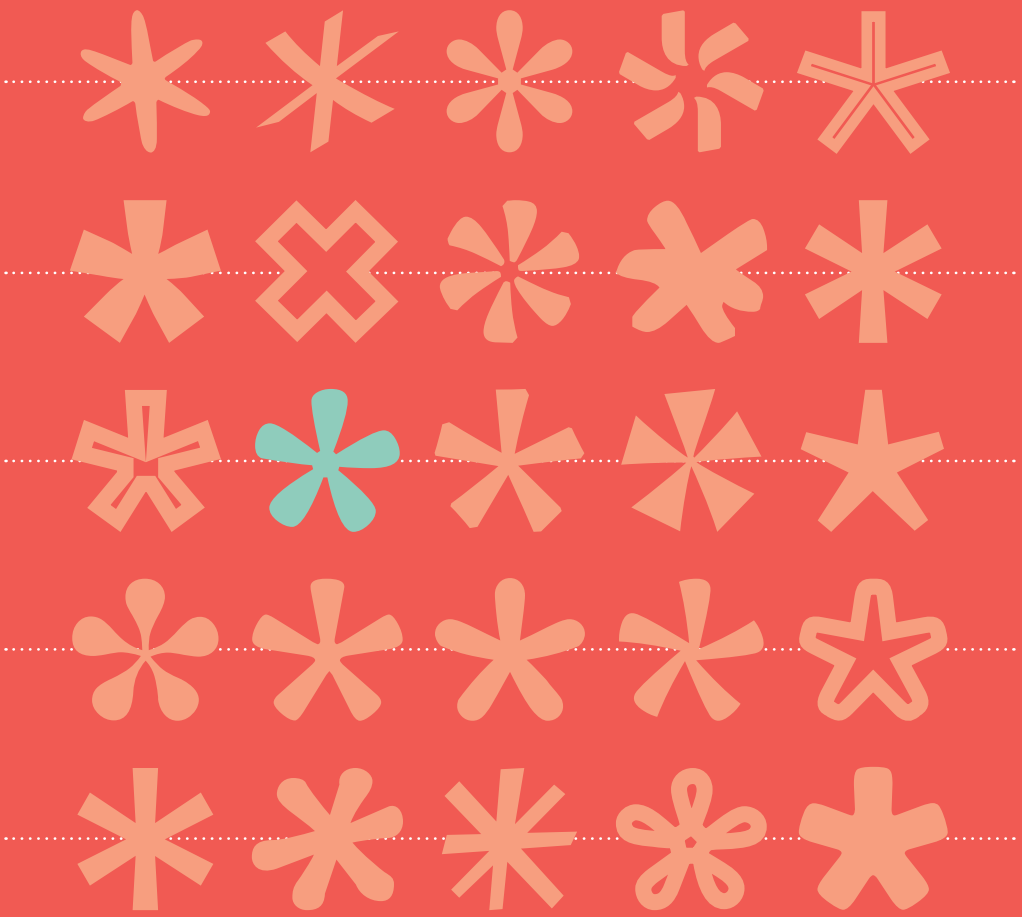
Proceedings of the AIGA Design Educators Community Conferences



Dialogue

VOL. 2 2018 **DECIPHER** CONFERENCE

Decipher, Vol. 2

Blind peer review of initial conference submissions was facilitated by the Decipher Conference Committee.

Dialogue is the ongoing series of fully open-access proceedings of the conferences and national symposia of the AIGA Design Educators Community (DEC). Issues of *Dialogue* contain papers from DEC conferences that focus on topics affecting design education, research, and professional practice, although each conference varies in theme. Michigan Publishing, the hub of scholarly publishing at the University of Michigan, publishes *Dialogue* on behalf of the AIGA DEC (www.dialogue.aiga.org).

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DESIGN AS RESEARCH IN THE AMERICAS

DECIPHER

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

STAMPS SCHOOL OF ART & DESIGN
UNIVERSITY OF MICHIGAN

AIGA Design Educators Community

DECIPHER

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

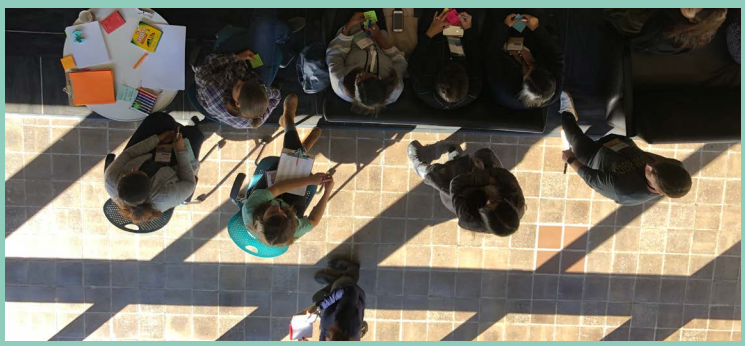
We included a number of submission and participation formats to engage people at different stages and degrees of comfort with design research. All Decipher attendees submitted written contributions in two modalities: the first was for ***facilitators***, those interested in leading an engaging session 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.

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

As the chairs of this conference and editors of these proceedings, we want to thank all of the people who made this possible, including Guna Nadajaran, Dean of the Stamps School of Art and Design, members of the AIGA DEC and DARIA, and our friends, loved ones, colleagues, students, proposal reviewers, session moderators, and conference volunteers. Honestly, the list is too long to print! Here are some key folks who put in extra time and effort behind the scenes to make Decipher 2018 a success:

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POSTER SESSION
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IN THIS SECTION

Translation Between Physical and Digital Experiences

LADAN BAHMANI
Illinois State University

Keywords
visual language, physical and digital experiences, translation, adoptive system

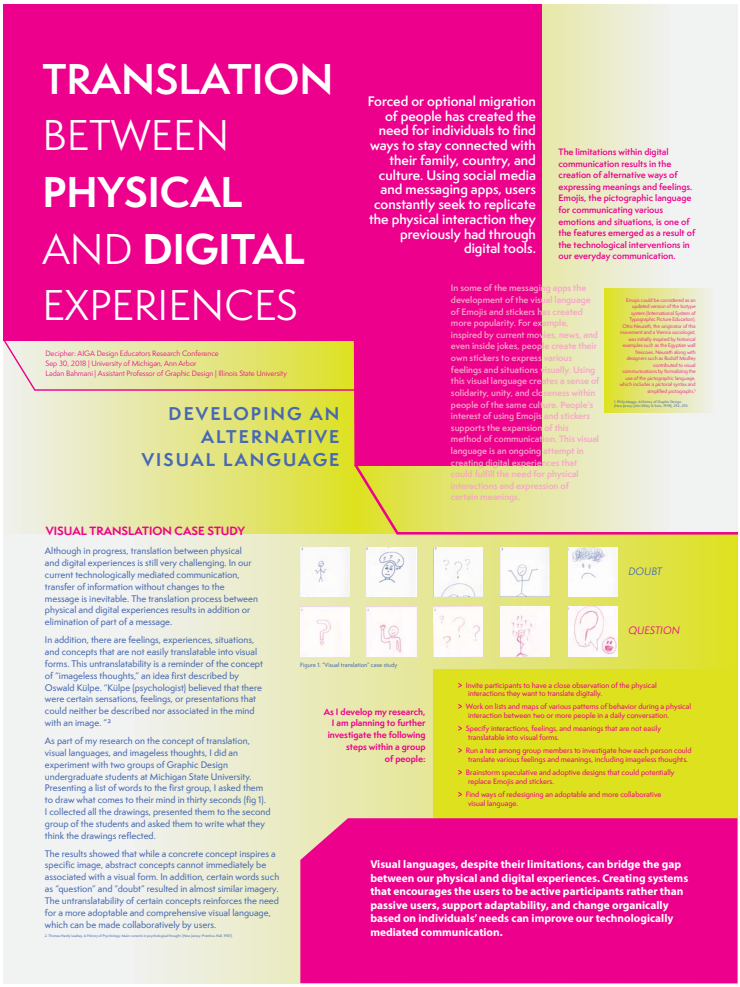
DEVELOPING AN ALTERNATIVE VISUAL LANGUAGE

Forced or optional migration of people has created the need for individuals to find ways to stay connected with their family, country, and culture. Using social media and messaging apps, users constantly seek to replicate the physical interaction they previously had through digital tools.

The limitations within digital communication results in the creation of alternative ways of expressing meanings and feelings. Emojis—the pictographic language for communicating various emotions and situations—is one of the features that emerged as a result of the technological interventions in our everyday communication.

Emojis could be considered an updated version of the Isotype system (International System of Typographic Picture Education). Otto Neurath, the originator of this movement and a Vienna sociologist, was initially inspired by historical examples such as the Egyptian wall frescoes. Neurath along with designers such as Rudolf Modley contributed to visual communications by formalizing the use of the pictographic language, which includes a pictorial syntax and simplified pictographs.[1]

In some of the messaging apps, the development of the visual language of Emojis and stickers has created more popularity. For example, inspired by current movies, news, and even inside jokes, people create their own stickers to express various feelings and situations visually. Using this visual language creates a sense of solidarity, unity, and closeness within people of the same culture. People's interest of using Emojis and stickers supports the expansion of this method of communication. This visual language is an ongoing



attempt in creating digital experiences that could fulfill the need for physical interactions and expression of certain meanings.

VISUAL TRANSLATION CASE STUDY

Although in progress, translation between physical and digital experiences is still very challenging. In our current technologically mediated communication, transfer of information without changes to the message is inevitable. The translation process between

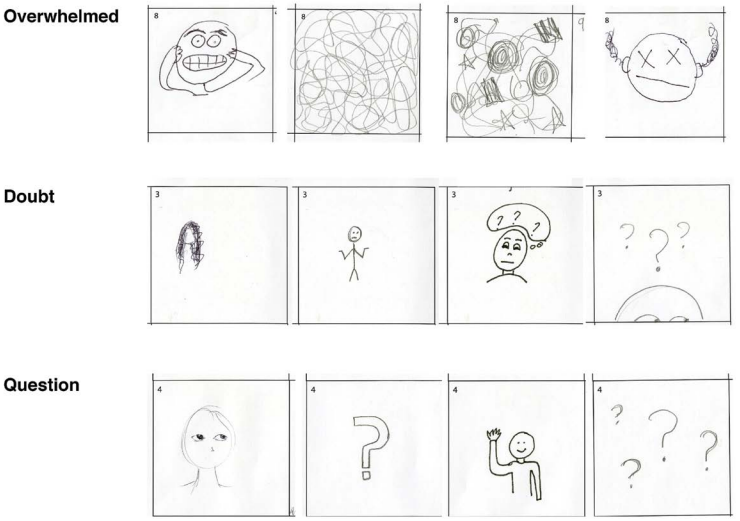


Figure 1. "Visual translation" case study

physical and digital experiences results in addition or elimination of part of a message.

In addition, there are feelings, experiences, situations, and concepts that are not easily translatable into visual forms. This untranslatability is a reminder of the concept of *imageless thoughts*, an idea first described by Oswald Külpe. Külpe (psychologist) believed that there were certain sensations, feelings, or presentations that could neither be described nor associated in the mind with an image."[2]

As part of my research on the concept of translation, visual languages, and imageless thoughts, I did an experiment with two groups of graphic design undergraduate students at Michigan State University. Presenting a list of words to the first group, I asked them to draw what comes to their mind in 30 seconds. I collected all the drawings, presented them to the second group of students and asked them to write what they think the drawings reflected.

The results showed that while a concrete concept inspires a specific image, abstract concepts cannot immediately be associated with a visual form. In addition, certain words such as "question" and "doubt" resulted in almost similar imagery. The untranslatability

of certain concepts reinforces the need for a more adoptable and comprehensive visual language, which can be made collaboratively by users.

As I develop my research, I am planning to further explore the following steps within a group of people:

- Invite participants to have a close observation of the physical interactions they want to translate digitally.
- Work on lists and maps of various patterns of behavior during a physical interaction between two or more people in a daily conversation.
- Specify interactions, feelings, and meanings that are not easily translatable into visual forms.
- Run a test among group members to investigate how each person could translate various feelings and meanings, including imageless thoughts.
- Brainstorm speculative and adoptive designs that could potentially replace Emojis and stickers.
- Find ways of redesigning an adoptable and more collaborative visual language.

Visual languages, despite their limitations, can bridge the gap between our physical and digital experiences. Creating systems that encourage the users to be active participants rather than passive users, support adaptability, and change organically based on individuals' needs can improve our technologically mediated communication.

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Teaching Design Research: Where is the Entrepreneurial Creativity? The Connection between Individual Creativity and Team Collaboration

TSENG-PING CHIU
University of Michigan

Keywords
entrepreneurship, creativity, divergent thinking, leadership, and collaboration

INTRODUCTION

Where is the creativity coming from? And how does it connect to entrepreneurship in the classroom setting? As a prospective design educator, I view myself as a design scientist and promoter, bridging the theoretical framework to design practices. To explore the broader possibilities of how individual creativity could lead to creative collaboration, I engaged in teaching design-related courses. I was an instructor in the industrial design department at National Kaohsiung Normal University the past few years, and now I am a Graduate Student Instructor (GSI) of the course called "Entrepreneurial Creativity" in the psychology department at University of Michigan. These teaching experiences enable me to investigate the connection between creativity and entrepreneurship, particularly from multidisciplinary perspectives.

Since 2017 Fall term, I have lectured and led discussion sections in the course of entrepreneurial creativity (PSYCH223). This is a core course that students take when pursuing an entrepreneurship minor through Innovate Blue at University of Michigan. The main purpose of this course is to explore the relationship between creativity, innovation, and problem-solving processes, especially considering the elements of creative thinking, exploring insights from a variety of perspectives, and engaging in projects designed to foster students' own creativity and innovation. There are three specific goals of this course: (1) introduce students to basic psychological theories and constructs underlying the concept of creativity. (2) Familiarize students with aspects of creativity and

Where is the Entrepreneurial Creativity? The Connection between Individual Creativity and Team Collaboration

Tseng-Ping Chiu, Ph.D. Candidate in Design Science, University of Michigan

Introduction

Where is the creativity coming from? And how it connects to entrepreneurship in the classroom setting? As a prospective design educator, we would like to explore the broader possibilities that how individual creativity could lead to creative collaboration. This course called "Entrepreneurial Creativity" in Psychology Department at University of Michigan, was to investigate the connection between creativity and entrepreneurship, particularly from multidisciplinary perspectives.

Course Objective

This is a core course that students minor in Entrepreneurship Program at Innovate Blue of University of Michigan. The main purpose of this course is to explore the relationship between creativity, innovation, and problem-solving processes, especially considering the elements of creative thinking, explore insights from a variety of perspectives, and engage in projects designed to foster students' own creativity and innovation. There are three specific goals of this course: (1) Introduce students to basic psychological theories and constructs underlying the concept of creativity. (2) Familiarize students with aspects of creativity and creative thinking in a collaborative setting by applying psychometric assessments to learn about their own characteristics. (3) Encourage the development of team skills and collaboration on an entrepreneurial project. In this course, I constructed my mini-lecture materials for the discussion section, covering design thinking, idea generation, survey design, design research methods, prototyping, and marketing strategy. To mentor my students' team projects, I applied my past experience in industrial design to demonstrate concrete examples of projects from industry. As an introductory course, my aim is to inspire students by immersing them in creative thinking within a collaborative setting. My students ranged from sophomores to seniors, so I learned a great deal about tailoring the pace and content of material to the expertise and interests of the diverse student body. However, the most common problem in my class is that students don't exactly know how to identify their own creativity because lacking expertise and experience, and they were hard to apply individual creativity to an entrepreneurial creative project.

As the aforementioned problem discussed above, empirically, I discovered that the common elements of a strong team include a well leadership structure in a collaborative setting, diversity of skill sets, and different levels of creativity from individuals. First, the leadership structure in a collaborative setting means that team could be aware leadership is the act of influencing a group to reach a common goal. Previous research has shown four key types of leadership: Delegating, Supporting, Coaching, and Directing (Hersey, Blanchard, and Johnson 2008). The student team could apply different leadership styles to their collaborative setting depending on the situation. Secondly, if the team has the wider diversity of skill sets including hard skills (i.e., design or coding skill) and soft skills (i.e., high EQ or grit), it usually leads a fruitful project outcome. Lastly, I encourage students to explore different levels of creativity from micro to macro level in order to learn their own characteristics. As consequence, we constructed three phases for students in the lecture to foster their individual creativity and lead them how to collaborate with their creative project.

About Author

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- Lecturer, Industrial Design Department

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- User Research, Human Factor, Experimental Design
- Surveying, Quantitative Analysis, Data Visualization

Research Focus:
- Product Design: Aesthetics, Aesthetic Principles
- Social Psychology: Cultural Psychology, Cognition
- Marketing: Consumer Behavior, Consumer Psychology

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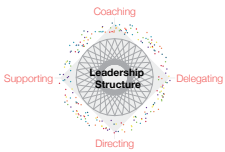
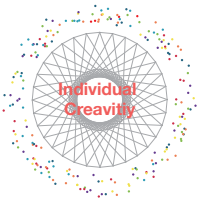
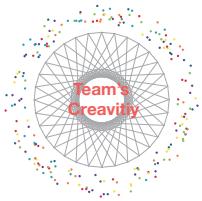


Three Phases of Entrepreneurial Creativity



1

At the beginning of the semester, we provide their own robust working definition of creativity, including intelligence, innovation, entrepreneurship, and imagination, to cover different levels of creativity from Mini-C to Big C. Further, we discuss individual characteristics and constructs related to individual creativity, including expertise, grit, Big 5 personality factors (McCrae and John 1992), IQ, and divergent thinking. Students could assess their own scores from these psychometric tests and have a brief concept of their ability in these areas where applicable.



2

In Phase Two, we identify key characteristics of high performance teams. Students would identify strengths and weaknesses related to their collective creative performance. In addition, we discuss constructs and characteristics related to effective work on creative teams, including Emotional Intelligence, Meyers-Briggs Type Indicator (Jung and Myers 2014), StrengthsFinder (Gallup 2018). Students could also assess their score to be aware their ability and apply that knowledge to their team participation.

3

Lastly, we discuss the central tenets of good leadership, including traits or skills uniquely important in the leadership of creative teams. Students will reflect on their participation on a creative team engaged in their entrepreneurial project. Students would learn to criticize their own and other's leadership and followership.

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4. McCrae, Robert R., and Oliver P. John. 1992. "An Introduction to the Five-Factor Modelend Its Applications." Journal of Personality 60 (2):175–215.

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TEACHING OBJECTIVE

Phase One: Individual Creativity

At the beginning of the semester, we provide our own robust working definition of creativity—including intelligence, innovation, entrepreneurship, and imagination—to cover different levels of creativity from Mini-C to Big C. Further, we discuss individual characteristics and constructs related to individual creativity—including expertise, grit, Big 5 personality factors (McCrae and John 1992), IQ, and divergent thinking. Students could assess their

own scores from these psychometric tests and have a brief concept of their ability in these areas where applicable.

Phase Two: Teams' Creativity

In Phase Two, we identify key characteristics of high-performing teams. Students would identify strengths and weaknesses related to their collective creative performance. In addition, we discuss constructs and characteristics related to effective work on creative teams, including emotional intelligence, Meyers-Briggs Type Indicator (Jung and Myers 2014), and StrengthsFinder (Gallup 2018). Students could also assess their score to be aware of their abilities and apply that knowledge to their team participation.

Phase Three: Leadership of Creative teams

Lastly, we discuss the central tenets of good leadership, including traits or skills uniquely important in the leadership of creative teams. Students will reflect on their participation on a creative team engaged in their entrepreneurial project. Students would learn to criticize their own and other's leadership and followership.

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Re-evaluating the Future of Trend Forecasting in Pedagogy and Practice

BROOKE BRANDEWIE AND EMILY FLANNERY
University of Cincinnati

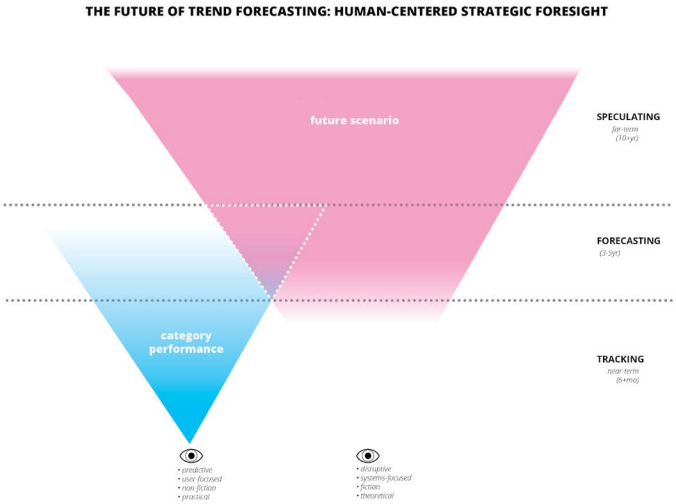
FORECASTING AT A CROSSROADS

Trend forecasting has been traditionally used to inspire design novelty and advance aesthetic execution. Despite an intrinsic connection to the design process, as a practice trend forecasting is challenged as being "too fuzzy" or not easily translated to strategic product, service, or experience applications. Today, a tidal wave of DIY trend spotters has risen from the convergence of clout-centric social networks and the democratization of design. Everyone with an internet connection can now feel capable of approximating the next "big" design movement or cultural trend, leaving the profession and practice of futures-based research like trend forecasting at a crossroads.

The Myron E. Ullman, Jr. School of Design at the University of Cincinnati has a vested interest in cultivating and educating design students in futures-based research. Our school has a history in and continues to prioritize attention, resources, and the development of new curricula to this area of study. Not only because we have a 35-year long pedagogical history in this area, but also because this area continues to be in high demand with our university employer partners. As a result of this, our employer partners hire our students as co-ops specifically for trend forecasting roles and many of our graduates pursue careers as professional Trend Forecasters.

THE FUTURE OF TREND FORECASTING

Qualitative research was conducted with 12 national and international expert forecasting practitioners, in addition to analysis of leading domestic and international design programs educating students on forecasting capabilities. This research indicates an overall shift from commercial trend reporting toward strategic, human-centered foresight and translation; from passive futures thinking to active futures doing. In this evolution,



trend forecasting as a practice is stratified into three zones of expertise: tracking, forecasting, and speculation. Both theoretical and practical competency in each of these zones is necessary for the translation to strategic design interventions which can be focused on near-term category performance or far-term future scenarios. This transforms the practice of Trend Forecasting from a monolithic, consumption-driven research methodology to one that illuminates additional pathways which amplify the attainment of strategic thinking and design translation skills in designers.

The outcome of this research suggests in order to adequately prepare students for the future of trend forecasting, as design educators, we must adapt and address the different trend translation methods inherent in each of these zones. The goal of on-going research in this area is to prototype and test solutions that address each of the zones through translation methods that yield strategic design interventions situated in both the near and far term. Codification of these solutions aim to better prepare young designers at the University of Cincinnati, College of Design, Architecture, Art and Planning, Myron E. Ullman Jr. School of Design for participation in, and as future strategic leaders of, the design industry.

Social Impact Design Assessment: A Case for Social Sciences Framework

AUDRA BUCK-COLEMAN
University of Maryland, College Park

This poster addresses the benefits and potential limitations of incorporating social science research and assessment methods into social impact design research.

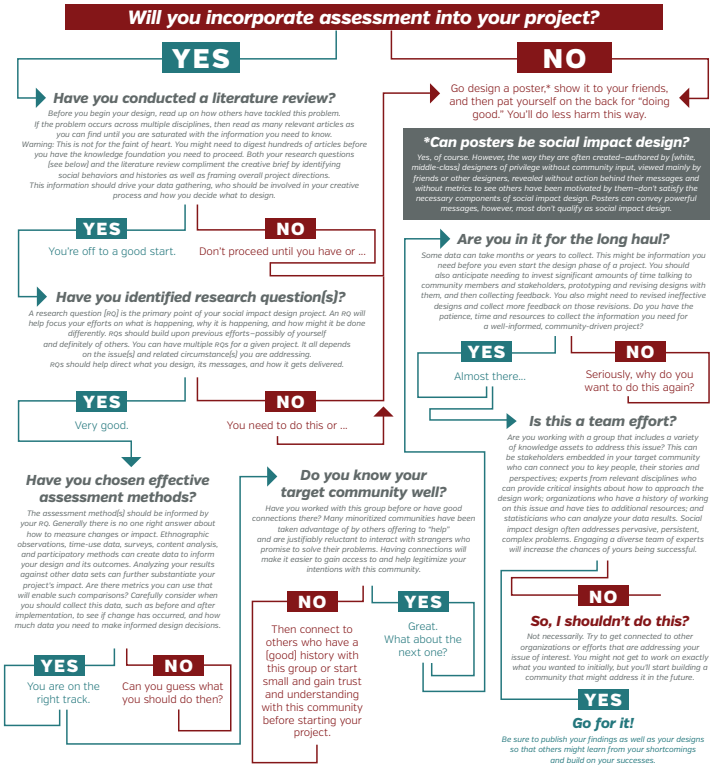
Social impact design is gaining popularity and credence in the design profession. Academic programs and design firms are increasingly emphasizing social aspects of their design work. They are also touting their successes, unfortunately many times without post-implementation assessment. Assessment is a key factor in social impact design, and yet it seems to be the one about which designers want more knowledge. Without assessment, design research cannot clearly articulate its benefits, nor can it be sufficiently appreciated and understood. Assessment is a necessary component of design projects and a core competency for the designer of the future. It is critical to building and learning from design research. We don't have to invent the assessment wheel. We can borrow from the other models and then make modifications as appropriate. Having a conversation about these possibilities can help shape its future. One avenue to incorporate assessment while also bolstering the foundation of social design is by incorporating a social science research framework. This poster will address effective ways of incorporating social science research and assessment methods within design research, models others have adopted, adapted or considered and to what end, and factors that might invalidate research results or create unproductive research.

A POSITION POSTER BY AUDRA BUCK-COLEMAN | UNIVERSITY OF MARYLAND

Should you undertake a social impact design project?

(WITH APOLOGIES TO JESSICA HISCHE)

Social impact design is both design and research. As such, designers must incorporate research and assessment aspects into the creative process. This poster employs a social science framework to demonstrate how this can happen.



Museums as Experiential Learning Labs: Developing User-centric Interactive Exhibits Through Observational & Participatory Research

LISA FONTAINE
Iowa State University

For educators wanting to introduce new and effective ways to include user-centered research in a design studio course, interactive museum exhibits can provide an efficient opportunity for students to inconspicuously observe many users without needing to set up formal observational studies.

It can be challenging engaging students in observational research, which requires the design and approval of official protocols, recruitment of subjects and scheduling of user testing.

By conducting research on interactive museum exhibits in Chicago, graphic design students from Iowa State University are able to circumvent many difficulties associated with conducting user studies in a classroom setting.

In their museum-based user research, students determine the intended outcomes of each exhibit by watching visitors' interactions with user interfaces and experiences. Through photographs and writing, they analyze why some interactions succeed while others fall short.

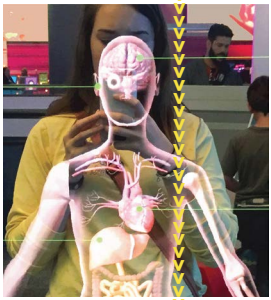
Armed with insights into how visitors really use exhibits, the students are then able to design exhibits for Chicago's Field Museum that include prolonged visitor engagements. These interactions successfully facilitate learning by employing methods that effectively engage and educate the museum's audience.

Developing User-centric Interactive Exhibits Through Observational & Participatory Research

Museums as Experiential Learning Labs

Lisa Fontaine
Iowa State University

For educators wanting to introduce new and effective ways to include user-centered research in a design studio course, interactive museum exhibits can provide an efficient opportunity for students to inconspicuously observe many users without needing to set up formal observational studies.



It can be challenging engaging students in observational research, which requires the design and approval of official protocols, recruitment of subjects and scheduling of user testing.

By conducting research on interactive museum exhibits in Chicago, graphic design students from Iowa State University are able to circumvent many difficulties associated with conducting user studies in a classroom setting.

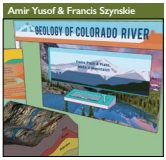
In their museum-based user research, students determine the intended outcomes of each exhibit by watching visitors' interactions with user interfaces and experiences. Through photographs and writing, they analyze why some interactions succeed while others fall short.

Armed with insights into how visitors really use exhibits, the students are then able to design exhibits for Chicago's Field Museum that include prolonged visitor engagements. These interactions successfully facilitate learning by employing methods that effectively engage and educate the museum's audience.

Monica Pearson & Ashley Temple

Chayli Rittman

Amir Yusof & Francis Szynskie



Ruby Hotchkiss

Brooke Ugolini & Tom Bos

On Teaching Design Research to Undergraduates

ANNE GALPERIN
SUNY New Paltz

Keywords
AIGA Designer 2025, basic research, design education, design research, knowledge generation, research process, undergraduate education

WHY WE TEACH DESIGN RESEARCH

At SUNY New Paltz we believe that broadly educated individuals make terrific designers, so we capitalize on our position within a comprehensive, liberal arts college community. We encourage students to select general education and elective courses to support active engagement with design as a cross-disciplinary practice that includes knowledge generation.

I inaugurated our design research course a dozen years ago. Since then it has evolved into a junior-level, 3-credit, semester-long prerequisite for the two-semester graphic design BFA senior thesis sequence. Whether or not students carry their research topics forward into their thesis projects, experiencing research as a process of inquiry, discovery and dissemination is energizing and empowering.

COURSE DESCRIPTION

ARS329 Design Research introduces basic strategies in primary and secondary research for graphic designers, including literature reviews; surveys/interviews; text, object and image analyses; and ethnographic approaches. Methods lead to both quantitative and qualitative analyses.

A virtually complete transition to an information-based economy means that students should be ready to go beyond providing surface structure and style to already established content. Their ability to identify, research, represent and design for issues of interest and concern creates possibilities for a fulfilling and evergreen practice.

On Teaching Design Research to Undergraduates

Anne Galperin
Associate Professor of Art
SUNY New Paltz

New Paltz
STATE UNIVERSITY OF NEW YORK

Why teach research methods?

I inaugurated ARS329 Design Research in 2006 and have continued as its instructor and developer. The course is a vital part of our Graphic Design BFA curriculum.

Active curiosity about the world around us leads to the generation, sharing and application of new knowledge, an evergreen and exciting aspect of design practice.

How the class is taught:

Phase Ia: Skill Building / Secondary Research

1: Why and how we do design research
Literature reviews
Modes of persuasion: ethos, pathos, logos
CITI course Social/Behavioral Research

Phase Ib: Skill Building / Primary Research

2: Semiotics review
Static observations and analysis of designed objects
3: Dynamic observations of behavior
4: Participant observations (in teams)
5: Team observation presentations
Research project introduced
Project conceptualization
6: Search engine image visual analysis
7: Quantitative and qualitative data visualization and analysis
8: Midterm quiz
Qualtrics training

Phase II: Projects

9: Final project draft proposals presented
10: Surveys launch
Work time / desk crits
11: Work time / desk crits
Review paper and poster specs
12: Surveys closed
Work time / desk crits
13: Work time / desk crits
14: Final quiz
Poster in progress crit

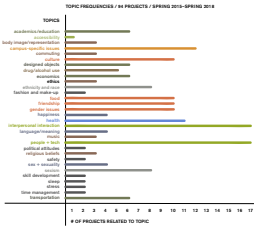
Phase III: Presentations

15: Papers due
Final poster presentations

Observations: Process

Students are always excited–and sometimes upset–about their survey data. The latter is actually something to celebrate: it's an "aha" moment that reveals a lot about their assumptions of the phenomena under scrutiny.

When a student is sure that their data is "wrong" it opens the opportunity to a shift in mindset from "proving" an expectation to being receptive to what has actually emerged.



Observations: Project content

94 research projects were completed by students since the Spring 2015 semester.

Student projects covered 31 content areas. 44 projects were single topic; 40 spanned more than one topic area.

With 186 total content area "hits," the average number of topics per multiple-topic project was 2.84.

Alignment with *AIGA Designer 2025*:

Complexity
Through their research in the Projects phase, students come to an acute awareness of their issue within the context of larger systems.

Bridging physical and digital experiences
During Skill building and Projects phases students observe and analyze a variety of behaviors. During the Projects phase surveys tap people's expressed needs, wants, values.

Resilient organizations
Course and project timelines orient students toward steps, tasks and resource needs.

Core values matter
During the Skill building phase students work with current events-based materials that problematize social and ethical issues and the designer's role.

New forms of sensemaking
The process of visualizing data engages issues of language and audience.

Accountability for predicting outcomes of design action
During the Skill building and Projects phases students' literature reviews and annotated bibliographies provide practice in identifying, interpreting, describing and applying information from multiple sources.

Students use human-centered research methods, mapping people's interactions with others, in their environments, having experiences and using objects.

During the Presentations phase, final reports and research posters provide an opportunity for students to summarize and present their research.

Selected Resources:

Bennett, Audrey and Steven Heller. 2006. *Design Studies: Theory and Research in Graphic Design*. New York, New York: Princeton Architectural Press.

Emerson, John. 2008. *Visualizing Information for Advocacy: An Introduction to Information Design*. Tactical Technology Collective / Open Society Foundations: https://www.opensocietyfoundations.org/reports/visualizing-information-advocacy-introduction-information-design, last accessed 16 August 2018

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Mack, Natasha, Cynthia Woodsong, Kathleen M. MacQueen, Greg Guest, Emily Namey. 2005. *Qualitative Research Methods: A Data Collector's Field Guide*. Research Triangle Park, North Carolina, USA: https://www.fhi360.org/sites/default/files/media/documents/Qualitative%20Research%20Methods%20-%20A%20Data%20Collector%27s%20Field%20Guide.pdf, last accessed 16 August 2018

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HOW WE TEACH DESIGN RESEARCH

The class is exercise-heavy at the front end: we build a skill and knowledge base that moves from secondary to primary research methods. Students take the basic CITI training for human subjects research (they pursue HREB review and approval as needed), research and write literature reviews, (re)-learn methods of persuasion and semiotic principles, analyze advertisements and cultural artifacts, and observe/document people in situ. They gain practice in writing surveys and conducting interviews (the College has a contract with Qualtrics, so this is the tool we use). We spend a lot of time moving data from its raw state to visualization and interpretation. In this phase, exercises go back and forth between the students and me as basic principles are mastered.

During the second half of the course students work on research projects of their own choosing. The topic may be an aspect of design/design practice, or it may be research unrelated to design per se that nonetheless could support a design project. The topic should be of interest to students or an issue of concern for them.

Students develop proposals, including a preliminary literature review, for my appraisal. Final projects are comprised of the students' literature reviews and the planning, carrying out and analysis of two complementary primary research methods, one of which is a student survey. Their research culminates in a written paper and, since Spring 2015, a poster session open to campus colleagues. Posters have proven to be a really satisfying addition to students' experience of the course and satisfy the hankering to design something. And it's validating for students to share and celebrate their hard work.

OBSERVATIONS AND OUTCOMES

From Spring 2015 onward—with the exception of Spring 2016 when the students and I took on a research project for our campus library—the course has been taught as described above. In Spring 2015, students were required to focus their research on issues of identity and social justice; in subsequent semesters topic choices were not constrained. In three and a half years, 94 independent research projects have been undertaken in 30 content areas:

Academics and education; accessibility; body image and representation; campus-specific issues; commuting students' issues; culture; designed objects: form and functionality, drug and alcohol use among students; economics; ethics; ethnicity and race; fashion and make-up; food; friendship; gender issues; happiness; health; interpersonal (live) interactions; language and meaning; music; people and technology; political attitudes and processes; religious beliefs; increasing safety within specific environments; sex and sexuality; sexism; skill development; sleep; stress; time management; and transportation.

Of the 94 projects, 44 were tightly focused on a single topic. The other 50 projects each spanned more than one topic area. There were two recurrent favorites: how people use technology and interpersonal relations.

Students are generally surprised by their data—and often by what their chagrin reveals about their own assumptions about the phenomenon they are studying. The moment a student is sure that their data is "bad" is a true turning point and leads to a shift in mindset from proving an expectation to being receptive to what has actually emerged.

ASSESSMENT

Although I have not used AIGA Designer 2025 to guide course content, here's how the course currently maps to trends identified in the document:

- During the exercise phase I choose materials that problematize social and ethical issues and the designers' role [Core Values Matter]
- Their literature reviews and annotated bibliographies provide practice in finding, interpreting, describing and applying information from multiple sources [Accountability for Predicting Outcomes of Design Action]
- Particularly during the project phase students come to an acute awareness of their issue within the context of larger and very often interrelated systems—technological, political, cultural, interpersonal, economic [Complexity]

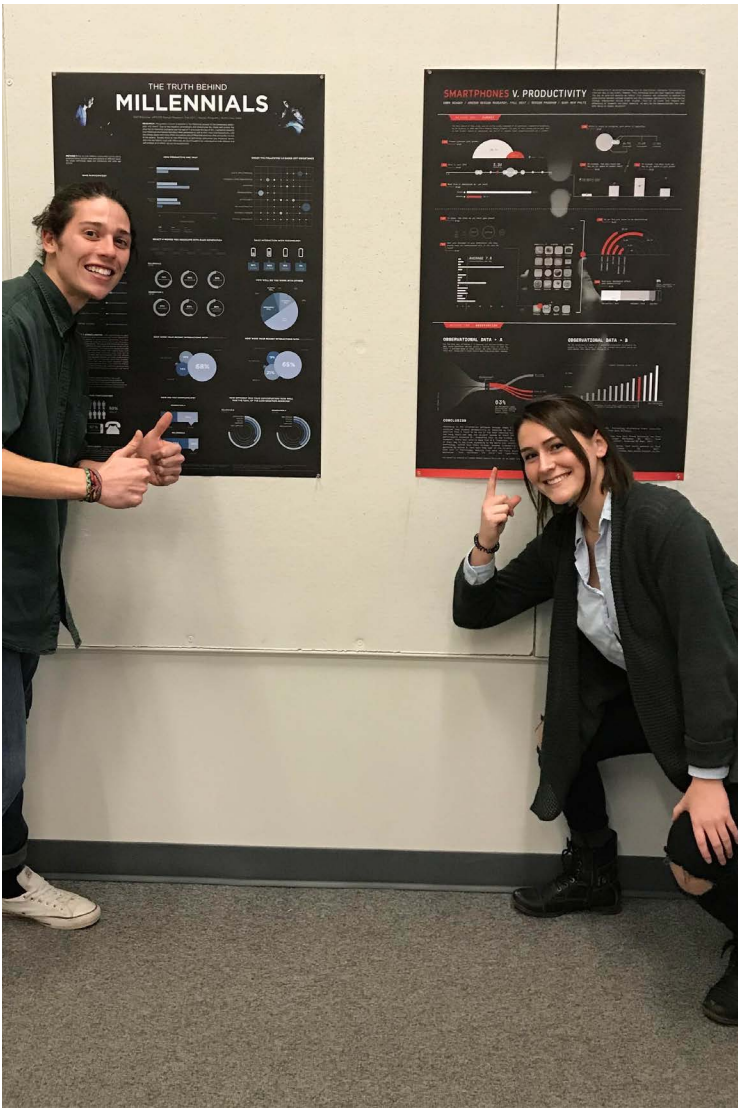

Figure 1. Matt Precioso and Emma Seager pose with their research posters in December 2017. Matt investigated millennial's beliefs about themselves and Gen X'ers. Emma researched student self-perceptions of the effects of smartphone use on personal productivity.

Photographer: Patrick Pearson

- Students are using human-centered research methods, mapping people's interactions with others, in their environments, having experiences and using objects [Accountability for Predicting Outcomes of Design Action]
- The project timelines orient students toward steps, tasks and resource needs. In the process of visualizing their data we work through issues of language and audience [Resilient Organizations]
- Final reports and research posters provide an opportunity to summarize and present their research [New Forms of Sensemaking / Accountability for Predicting Outcomes of Design Action]

AIGA Designer 2025 will be useful in informing future iterations of the course.

SELECTED RESOURCES

Bennett, Audrey and Steven Heller. 2006. *Design Studies: Theory and Research in Graphic Design*. New York, New York: Princeton Architectural Press.

Emerson, John. 2008. *Visualizing Information for Advocacy: An Introduction to Information Design*. Tactical Technology Collective / Open Society Foundations: www.opensocietyfoundations.org/reports/visualizing-information-advocacy-introduction-information-design

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Civically-Driven Design Curriculum Grounded in Sustainable Community Partnerships

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Keywords
community-engaged learning, social design, experiential learning, high impact practices, interdisciplinary collaboration, design for good

STUDENTS, THE INSTITUTION, THE COMMUNITY

Public Research Institutions

As a part-time graduate researcher at a large public research university in 2011, I found myself among 40,000 students in a sea of self-driven investigations. Compelled to finally leave my full-time design position, I hoped to focus my individual research topic on something more meaningful than the deadline-driven life I was living. Titled "Community as Client: Defining social design as a means of designing for good," my thesis focused on the belief that designers have the power to make social change happen in their own communities and their own career.[1] While researching and teaching undergraduate foundation design courses at Purdue University, I found that these two sections of my career were independent from one another other. Very rarely did I have the opportunity to talk with my undergraduate students about the topics that I was researching.

Although the research was very timely with the revival of the First Things First manifesto, I was perplexed when considering where this research would take me in the long run. The goal to unite community-driven design initiatives with my future academic career felt far-fetched. Little did I know, this particular research would bring me full circle as a socially-driven design educator several years later.

Today, I oversee the Integrated Media Arts program in a rural, picturesque liberal arts environment. Juniata College has

the mission to "provide an engaging personalized educational experience empowering our students to develop the skills, knowledge and values that lead to a fulfilling life of service and ethical leadership in the global community."[2] Rather than asking students to design conceptual work, we directly relate our coursework to this mission with a real world problem including variable guidelines.

Why a small liberal arts environment works

Over the last four years, I have been able to find clear and concise

intersections between academia, community, and the design industry. In the collaborative liberal arts environment at Juniata College, faculty concentration is geared heavily on teaching and student assessment rather than that of a large research institution such as Purdue University, which focuses on traditional forms of publishing self-initiated research.

The intellectual environment at my current institution boasts faculty-student relationships and identifies advising in addition to student mentorship as a key component of personal evaluation for tenure and promotion. This unconventional institutional standard has allowed me to reimagine a design curriculum that focuses on connecting the campus with the greater community within the traditional academic world. During the process of curricular redevelopment of the Integrated Media Arts Program, I was able to focus on merging my academic agenda with the institutional mission by connecting the campus with the local community.

Juniata College is situated in a small rural town; the town I grew up in and left nearly two decades ago to seek an education. Prior to departing my hometown, Huntingdon was a thriving municipality with active storefronts and a bustling main street. Today, longtime family-owned businesses are struggling to connect to the younger college audience. In addition, many local organizations and nonprofits lack the technology skills and resources to continue to exist in the world their consumers currently reside in. This is when my personal community interests merged with my academic responsibility.

In the fall of 2014 as a new faculty member at Juniata College, I was tasked with teaching undergraduate courses ranging from principles of design to design technology, in addition to overseeing undergraduate research. Being an interdisciplinary program I also needed to find a way to engage non-design students with design curriculum. I felt empowered to teach design curriculum with a focus on learning by doing. Now, prior to launching any client based project in the classroom, we run through a series of design blitz workshops to prepare for client meetings. I focus the start of the semester on identifying problems and then associate them with realistic visual deliverables. This exercise allows students from all areas to connect their individual abilities to the project.

Figure 1: Fall 2017 Integrated Media Arts students identifying campus-community problems.

Following our first client meeting, the design team works from the start of the project identifying project goals and parameters that merged well with their skills and talents. The students must develop sustainable solutions that the client can continue to maintain by considering the end deliverables, the platforms, and most importantly the use of the proper technology.

Once the work is complete in the lab environment, student reflection is a key to the continued success of the newly developed curriculum. We utilize multiple forms of service-learning rubrics to identify project goals and parameters in a reciprocal way.[3] The assessment outcomes have solidified the argument: the type of knowledge this design research has generated confirms that community-engaged design curriculum is a key component of any undergraduate design course.

CONCLUSION

Academic institutions that focus solely on curricular efficiency, assessment, and student outcomes may not be as motivated to offer

experiential community-engaged learning. Concurrently, this type of instruction may not deliver any of the aforementioned results. I would argue that this type of experience is not only important to the students but also to the academic institution. My current role has solidified my belief that design curriculum should no longer focus on mock design projects for non-existing clients, but rather on multiple civically driven design initiatives with variable outcomes. Offering such curriculum not only allows for the students to have a more in depth education, they are also offered the opportunity to engage in profound experiences that allow them to enter the world as civically driven designers and citizens.

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2 "Juniata College | Mission Statement," *Juniata College*, June 2018, www.juniata.edu/about/mission.php.

3 Molly Clever, *Service Learning: Strategies, Outcomes, and Assessments. A Handbook for Classroom Instructors.* (West Virginia Wesleyan College: Department of Sociology, 2016), 21.

The Semiotics of Pain: How Design Impacts the Communication of Pain

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University of Texas, Dallas

CASSINI NAZIR
University of Texas, Dallas

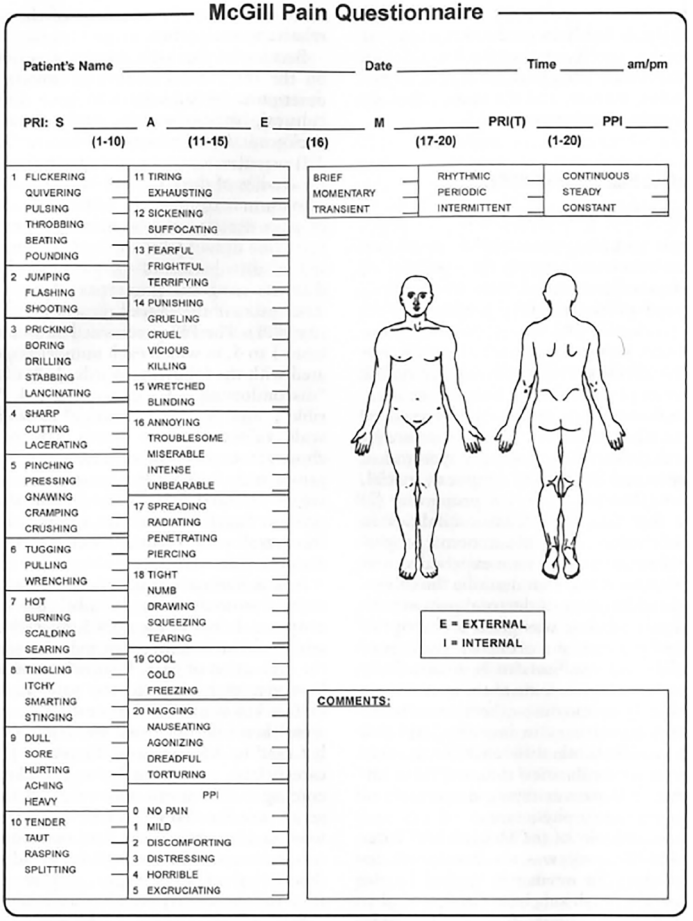
design research, semiotics, healthcare, language barrier, patient-centered design, co-creation, lexicon, taxonomy, information architecture

SOLVING THE WICKED PROBLEM: OUR EXPERIENCES WITH PAIN ARE UNIVERSAL, YET UNIQUE.

Pain affects more Americans than diabetes, heart disease, and cancer combined: It is the most common reason to visit a doctor's office, and it is the leading cause of long-term disability and increased healthcare costs.[1] In healthcare settings, pain has traditionally been assessed using a Visual Analog Scale with faces (Figure 1) or, less frequently, the McGill Pain Questionnaire (Figure 2). The McGill Questionnaire requires patients to read and comprehend more than 150 words and answer 78 questions.

Figure 1. Wong-Baker FACES Pain Rating Scale.

Though comprehensive, the McGill Questionnaire is hard to comprehend, particularly for patients with limited English proficiency. Elaine Scarry, author of the seminal book *The Body in Pain*, notes the "inexpressibility" of pain.[2] Even for native English speakers, describing pain is challenging. Pain assessments like the McGill Questionnaire seek to describe pain through nomothetic constructs, although pain itself is idiographic and idiopathic.


McGill Pain Questionnaire

Patient's Name _____ Date _____ Time _____ am/pm

PRI: S _____ (1-10) A _____ (11-15) E _____ (16) M _____ (17-20) PRI(T) _____ (1-20) PPI _____

1 FLICKERING, QUIVERING, PULSING, THROBBING, BEATING, POUNDING
2 JUMPING, FLASHING, SHOOTING
3 PRICKING, BORING, DRILLING, STABBING, LANCINATING
4 SHARP, CUTTING, LACERATING
5 PINCHING, PRESSING, GNAWING, CRAMPING, CRUSHING
6 TUGGING, PULLING, WRENCHING
7 HOT, BURNING, SCALDING, SEARING
8 TINGLING, ITCHY, SMARTING, STINGING
9 DULL, SORE, HURTING, ACHING, HEAVY
10 TENDER, TAUT, RASPING, SPLITTING
11 TIRING, EXHAUSTING
12 SICKENING, SUFFOCATING
13 FEARFUL, FRIGHTFUL, TERRIFYING
14 PUNISHING, GRUELING, CRUEL, VICIOUS, KILLING
15 WRETCHED, BLINDING
16 ANNOYING, TROUBLESOME, MISERABLE, INTENSE, UNBEARABLE
17 SPREADING, RADIATING, PENETRATING, PIERCING
18 TIGHT, NUMB, DRAWING, SQUEEZING, TEARING
19 COOL, COLD, FREEZING
20 NAGGING, NAUSEATING, AGONIZING, DREADFUL, TORTURING

PPI
0 NO PAIN
1 MILD
2 DISCOMFORTING
3 DISTRESSING
4 HORRIBLE
5 EXCRUCIATING

BRIEF	RHYTHMIC	CONTINUOUS
MOMENTARY	PERIODIC	STEADY
TRANSIENT	INTERMITTENT	CONSTANT

E = EXTERNAL
I = INTERNAL

COMMENTS:

Figure 2. McGill Pain Questionnaire by Ronald Melzack.

VISUAL COMMUNICATION MAY OFFER LANGUAGE-INDEPENDENT OPTIONS.

Meaningful visual communication has the potential to transcend the language barrier. Otl Aicher's pictogram designs for the 1972 Summer Olympics in Munich used as little wording as possible and yet communicated meaning across hundreds of languages.

Based on research into pain, I propose a workshop where designers as critical and conceptual thinkers tackle the universal-yet-individualistic and distinctive-yet-similar problem of pain. Pain is

a medical problem, one that involves communication, service, and expression. How can designers approach the communication of pain?

THE PAIN LEXICON: CO-CREATING A ROBUST ARCHIVE OF PAIN.

Participants will create a 6-second video to convey and share the characteristics of pain. A video includes metaphors and visualization often neglected in traditional pain assessment. Successful videos would better enable viewers to empathize with the pain being communicated.

Videos would be added to the Pain Lexicon, a crowd-sourced library of pain, which prepares patients to become competent in explaining and expressing their pain. This robust archive of user-created videos enables users to share and learn from each other.

By nature, pain is complicated. It is hard to communicate with just words or static images. The videos will help to better capture the complexity and transformation of the pain. Better comprehension of pain may yield faster and more accurate diagnosis.

ENRICHING THE VOCABULARY OF PAIN

The goal of the Pain Lexicon is to create an archive where patients can learn and apply other metaphors to gain competence in explaining and understanding pain. It is a patient-centered pain assessment.

The Pain Lexicon focuses on three major features of the pain (Figure 3):

- **Where** is the pain? (Location)
- **What** kind of pain? (Characteristics)
- **How** bad is the pain? (Intensity)

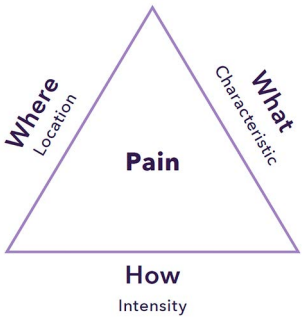


Figure 3. The pain identification model used in the Pain Lexicon.

The Pain Lexicon can be used during person-to-person interactions (such as in healthcare settings, workshops, etc.) to facilitate understanding between parties, or in an individual setting, using an app. The app aims to help individuals better understand their pain as they attempt to communicate it. The app prototype below describes its use in an individual setting.

APP PROTOTYPE DESCRIPTION

Participants of this workshop can validate the concept of the app and inspire design improvements for the better usability of the app. Each user will be asked to visualize their pain by taking a 6-second video using a household item to express their pain. In this way, we can transcend the language barrier.

First, the user will indicate the location of the pain by placing the problem area in the center of the square. Next, the user can either start shooting a video using household items to represent the pain. For example, using a fork to poke the mannequin represents pricking pain (Figure 4).

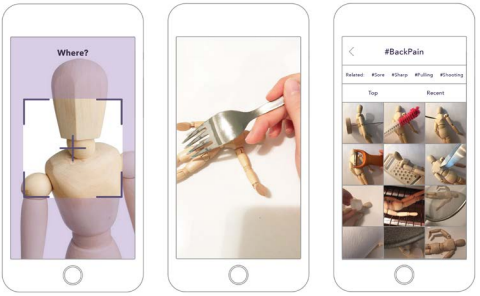


Figure 4. The Pain Lexicon wireframe.

After shooting a video, the user will tag the location and characteristic of the pain. The app will help by showing pre-categorized word bank of pain. Also, the user can narrow down the kind of the pain by answering a few questions like:

- Is your pain sharp or dull?
- Is your pain constant or comes and goes?
- Does your pain get worse as time goes by?

or selecting a visual metaphor (Figure 5) such as these examples:

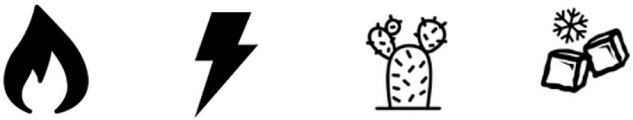


Figure 5. Icons from thenounproject.com "Fire" by icon 54, "Lightning" by Ahock, "Cactus" by Prasong Tadoungsorn, and "ice cubes" by Emma Langston respectively from thenounproject.com.

Using tags, the user can view videos of specific kind of pain as a whole. For example, the user can browse all #BackPain. In this way, the user can find similarities and possibly even discover a perfect video that represents their pain at the doctor's appointment. After videos are saved, they will be converted to .GIF image format so that user will be able to browse through without playing the video.

VIDEO STRUCTURE

Videos would loosely follow this structure: describe the location, the characteristic and the intensity of the pain in a video, and caption using appropriate hashtags (Figure 6). A video must be shot in a portrait (vertical) layout.

Figure 6. The Pain Lexicon video structure.

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Artificial Societies as a Tool for Design Research of Emergent Interactions

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University of Illinois at Urbana-Champaign

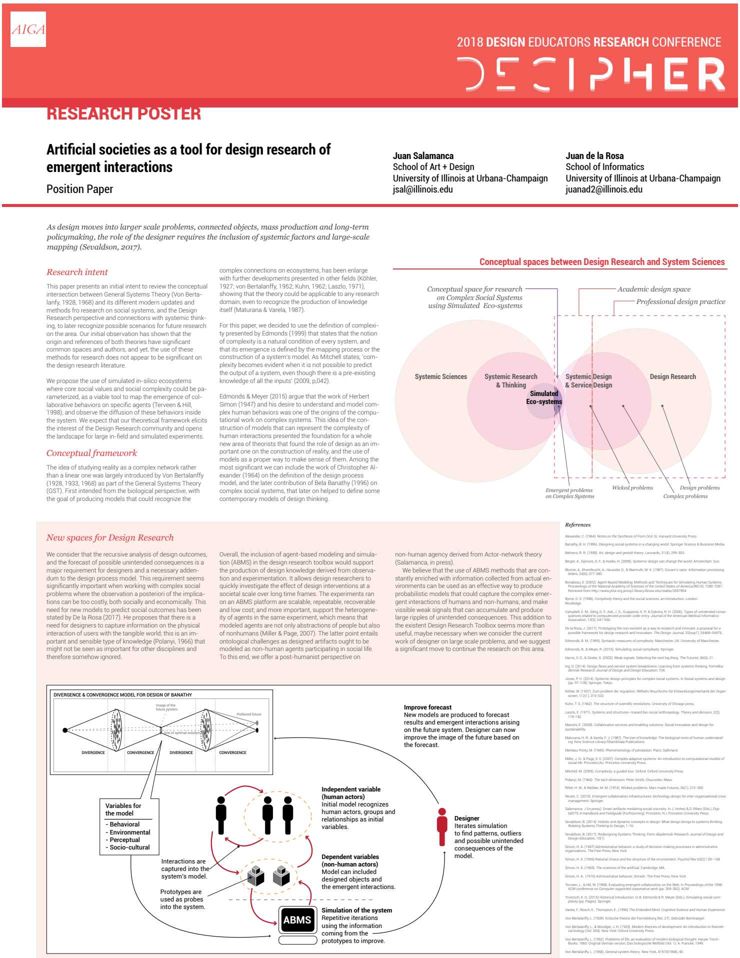
Keywords
emergence, complexity, agent-based modeling, design research methods

INTRODUCTION

An observation of current design trends and tendencies, both on the professional spectrum that is moving toward service design and the contemporary principles of design, shows the significant relevance of the inclusion of the theory of Complex Systems (Von Bertalanffy, 1928) in the design process and design research to allow designers to map and understand the complexity that arises from the size and diffusion of current problems (Ing, 2014). As design moves into larger scale problems, connected objects, mass production and long-term policymaking, the role of the designer requires the inclusion of systemic factors and large-scale mapping (Sevaldson, 2017).

The same analysis has also acknowledged the need for designers to recognize the core values that support human relationships inside a system (Berger, Sijmons & Hoeks, 2009), and move the notion from the common perspective of human or user-centered design that implies a role for designers as truth holders that are in charge of identifying the needs and requirements of others, to a collaborative process of acknowledgement of the underlying values of social groups and entities, the agency of communities on the construction of their reality (Manzini, 2008), and the repercussions that emergent values and behaviors can have in the application of specific design principles.

This paper presents an initial intent to review the conceptual intersection between System Theory (Von Bertalanfy, 1928, 1968) and its different modern updates for social systems, especially the use of digital simulations of complexity, and the design research perspective and connections with systemic thinking, to later on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RESEARCH POSTER

Artificial societies as a tool for design research of emergent interactions

Position Paper

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As design moves into larger scale problems, connected objects, mass production and long-term policymaking, the role of the designer requires the inclusion of systemic factors and large-scale mapping (Sevaldson, 2017).

Research intent

This paper presents an initial intent to review the conceptual intersection between General Systems Theory (Von Bertalanfy, 1928, 1968) and its different modern updates and methods fro research on social systems, and the Design Research perspective and connections with systemic thinking, to later recognize possible scenarios for future research on the area. Our initial observation has shown that the origin and references of both theories have significant common spaces and authors, and yet, the use of these methods for research does not appear to be significant on the design research literature.

We propose the use of simulated in-silico ecosystems where core social values and social complexity could be parameterized, as a viable tool to map the emergence of collaborative behaviors on specific agents (Terveen & Hill, 1998), and observe the diffusion of these behaviors inside the system. We expect that our theoretical framework elicits the interest of the Design Research community and opens the landscape for large in-field and simulated experiments.

Conceptual framework

The idea of studying reality as a complex network rather than a linear one was largely introduced by Von Bertalanffy (1928, 1933, 1968) as part of the General Systems Theory (GST). First intended from the biological perspective, with the goal of producing models that could recognize the complex connections on ecosystems, has been enlarge with further developments presented in other fields (Köhler, 1927; von Bertalanffy, 1952; Kuhn, 1962; Laszlo, 1971), showing that the theory could be applicable to any research domain, even to recognize the production of knowledge itself (Maturana & Varela, 1987).

For this paper, we decided to use the definition of complexity presented by Edmonds (1999) that states that the notion of complexity is a natural condition of every system, and that its emergence is defined by the mapping process or the construction of a system's model. As Mitchell states, 'complexity becomes evident when it is not possible to predict the output of a system, even though there is a pre-existing knowledge of all the inputs' (2009, p,042).

Edmonds & Meyer (2015) argue that the work of Herbert Simon (1947) and his desire to understand and model complex human behaviors was one of the origins of the computational work on complex systems. This idea of the construction of models that can represent the complexity of human interactions presented the foundation for a whole new area of theorists that found the role of design as an important one on the construction of reality, and the use of models as a proper way to make sense of them. Among the most significant we can include the work of Christopher Alexander (1964) on the definition of the design process model, and the later contribution of Bela Banathy (1996) on complex social systems, that later on helped to define some contemporary models of design thinking.

Conceptual spaces between Design Research and System Sciences

New spaces for Design Research

We consider that the recursive analysis of design outcomes, and the forecast of possible unintended consequences is a major requirement for designers and a necessary addendum to the design process model. This requirement seems significantly important when working with complex social problems where the observation a posteriori of the implications can be too costly, both socially and economically. This need for new models to predict social outcomes has been stated by De la Rosa (2017). He proposes that there is a need for designers to capture information on the physical interaction of users with the tangible world; this is an important and sensible type of knowledge (Polanyi, 1966) that might not be seen as important for other disciplines and therefore somehow ignored.

Overall, the inclusion of agent-based modeling and simulation (ABMS) in the design research toolbox would support the production of design knowledge derived from observation and experimentation. It allows design researchers to quickly investigate the effect of design interventions at a societal scale over long time frames. The experiments ran on an ABMS platform are scalable, repeatable, recoverable and low cost; and more important, support the heterogeneity of agents in the same experiment, which means that modeled agents are not only abstractions of people but also of nonhumans (Miller & Page, 2007). The latter point entails ontological challenges as designed artifacts ought to be modeled as non-human agents participating in social life. To this end, we offer a post-humanist perspective on non-human agency derived from Actor-network theory (Salamanca, in press).

We believe that the use of ABMS methods that are constantly enriched with information collected from actual environments can be used as an effective way to produce probabilistic models that could capture the complex emergent interactions of humans and non-humans, and make vissible weak signals that can accumulate and produce large ripples of unintended consequences. This addition to the existent Design Research Toolbox seems more than useful, maybe necessary when we consider the current work of designer on large scale problems, and we suggest a significant move to continue the research on this area.

References

recognize possible scenarios for future research on the area. Our initial observation has shown that the origin and references of both theories have significant common spaces and authors, and yet, the use of these methods for research does not appear to be significant on the design research literature.

We propose the use of simulated in-silico ecosystems where core social values and social complexity could be parameterized, as a viable tool to map the emergence of collaborative behaviors on specific agents (Terveen & Hill, 1998), and observe the diffusion

of these behaviors inside the system. We expect that our theoretical framework elicits the interest of the design research community and opens the landscape for large in-field and simulated experiments.

THE EMERGENCE OF COMPLEXITY ON SOCIAL SYSTEM MODELS

Complexity has become a significant subject of concern and research on many disciplines in the last decades, mainly because there is a growing need to investigate implications on larger systems, forecast possible repercussions and understand issues of a larger scale. This idea of studying reality as a complex network rather than a linear one was largely introduced by Von Bertalanffy (1928, 1933, 1968) as part of the General Systems Theory (GST). Since then it has been used in many fields as a reference for the observation and analysis of research subjects. Von Bertalanffy (1972) explains this phenomenon as a response to the principle of simplification or simplicity that has been used as one of the foundations of the scientific method (Blumer, et.al, 1987).

This idea introduced by GST, was first intended from the biological perspective, with the goal of producing a model that could recognize the complex connections on larger systems; but further developments presented in other fields (Köhler, 1927; von Bertalanffy, 1952; Kuhn, 1962; Laszlo, 1971) have shown that the theory could be applicable to any research domain, even to recognize the production of knowledge itself (Maturana & Varela, 1987). Nevertheless, some views of the GST propose the complexity as a natural variable on certain systems, assuming that other systems might not present this quality. For this paper, we rather use the definition presented by Edmonds (1999) that states that the notion of complexity is a concept that is defined by the mapping process or the construction of the model of a system. For Edmonds, complexity is a natural, permanent principle of reality and the fact that many disciplines or processes do not include it in their practices is because of their need for simplification and the definition of close subsystems that provide a better field for theory construction, rather than the non-existence of complexity in those spaces. Complexity is a principle that emerges in the definition of conceptual models, and from the significance or impact of the actions produced in other areas of the system.

Complexity becomes evident when it is not possible to predict the output of a system, even though there is a pre-existing knowledge of all the inputs. As Mitchell points out, complex systems follow the second law of thermodynamics: "the entropy [...] will always increase until it reaches its maximum level. It will never decrease on its own unless an outside agent works to decrease it." (Mitchell, 2009, p,042). But the forces taming with entropy do not need to be endogenous; they could come from the interaction of the system's constituent agents. Applying the concept of entropy to Darwin's theory of natural selection and evolution, Mitchell illustrates how ecological systems exhibit entropy when species compete with each other, or individuals compete with others of the same species. Each individual transforms energy from their environment but only those who do it appropriately and efficiently thrive. As a result, selection and evolution emerge from interactions between individuals. On this view, there are no external "hands" selecting the survival specimens.

The definition of complex problems in the social sciences mirror systems complexity on several accounts. The boundaries of the system are fuzzy, small changes make for big differences, system components are networked rather than linearly organized, and the system has state transitions as interactions between its constituents unfold. In spite of systems entropy, social systems exhibit some stability around some *strange attractors* (Byrne, 1998). It means that the output space of social systems is not wide open but defined within the domains of some relational models. Under the name Relational Models Theory (Fiske, 1992, 2004), Fiske introduces a theoretical framework that describes how people regard interpersonal interactions, and how such operations shape the primary standards of social morality. This framework is extremely actionable when it comes to instantiating norms, motives and moral principles in mediating artifacts.

DESIGN RESEARCH AND COMPLEX SYSTEMS

General systems theory was initially presented as an academic approximation to produce a better model of understanding of biological systems (von Bertalanffy, 1928). While the scientific model has been beneficial for the construction of a large number of theories about the order of things, it fails to produce a clear

understanding of systemic changes and the emergence of complexity on those systems, therefore its large adoption in other areas, especially in social sciences.

Design has been another area where complex systems and dynamic systems have had a significant impact. In fact, we can track certain common theories and authors to design theory and systems theory. Von Bertalanffy (1972) recognizes the work of Wolfgang Köhler (1927) on the Gestalt movement like one of the most significative and thorough systemic views of human perception and cognition; work that became one of the foundations for the design movement of Bauhaus (Behrens, 1998).

Edmonds & Meyer (2015) argue that the work of Herbert Simon (1947) and his desire to understand and model complex human behaviors was one of the origins of the computational work on complex systems. This idea of the construction of models that can represent the complexity of human interactions presented the foundation for a whole new area of theorists that found the role of design as an important one on the construction of reality, and the use of models as a proper way to make sense of them. Among the most significant, we can include the work of Christopher Alexander (1964) on the definition of the design process model, and the later contribution of Bela Banathy (1996) on complex social systems, that later on helped to define some contemporary models of design thinking. The work of Simon (1947, 1956, 1969, 1976) also produced some of the most significant theoretical bases for disciplines like economy or design.

Another connection between systemic thinking and contemporary design theory is the work of Rittel and Webber (1974) situating one of the objectives of design at the search for solutions to complex problems, or what they defined as wicked problems. This notion of fuzzy problems that are hard to define and to address due to the long ramifications and connections inside the system, perfectly aligns with the later definitions of complex problems of Byrne (1998).

The ideas of complex systems and a systemic view have led to theories like the ones of biological cognition proposed by Maturana and Varela (1987) that support ideas of a different type of knowledge (Merleau-Ponty, 1945; Polanyi, 1966) that have been central for many design theories.

Recently, the work of Jones (2014) and Sevaldson (2014) have become some of the latest reference to the idea of an intersection between design theory and system theory, exploring the current need for designers and design thinkers to recognize the complexity of human interactions and social systems and the possible unintended consequences of designed solutions on a larger scale. Their work has opened the gate for designers to start working on the design for policy making and complex social systems.

SIMULATED SOCIETIES AS A METHODOLOGICAL ADVANCE OF SYSTEMS THEORY

Through this paper we have recognized the proximity between GST, complex or dynamic systems theories and design theory, and yet through our review, we haven't been able to find clear evidence in the design research literature of the use of agent-based modeling, one of the state-of-the-art systemic thinking tools. We are referring to the use of computational models of social systems to run simulations of artificial societies in which instances of people interact with each other, as well as with designed objects. From the simulations, it is possible to analyze the emergence of behaviors, like collaboration, cooperation, coercion, or aggression, as a result of design interventions in the environment.

We can situate the initial theoretical advances in the work of Herbert Simon and Jay W. Forrester (Troitzsch, 2015) with his developments on system dynamics. Both carried the idea that social complexity could not just be analyzed but also modeled and forecasted. The early work of Forrester simulating social dynamics for ethnographic analysis cemented the foundations for computational models of social complexity.

An artificial society is composed of a stage (also called world). The stage contains agents, representing either people or artifacts—this entails the ontological possibility of endowing agency to nonhumans. Every agent is scripted to behave according to the underlying relational values we want to explore. In the end, we will observe the output of synthetic human agents engaged in social interactions mediated by different versions of synthetic nonhuman agents. Such methodology has implications in the study of design for complexity in several fronts: in modeling and understanding

agency, in modeling and understanding social relational models, and in modeling and understanding the large impact of information design (visual or tangible) in social interaction.

RESEARCH OPPORTUNITIES

This initial review of the areas intersecting the GST, the systemic thinking and the design research, has helped us to recognize a very important space for design research and a plausible methodological contribution by borrowing the techniques of simulation of artificial societies used in social sciences.

We have to recognize that design does not have a long tradition of research in the unplanned outcomes that emerge from the deployment of design solutions or the so called unintended consequences (Campbell, et.al., 2006). We believe that part of this problem is due to two factors. First, the strong emphasis on future research—especially during the first part of the design process—that leads to underestimating the requirement of constantly observing the life cycle of solutions. Second, the majority of the design thinking and design process models stop at the deployment of the designed solution and do not propose a methodic analysis of its repercussions.

We consider that the recursive analysis of design outcomes as a major requirement for designers and a necessary addendum to the design process model. This requirement seems significantly important when working with complex social problems where the observation a posteriori of the implications can be too costly, both socially and economically. This requirement for new models to predict social outcomes has been stated by De la Rosa (2017). On his model, he proposes the value and needs for designers to capture information on the physical interaction with objects. He argues that this is an important and sensible type of information that might not be as important for other disciplines and therefore somehow ignored.

Overall, the inclusion of agent-based modeling and simulation (ABMS) in the design research toolbox would support the production of design knowledge derived from observation and experimentation. It allows design researchers to quickly

investigate the effect of design interventions at a societal scale over long time frames. The experiments that ran on an ABMS platform are scalable, repeatable, recoverable and low cost; and more important, they support the heterogeneity of agents in the same experiment, which means that modeled agents are not only abstractions of people, but also of nonhumans (Miller & Page, 2007). The latter point entails ontological challenges as designed artifacts ought to be modeled as non-human agents participating in social life. To this end, we offer a post-humanist perspective on non-human agency derived from actor-network theory (Salamanca, in press).

As an example, in the field of economics, ABMS is typically used to simulate emergent phenomena in four areas of application: flows of agents in contextual situations, the evolution of markets including prices and strategies, organizational and operational risk in organizations, and diffusion of innovation and learning of dynamics (Bonabeau, 2002). In the same vein, design research could use this mindset of describing a system from the point of view of its constituent units to investigate the output of large groups of users using artifacts purposefully designed to stimulate social innovation or to investigate the use of the same artifacts in small but heterogeneous groups.

ABMS could be especially useful to study how users, modeled as agents, evolve or learn from their experiences while they interact with others or use new products or technologies. In this potential strand of research, the idea of embodied knowledge derived from the tradition of tacit knowledge of Polanyi (1966) and the later work on embodied cognition from Varela, Rosch and Thompson (1996) take center stage. Design has taken these ideas as a significant part of its theoretical corpus, recognizing the knowledge that is produced on the interaction-with-the-world as one of the main foundations to support any type of production.

Moreover, ABMS not only could be used to forecast emergent behaviors but as a platform that could improve the process of recognition of the different design variables on a complex scenario. We believe that once a simulated society is set in place, the researcher can release some of the cognitive burdens that complex

major factors have on the design process and focus on the search for invisible factors and low signals (Harris & Zeisler, 2002).

Some of the initial experimentation performed by the authors suggest that the use of physical sensors and the collection of data of the actual interactions of experimental subjects on real interactions can provide an important new layer of information for the computational models of simulation, and reveal the emergence of human and non-human interactions that common simulation models would not consider.

CONCLUSION

We see a significant conceptual space for design research opening on the field of simulated societies, but it is not just one that works unilaterally for the gain of the design research field. If there is a possible forecast to be made of the advances of simulated technologies both for design researchers and for systems researchers, it is the growth of the field that could be produced by the addition of some of the methodologies of design research.

Forecasting possible unintended consequences and the emergence of social behaviors is a vital task for current researchers, especially since the actions of humans and the artificial environment have grown to unsustainable levels. And although this has been a role of forecast and social sciences, we believe that design must assume an active role on the research of future systems and a better understanding of the repercussions of its actions.

This paper calls for further research in this area, and for future collaborations between the different disciplines of systemic thinking to better understand the tools and search for new improvements in the field.

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BridgeBrain: Engaging with the Next-Generation of Academic Scholars

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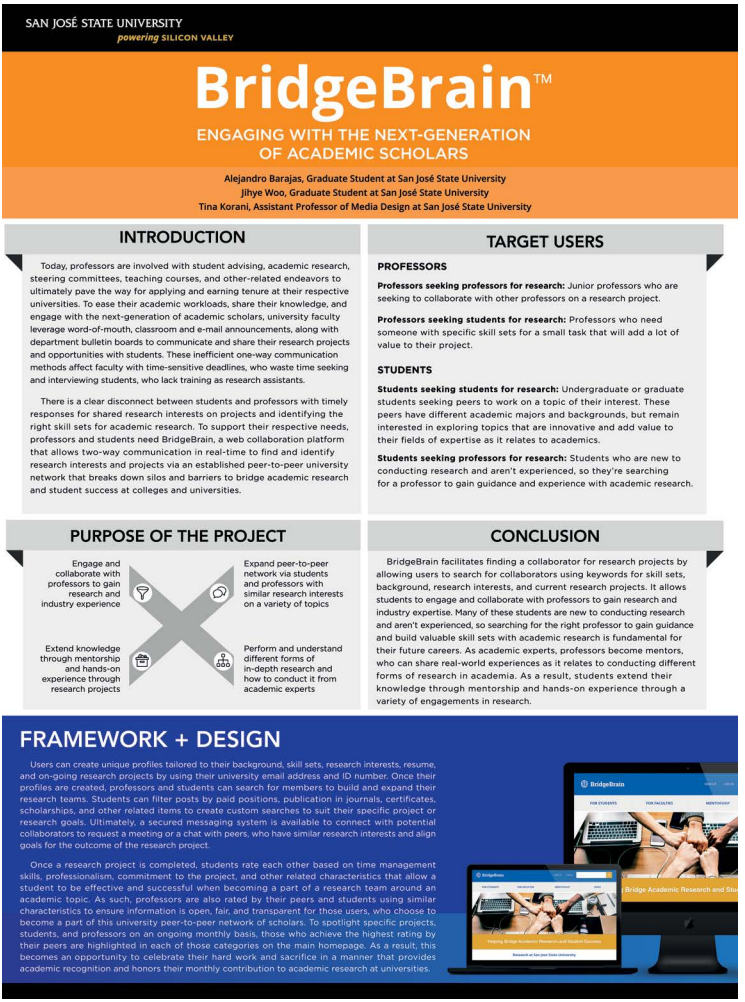
Keywords
interdisciplinary collaboration, academic research, mentorship, student engagement

INTRODUCTION:

Today, professors are involved with student advising, academic research, steering committees, teaching courses, and other-related endeavors to ultimately pave the way for applying and earning tenure at their respective universities. To ease their academic workloads, share their knowledge, and engage with the next-generation of academic scholars, university faculty leverage word-of-mouth, classroom and e-mail announcements, along with department bulletin boards to communicate and share their research projects and opportunities with students. These inefficient one-way communication methods affect faculty with time-sensitive deadlines who waste time seeking and interviewing students, and who lack training as research assistants. Professors will be looking for experienced research assistants, who can perform basic research functions to help with their proposals, research papers, and projects for publication in academic journals to demonstrate expertise in their area of research.

Students have a harder time seeking professors to form part of their research projects and committees. They waste valuable time seeking advice and guidance from peers and professors to find the right match to achieve their academic goals. Most students want to become experts in a topic area via academic research to demonstrate their culminating experience in a thesis defense before university faculty or publish their findings in academic journals to meet their department requirements for graduation and advance their future careers.

There is a clear disconnect between students and professors with timely responses for shared research interests on projects and



identifying the right skill sets for academic research. To support their respective needs, professors and students need BridgeBrain, a web collaboration platform that allows two-way communication in real time to find and identify research interests and projects via an established peer-to-peer university network that breaks down silos and barriers to bridge academic research and student success at colleges and universities.

TARGET USERS:

Professors

- Professors seeking professors for research: Junior professors who are seeking to collaborate with other professors on a research project.
- Professors seeking students for research: Professors who need someone with specific skill sets for a small task that will add a lot of value to their project.

Students

- Students seeking students for research: Undergraduate or graduate students seeking peers to work on a topic of their interest. These peers have different academic majors and backgrounds but remain interested in exploring topics that are innovative and add value to their fields of expertise as it relates to academics.
- Students seeking professors for research: Students who are new to conducting research and aren't experienced are searching for professors in order to gain guidance and experience with academic research.

DESIGN AND FRAMEWORK:

Users can create unique profiles tailored to their backgrounds, skill sets, research interests, resume, and on-going research projects by using their university email address and ID number. Once their profiles are created, professors and students can search for members to build and expand their research teams. Students can filter posts by paid positions, publication in journals, certificates, scholarships, and other related items to create custom searches to suit their specific project or research goals. Ultimately, a secured messaging system is available to connect with potential collaborators to request a meeting or a chat with peers who have similar research interests and align goals for the outcome of the research project.

Once a research project is completed, students rate each other based on time management skills, professionalism, commitment to the project, and other related characteristics that allow a student to be effective and successful when becoming a part of a research team around an academic topic. As such, professors are also rated

by their peers and students using similar characteristics to ensure information is open, fair, and transparent for those users, who choose to become a part of this university peer-to-peer network of scholars. To spotlight specific projects, students, and professors on an ongoing monthly basis, those who achieve the highest rating by their peers are highlighted in each of those categories on the main homepage. As a result, this becomes an opportunity to celebrate their hard work and sacrifice in a manner that provides academic recognition and honors their monthly contribution to academic research at universities.

CONCLUSION:

BridgeBrain facilitates finding a collaborator for research projects by allowing users to search for collaborators using keywords for skill sets, background, research interests, and current research projects. It allows students to engage and collaborate with professors to gain research and industry expertise. Many of these students are new to conducting research and aren't experienced, so searching for the right professor to provide guidance and help students build valuable skill sets with academic research is fundamental for their future careers. As academic experts, professors become mentors who can share real-world experience as it relates to conducting different forms of research in academia.

These students are interested in exploring topics that are innovative and add value to their fields of expertise as it relates to academics. As a result, students extend their knowledge through mentorship and hands-on experience through a variety of engagements in research. Students perform and understand different forms of in-depth research and how it's conducted with faculty, while professors get assistance with their academic workloads.

Strategically, professors can focus on achieving several academic goals like tenure at their university and simultaneously, mentor the next generation of academic scholars with best practices in research. As such, students gain experience with manual input for statistical references, research gathering from archives or Internet-based resources, and conducting different forms of coding. After this experience, students gain an understanding with basic research methods and processes, which allows them to become potential experts in their respective fields via mentorship and professional guidance.

The "Designumentary"

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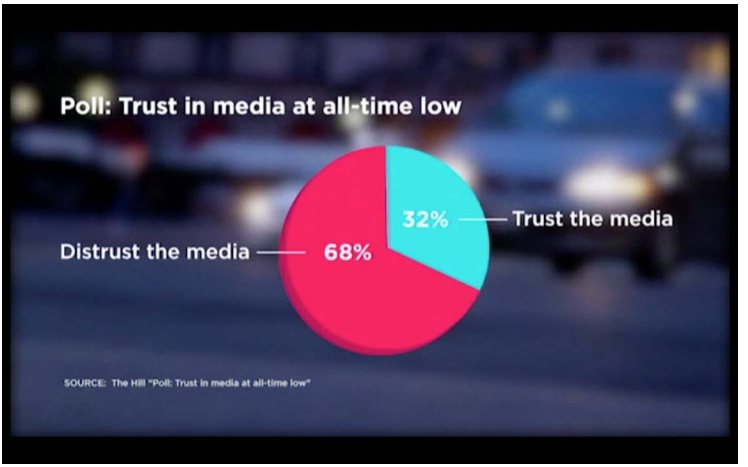
Keywords
problem-based learning, visual storytelling, praxis, information graphics, motion graphics

COMMUNICATION DESIGN PROJECTS

Drawing inspiration from Professor Gunnar Swanson's essay, "Design and Knowledge in the University and the 'Real World,'" in graduate school (at MassArt's Dynamic Media Institute) I developed seven projects that were guided by four interrelated themes introduced by Swanson: communication, expression, interaction, and cognition. According to Swanson[1], these represent four broad areas that graphic design could bridge. Based on this research I have developed a series of undergraduate graphic design projects that further bridge these four themes, while introducing students to the methodologies of design research through communication design. With this research I hope to renew a conversation around Swanson's four themes, while providing examples from my own teaching and research.

What is graphic design? Throughout my graduate thesis "The Education of a Communication Designer" I re-examined "graphic design" and placed it in the broader context of "communication design"—a comprehensive field that posits a wider range of media, disciplines, technologies, and applications. Much of the research and inspiration for my thesis was derived from Steven Heller's anthology "The Education of a Graphic Designer," to which the title of my thesis alludes. This thesis document represented both a personal shift but also a broader shift in the graphic design profession in the past ten to twenty years. This shift is marked by an expansion of the kinds of problems a graphic designer is asked to solve and what artifacts they are producing. Graphic designers continue to produce communicative artifacts (printed, environmental and digital), but now we can also help create experiences, interactions, and systems. This shift has deeply informed both my practice *and* my teaching. Below I chronicle



two examples of the *Designumentary* a communication design project I have explored with my undergraduate students, first at Massachusetts College of Art and Design, or "MassArt" (a BFA program) and later at Merrimack College (a BA program).

THE DESIGNUMENTARY AT MASSART

In the Fall of 2016 I co-taught a section of sophomore studio, an introductory design class for students who recently declared their major as graphic design. I co-taught the class with Professor

Martha Rettig, and our charge was to reformulate the class as part of a broader restructuring of the curriculum aimed at introducing the principles and methodologies of design research earlier in the program. Below is an excerpt from our project sheet:

> In this four-week class we will learn to talk to people before assuming we know the best solution to a problem or answer to a question. Once we ask the right questions, (and lots of them), we will uncover problems and realizations different from our assumptions, and in turn we will be able to communicate more accurately. We will use established methodologies and techniques for human-centered-design including IDEO's Field Guide to Human-Centered-Design. As designers we have played a big part in the success and failures of businesses, communities and for better or worse, even elections. Your group will have the opportunity to select a topic and research it using first-hand accounts. We will learn about researching and targeting demographics, conducting in-person interviews with users, conducting competitor research, and how to keep asking questions until we identify the true answers and problem. We will document and present the research process using video footage, storytelling and motion/information graphics.

In this team-based project each student team was asked to deliver a video (2-4 mins) that included footage from original interviews, information graphics, a narrated/voiceover script, "B-roll" and/or research process footage (Fig. 1). Each team was also asked to submit process materials including research material, storyboard sketches and a 12" x 18" "poster" with a short description of their project. Each team was allowed to select from 4 topics: voting, why we lie, best coffee in Boston or cycling in Boston

THE DESIGNUMENTARY AT MERRIMACK COLLEGE

Based on the project at MassArt I reintroduce an adapted version of the Designumentary project at Merrimack College in my Motion Graphic Class. The students were given similar parameters as the MassArt project, but all students were given the same prompt. To research and compare the *United States and Norway* based on five, self-selected criteria based on initial comparative research. The project resulted in a wonderful range of solutions (Fig. 2), themes

and approaches from hand done illustrations and graphics to a topical "museum" created in virtual reality.

A CONVERSATION STARTER

Compared with more conventional graphic design assignments, this project consistently fosters an extremely high level of contextual research, media exploration and innovation. Students are pleasantly surprised, as they begin to see for themselves how graphic design can be used as a vehicle for research and whose media are often extended to those embedded within a broader context of communication design.

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Learning from the Social Sciences to Create Research Methodologies in Communication Design

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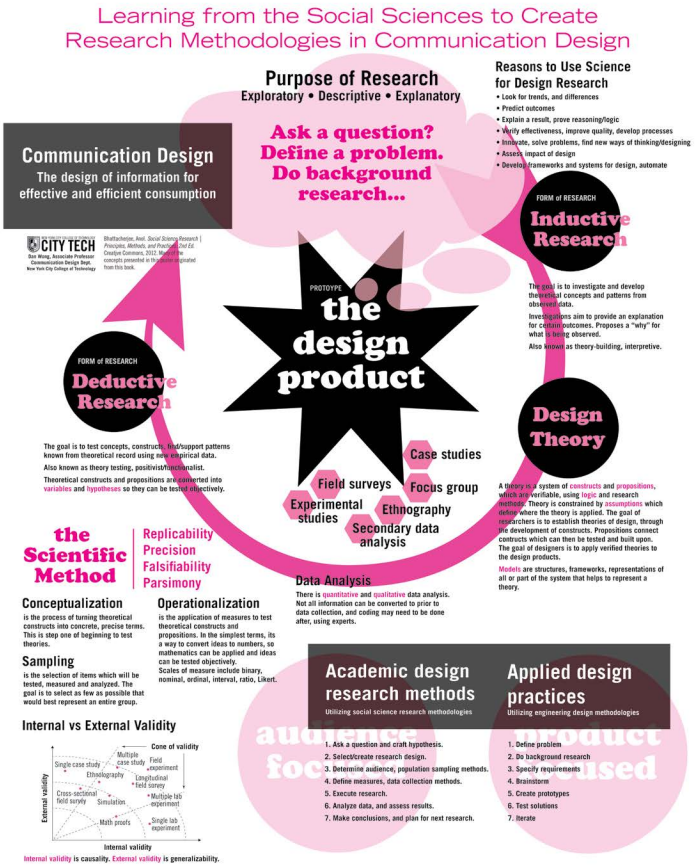
Keywords
design theory, social science, inductive research, deductive research, design research, research methodology

APPLIED AND ACADEMIC DESIGN RESEARCH

Three is a problem, currently, with design research, particularly communication design research. Too many in the field are approaching design research as if it's never been done before and there's no existing structure. But in fact, nearly all design research falls into two types, both of which are actually rather well developed.

The first type is product research, that is, the application of design. Designers in industry do this task all the time, though they may not take it to a level that would be considered "scholarship" by writing about their process and conclusions. Theirs is an iterative process—identify a problem, define specifications, brainstorm, select a path, create a prototype, test the prototype, and make improvements, and repeat. Such a process mimics much of what is done by applied engineering design and hence there is no need to reinvent that wheel.

The second type of design research is less about developing and testing products, and more about developing and testing theories. Again, this type of design research is not new. Nearly all design theory is looking at the human impact of design. We in communication design are hardly the first to examine the human impact of design. Environmental psychologists have been doing this for decades. Environmental psychology is an interdisciplinary social science and my assertion is that communication design is also a social science, and should use the research principles that have been clarified over decades by social scientists.



COMMUNICATION DESIGN AND ITS DEFINITION

For clarification, it's helpful to examine what communication design is. Put simply, it's the design of information for efficient and effective consumption. This is true whether it be within the structure/context of a newspaper with catchy headlines, or the organization of information in a complex corporate website, or an editorial illustration or photograph that sums up a topic and inspires a viewer, or a video that tells a story and sends a

message by evoking emotion, or something as impersonal as the organizational structure of data within a database, allowing humans access to information via software.

In nearly all cases communication design organizes information for human consumption. My assertion is that the human component makes communication design research a form of social science.

APPLYING SOCIAL SCIENCE IN COMMUNICATION DESIGN RESEARCH

In broad terms social science research is either theoretical, or empirical. Social scientists are either taking empirical observations and building a theory using those observations (inductive research). Or they are testing those theories with empirical research (deductive research).

The empirical tests and observations developed in social science can either be quantitative or qualitative. Neither is "better" because each type of research compliments the other and often sheds light on truths / human experiences that can't be adequately understood in other ways.

DESIGN RESEARCH LOOKING FORWARD

Designers and design researchers have historically been involved in various types of research as part of design practice. Surveys, questionnaires, ethnographic research, field studies, focus groups, case studies, a/b testing are all examples of empirical research and data collection. We have also been producing design theory, and applying those theories to our practice and processes, though in a relatively unstructured manner. These methods are social science research, and we should use what is learned from other forms of social science to improve research and scholarship in our field. We need not reinvent the wheel and redevelop what already exists.

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IN THIS SECTION

Creativity in Design: Relationships Among Creativity Components and Comparison of Idea Generation Outcomes Between Crowdsourcing and Individual Creativity

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Keywords
Creativity, Persistence, Flexibility, Novelty, Usefulness, Idea generation, Crowdsourcing creativity

INTRODUCTION

Idea generation is one of the creative design processes that offers solutions to a given problem. As a result, idea generation is increasingly important for researching the design process and the study of creativity. However, many previous studies were performed in laboratory settings. Therefore, we examined the outcome of the idea generation task in a more realistic context.

The research we present here is to show whether the quality of the ideas produced in the idea generation become more creative as time goes on and more flexible in generating the diverse idea categories. In addition, although the previous creativity theory argues that creative ideas are both novel and useful at the same time, less is known about which one of novelty and usefulness is more related to creativity, how they relate to each other, and how the criterion of novelty and usefulness can predict creativity evaluation. Finally, we will identify the differences between the ideas produced by individuals in their idea generation process and the ideas produced by feedback through the sharing of multiple ideas in an open design platform.

STUDY 1: RELATIONSHIPS AMONG CREATIVITY COMPONENTS: PERSISTENCE, FLEXIBILITY, NOVELTY, AND USEFULNESS

What makes creativity? *Creativity* is defined as the generation of ideas, insights, or solutions that are novel and useful for a given

situation or problem (Amabile, 1996; Amabile, Barsade, Mueller, & Staw, 2005; Lucas & Nordgren, 2015). Novelty refers to the ideas that only few people will come up with. They are thus unique or rare in the population (Runco & Charles, 1993). Usefulness is determined by the idea's feasibility, effectiveness, or plausibility (Diedrich, Benedek, Jauk, & Neubauer, 2015; Long, 2014). The study 1 examines the relationships among creativity components and which one can better predict creativity evaluations. Based on the traditional creativity theory (DPCM; Dual Pathway to Creativity Model; Nijstad, De Dreu, Rietzschel, & Baas, 2010), creative outcomes are a function of cognitive flexibility and cognitive persistence. Flexibility means the use of broad and inclusive cognitive categories, and relatively frequent switching among cognitive categories (De Dreu, Nijstad, Baas, Wolsink, & Roskes, 2012), which are related to the divergent thinking process. Persistence—the act of continuing to invest effort toward a task or goal—is considered essential for creative performance (Lucas & Nordgren, 2015), which is related to the convergent thinking process. Thus, this research investigates the effectiveness of the roles of cognitive flexibility and persistence for creativity evolution.

We analyzed the idea quality using the ideas submitted by the students through the idea generation task given in the summer class. Study 1-A examined whether the quality of ideas evolved to be more creative over time, and Study 1-B investigated whether persisting in the subsequent idea generation task produced more (flexibility) in the idea categories.

Investigated whether the participants would produce more flexible and new ideas if they continued to generate more ideas.

Additionally, Study 1-C examined the relationship between creativity, novelty, and usefulness and analyzed how novel and useful ideas can predict creative ideas.

Twenty students from University of Michigan were asked to perform two idea-generation tasks while receiving summer class credits. Students were given a week to complete a task and were asked to produce 10 ideas per task. We analyzed the 400 ideas produced by 20 students. The big theme of the idea-generation task was "how could we dramatically reduce waste by transforming our

relationship with food?" and students were asked to generate creative ideas especially related to "food habit" through the two-idea-generation task. Then students evaluated the quality of the 20 ideas they produced through the two-idea-generation task in terms of creativity, novelty, and usefulness (creativity of ideas quality ratings scale from 1 [least creative] to 20 [most creative]).

In terms of the Study 1-A persistence test, we analyzed the frequency of ideas that were either creatively evaluated or not, among the ideas generated by the students in the first task and

the second task with time differences. The results showed that the most creative ideas are produced more in task 2, while the less creative ones are more in task 1. Thus, there is a trend that the ideas generated after persistently working to produce them yielded more creative ideas than those generated immediately. To support the above results, we analyzed whether the ideas produced while persisting were more creative over time than the ideas originally produced. The order of production of the ideas has a positive effect on the production of creative ideas as a result of the regression analysis that the order of production of the 400 ideas is an independent variable and the creativity score of each idea is the dependent variable (β=.124, SE=.050, p=.013). In other words, the later order of idea production, the more ideas were evaluated as more creative.

In the Study 1-B flexibility test, we expected that while participants were persisting in Task 2, they would produce more new ideas that were not in previous Task 1, and that the ideas would be evaluated creatively. The results showed that participants produced an average of 1.81 new categories in the Task 2 and produced an average of 3 new ideas that did not overlap at all with Task 1. On average, two of these newly produced ideas were evaluated as creative ideas. In other words, individuals can cognitively produce more flexible and new ideas while persisting, which suggests that the idea quality increases over time.

In the Study 1-C Correlations between creativity, novelty, and usefulness test, we analyzed the Spearman correlation to see how creative ideas are related to ideas that are evaluated as novel and useful ideas. The results show that creativity evaluation shows novelty, usefulness and strongly positive correlations. When we look at the coefficient of creativity, creativity appears to be more related to novelty (.427) than usefulness (.133). However, unlike what we expected, there is no significant correlation between novelty and usefulness (p=.344).

STUDY 2: COMPARING IDEA GENERATION OUTCOMES BETWEEN CROWDSOURCING AND INDIVIDUAL CREATIVITY

The study 2 is designed to answer a different research question: "how different are creative outcomes when comparing crowdsourcing and individual creativity?" It compares the idea generation outcomes between crowdsourcing OpenIDEO data and individual students' data. The OpenIDEO is a global design open platform that is an online community where people are offered a better solution by suggesting their ideas on a common challenge, giving feedback to other people's ideas over a given period of time. The purpose of the Study 2 is to identify the differences in the creativity of individual ideas and crowdsourcing ideas, especially in terms of creative flexibility.

Our crowdsourcing data are obtained from OpenIDEO (www.openideo.com), an open design platform community. We analyzed the ideas proposed in the food waste challenge among the various challenges. The Food Waste Challenge was launched on the online platform from June to September 2016 with the theme "How might we dramatically reduce food waste by transforming our relationship with food?" More than 20,000 people from more than 100 different nationalities participated in the challenge over three months. We analyzed a total of 450 ideas proposed by participants in the idea generation phase. First, we collected all 450 ideas and sorted them into five previously defined categories: waste means business, food habits, thinking locally to scale globally, better together, and unwashed campaign. We chose the food habits category among the five categories and subdivided the categories according to the food waste cycle in the 121 ideas. Unlike OpenIDEO, students' ideas were generated individually and independently rather than sharing ideas and feedback with others. Students were asked to submit a total of 20 food-habit-related ideas. In order to select categories of ideas, we subdivided the various ideas into 12 stages in the food waste cycle. The subdivided categories are: (1) producer, (2) packaging, (3) store, (4) shopping list, (5) cart, (6) home storage (pantry / refrigerator), (7) meal planning, (8) meal preparation, (9) plate, (10) leftovers, (11) disposal, (12) other. The 121 ideas of the OpenIDEO's were classified based on the above 12 stages, and students were required to classify their ideas based

on the above 12 stages.

In order to divide the ideas into categories, we analyzed the student's ideas and ideas of OpenIDEO and calculated the frequency of each subcategory and what percent of the ideas they took. Unlike what we expected, the OpenIDEO's ideas were concentrated only in Home storage (28%) and Meal planning (21%), while students' ideas were spread across the four categories (Store: 13%; Meal Planning: 13%; Leftover: 13%; Disposal: 19%). These results were slightly different from the general expectations that flexibility of ideas is considered to be more diverse in an open design platform, where opinions and feedback from various people are commonly shared. These results suggest that the flexibility of ideas suggests the importance of individuals in producing ideas in an independent form.

In addition to the previous result, we also looked at where the best ideas are located in categories. Does the best idea come from a category where people produce many ideas? Or does the best idea come from an idea category that people do not produce much? In order to answer the above questions, we analyzed the categories of the idea selected as the top idea among the ideas provided on the OpenIDEO website and the idea that was voted as the best idea among the ideas produced by the students. First, the top ideas of OpenIDEO were evaluated by the collaborators, challenge sponsors, and advisory panels of OpenIDEO. Ideas for reducing food waste were evaluated based on how innovative they are, whether they are human-centered, whether they can be extended to local community levels, and whether they are well understood and reflected in the relationship with the food system. Of the 450 ideas that came out of the food waste challenge, 12 were selected as the top idea; and one out of 121 ideas that corresponded to our "food habit" topic was selected as the top idea. The top idea "eat the old one first" was included in the "home storage (pantry / refrigerator)" category, interestingly, which is the category with the greatest number of ideas (28%). In other words, there is a correlation between quantity and quality: the categories for which the largest number of ideas were generated also contained the best ideas.

Next, the best students' ideas were selected by the students' votes. Twenty students were asked to submit one of their best ideas out of the ideas they produced. Of the 20 ideas collected, individuals were asked to choose the three best ideas per person for a total of 60 votes. The idea that won the highest number of votes among all 60 votes was "Will's double lid jar" (from the "packaging" category) with 15 votes. The second idea had 14 votes: "Yonathan's Elimination of Food," from the "meal planning" category. In previous study 1-A, students' ideas were evenly distributed across four categories (store: 13%; meal planning: 13%; leftover: 13%; disposal: 19%). Considering that the two ideas selected as best ideas for students has the categories of packaging and meal planning, the best ideas selected by students are not only even in categories with many ideas, but in categories that others do not think much about. Of course, there is a possibility that the criteria for students' evaluation of the best ideas may be different from those evaluated by that of OpenIDEO. However, we can identify the clues as to where the best ideas of individual creativity and crowdsourcing creativity come from.

DISCUSSION AND CONCLUSION

Considering the results of the Study 1, novelty has a bigger contribution to ideas judged as more creative than does usefulness even in longer-term design projects. Other studies support this finding in short tests of creativity. We suggest design practitioners give more time to persist. People easily underestimate the value of persistence for their creative performance. However, now we know how important the persistence is for enhancing creativity.

Also, based on the results of the Study 2, we encourage designers to generate their own ideas first, then share ideas later. Unexpectedly, the research results showed that crowdsourcing ideas does not necessarily produce the most different design concepts. Sharing ideas early in the idea generation stage may influence other designers, leading to group fixation on a smaller set of design categories. When students worked alone on their ideas, they generated a wider variety of ideas, presumably benefitting later stages of design. Therefore, we suggest generating one's own ideas first, then exchanging ideas with others.

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Understanding the Horticultural Community First: Generative Research

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Keywords
horticulture, field observation, generative research, design to value, design for communities

DESIGN TO VALUE

Shallow understanding and insufficient access to relevant information are common con ditions in design that lead to poor solutions. The purpose of this research is to understand the horticultural community and those within it in order to gain insights from their behavior that inform better design outcomes. What are their wants, needs, and goals? How can this information help the designer find previously unidentified problems? The research began with concept mapping, interviews, field observation, and personas which then informed an infographic poster (Figure A). A matrix (Figure B) was then created in order to identify problems and solutions. The most relevant and useful problem was chosen to become a physical design outcome, the same process was then replicated in order to create a digital design outcome (Figure C).

In this situation, beginning with design research allows the designer to gain a deeper understanding of their community or "client" first in order to then find the deeper problems, rather than creating solutions to problems given to them by a client, of which the designer may only have a surface understanding. The methods used throughout can be seen as a construction kit that can be replicated and remodeled, an open work to be repeated as needs change.

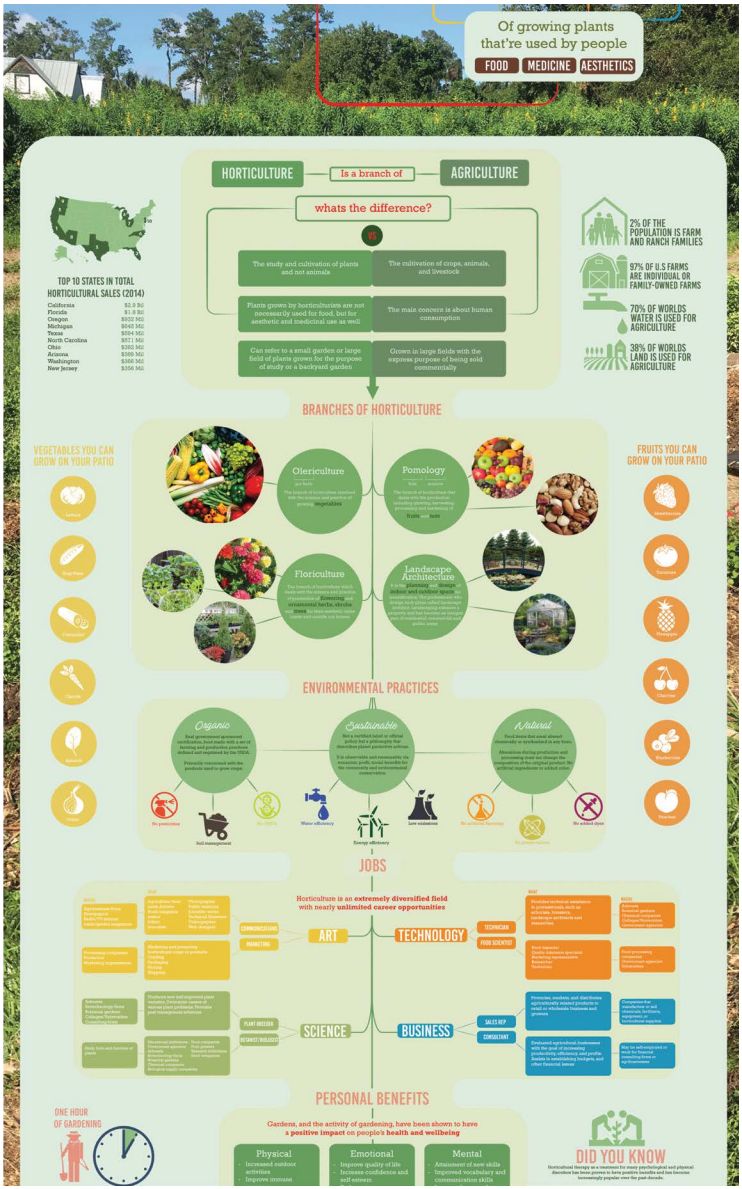

Figure A: Infographic Poster Based Off of Primary and Secondary Research

FINDING	OPPORTUNITY
People are not aware/underestimate the physical, mental and therapeutic benefits of gardening and farming.	Educate/inform people about all the pros and benefits of farming and gardening .
People think organic, natural, and sustainable are all the same thing and do not know the differences.	Educate people about the differences between organic, natural, and sustainable.
There is a misconception that there are no jobs in the field, or that the only job is "farmer".	Educate people on the unlimited opportunities in the extremely diverse field of horticulture.
A small percentage of people grow their own food anymore. IT is a skill that no one learns except for people in the field.	Teach people the techniques and knowledge necessary for growing your own food.
There is a lot of food insecurity in neighborhoods with high poverty rates/low income places	Establish ways to fight food insecurity
People are completely unaware of what they should be eating in a day or the negative consequences of unhealthy eating as well as the corruption of the food industry	Teach proper nutrition and bring awareness to the corruption in the food industry
In the near future were going to need to produce twice the amount of food that we currently do in order to meet human consumption needs	Bring awareness to the issue
There is a lot of food waste and not enough efforts to control it	Teaching harvest storage, preserve more- waste less
People try to buy fruits and vegetables that look the best when looks dont determine the quality of the fruit which contributes to waste	Break down the misconception
Post harvesting problems- have to keep produce in best shape so it has the best shelf life (use refrigerated trucks)	Sourcing your food locally

Figure B: Problem Finding and Solving for a Physical Design Solution
(continued on next page)

STRATEGY	SOLUTION
Create an event where people can come out and learn simple gardening techniques that they can do at home, while simultaneously learning about all the benefits	Create a poster to advertise the event, and create a takeway informational piece.
Create an interactive activity that teaches people the differences between the different practices.	Design an interactive activity.
Make an event like a job fair to expose people to all the industries, companies, and job opportunities out there for horticulturists.	Create a poster to advertise the job fair/event. (Advertising campaign).
Make a tool kit that includes everything you would need to properly grow something in your home.	Create packaging for the tool kit.
Create campaigns to raise awareness and get food donations to distribute to neighborhoods with high food insecurity	Create a campaign to raise awareness and encourage donations
Create a movie night where there are food documentaries shown and healthy foods given	Create infographics that show what you should eat in a day, nutrition facts about certain foods- healthy and unhealthy and event promotional materials
Create infographics to explain the implications of the issue	Design infographics
Create a campaign that informs people on how to preserve more and waste less- conduct workshops	Campaign materials and workshop/teaching materials. brand a class?
Use art and design to change perceptions	Design a campaign to change perceptions
Create a farmers market or local store	Branding of a local co-op/farmers

Figure B: Problem Finding and Solving for a Physical Design Solution (continued from previous page)

SOLUTION	DIGITAL
Create a poster to advertise the event, and create a takeway informational piece.	Create a website to promote events as well as link to resources of where in the community individuals can attend different types of gardenning (social)
Design an interactive activity.	Create an educational app game that teaches the difference between organic, natural, and sustainable
Create a poster to advertise the job fair/event. (Advertising campaign).	Create a website that works as a search engine for all the jobs in the field
Create packaging for the tool kit.	Create an app that guides you in choosing the optimum time to grow fruits and vegetables in your area by utilizing location based data & information. App includes a garden planner by way of a virtual reality garden. a progress tracker to keep up with what you have planted by uploading pictures. has step by step instructions with text & visuals on how to plant and mantain specific plants.
Create a campaign to raise awareness and encourage donations	Create a website to help fundraise and collect donations for these communities
Create infographics that show what you should eat in a day, nutrition facts about certain foods- healthy and unhealthy and event promotional materials	Create infographics that show what you should eat in a day, nutrition facts about certain foods- healthy and unhealthy and event promotional materials
Design infographics	Design infographics
Ccampaign materials and workshop/teaching materials. brand a class?	Campaign materials and workshop/teaching materials. brand a class?
Design a campaign to change perceptions	Design a campaign to change perceptions
Branding of a local co-op/farmers market	Branding of a local co-op/farmers market

Figure C: Problem Finding and Solving for a Digital Design Solution
(continued on next page)

BENEFITS	FUNCTION
Creates a one stop location to find several options around the community that offer social gardening as well as easily accessible event info - fosters more participation	Functions as a website with easily accecible information, as well as a calendar with easily understandble and visible community events
Educational and fun way for people to learn the differences in an interactive manner	Would work as a trivia and interactive game app
Puts a mass of information and job listings in one place and makes it easy to refine and find specific results	Functions as a search engine
Makes it extremely easy to take your gardening plans in to action by guiding you with a virtual garden planner, progress tracker, and instructions. It is a one stop shop for all the resources that is in your hands.	Functions as an organizational & planning app where virtual reality blends with physical and digital to create an easy and seamless way to learn how to begin & mantain your own garden.
Creates a place to help increase the amount of money collected for these causes and place for food insecurity advocates to spread their message	Functions as a donation website
Create a website/app combo where you can learn about nutrition and what you should eat (on website) then go on app and keep track of your daily food intake	Website works as guide and recipe resources, that then works in combination and connection with app. app functions as a logger and tracker
Create a website that serves as an online campaign	Functions as a sharable social media campaign
Create an app that has virtual classes/workshops that teach about food waste and storage and preservation techniques	Functions as a subscription based app, where you sign up for different workshops and classes that you attend virtually
Create a website that serves as a campaign for educating people on the misconception	Sharable social media campaign
Create website to house the local co op brand with an accompanying mobile app	Serves as home website for the market/co-op that houses all their info and online shopping

Figure C: Problem Finding and Solving for a Digital Design Solution (continued from previous page)

Experiential Learning Spaces to Enhance Typographic Communication

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Keywords
experiential design, situated cognition, typographic communication, design pedagogy

ABSTRACT

Contemporary graphic design practice is shifting from visual design implementations to a design of experiences within complex systems (Davis,13). The Designer of 2025 Symposia (AIGA Conference, 2017) compiled a list of trends for design educators for the upcoming seven years. These trends have mentioned the need to create new sense-making platforms that will allow designers of the future to bridge the gap between the physical and the digital realms. This is necessary for users today, who are not passive observers of design but are rather engaged in the process of design through interactions within mediums. As a designer, my practice has evolved from designing print-based work to designing experiences that allow the user to understand the information being communicated in an embodied, immersive manner. I believe this can be achieved through creating experiences that communicate information through all sensory channels, and the use of multiple mediums. I define this approach to design as experiential design. I feel this kind of experiential design will allow future designers to effectively communicate information to the users.

Based on the above-mentioned trends and changes in the graphic design practice, I feel that experiential design is an emerging context for graphic design pedagogy. It is also an efficient method to create valuable emotional experiences. The aim of my thesis was to create experiential learning spaces in a typography design classroom to enhance student work. This poster presentation is a compilation of my research of theories and explorations of strategies that helped me bring an experiential teaching approach to the classroom. As graphic designers, we employ typography as

a visual tool. However, from a user's perspective, typography is a means of communication that affects their day-to-day life in many ways including instruction, conversation, learning, understanding and a means to generate creative and critical thought. Type impacts the culture and societal structures we live in, it is essential for graphic designers to understand this broad impact of communicating with typography. To help my students understand this, I created a class structure around the concept of a *narrative*, building on theories of meaning-making through semiotics, the contribution of materiality to add value and meaning to a designed object, and the impact of a positive emotional aspect on the success of a designed experience.

This poster presentation is a compilation of the theories and principles I used to help my students design an experience with type. Through this study I found that an experiential approach to teaching allows the students to learn core concepts in a class in an interactive, immersive manner. Breaking down discussions through experiences and hands-on activities allows students to be actively engaged in the learning process. Experiential learning helps build a positive emotional context through the embodied learning. This context helps nourish student creativity, allowing them to explore varied methods of making through the project prompts.

FROM THE UNIFIED THEORY TO THE EXPERIENTIAL MEANING THEORY

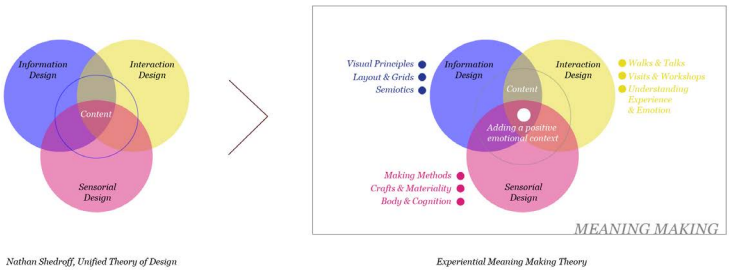

Figure 1. Experiential Meaning Making Theory, building on Nathan Shedroff's Information Interaction Design: A Unified Field Theory of Design[3].

STUDENT WORK SAMPLES – NARRATIVE/TYPE AS AN EXPERIENCE

Figure 2. Type as a Game by Evelyn Li, Tiffany Zhang, Rachel Chen

Figure 3. Final Wars Type Crawl by Lucas Simes, Sam Althaus, Edward O'Malley

Figure 4. Self Portrait - Understanding Materials by Puja Chug

Figure 5. Real Myths – Hope by Daniel Corry, Madison Tompkins, Melissa Andrikos & Armando Sanchez-Monsivais

PROPOSED THEORY AND TEACHING PARAMETERS

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MealSpace: A New Way To Eat And Cook Nutritious Meals

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Keywords
meal-planning, students, health, nutrition, diet, self-care, mental health.

ABSTRACT

MealSpace is a solution that engages the student community that is new to a university campus by providing a physical space for students to cook together to encourage healthy eating. This space provides ingredients for tailored recipes, along with step-by-step guidance for preparing the meal. Drawing inspiration from makerspaces across the nation, MealSpace is conceptualized from studying student habits, responses, and working with the University of Michigan Health Services.

Research was done with students regarding the transition to a college environment from high school or a different country, since the drastic change of setting can push students to not prioritize healthy eating. Using various methods such as surveys, contextual inquiry, and diary studies, MealSpace was created. The technical intervention focuses on a website for registration of cooking sessions and a tablet interface for recipes and guidance. The main focus of MealSpace resides in engaging students to create a meal with each other.

INTRODUCTION

Students transitioning to a college environment from high schools or another country often have a hard time adjusting to the new environment and end up neglecting their body's nutritional needs. Research has shown that college freshman gain more weight than the general population, ranging from about 1.5 to 4.5 kilograms weight gain in their first semester of college. In an interview with a dietitian nutritionist, Julie Stocks, at the University of Michigan Health Service Nutrition Clinic, we found that about 30 percent of college students experience eating disorders and many other

college students struggle during the transition of moving out of residence halls and buffet-style meal plans. This finding was consistent with other research on eating habits among college students. [personal communication, December 8, 2017.] Revealed to us that college students often are concerned about nutrition but are tempted by convenience and the large amount of options to choose from at many buffet-style dining halls during their first year of college.

Family cultures and other pre-established dietary habits also shape students' decisions to select nutritious meals in college. As pointed out by Stocks, a home-cooked meal often contains more nutritional value when compared to food items made at a restaurant. Therefore, to motivate students to start eating more balanced and nutritious meals, it is important to begin the process intrinsically, encouraging more cooking and healthy eating rather than dining at restaurants.

Our goal during this project was to design a research-based intervention for the student community that aids them in transitioning to preparing their own meals, while addressing issues of time management, motivation, and nutrition.

PROCESS OVERVIEW

Our process consisted of first determining a community to engage to which access was available for research. After brainstorming and initial user interviews, it was determined that there was a need for addressing the issue of emphasizing healthy eating on college campuses. From quick in-person survey results, we devised a priority matrix to understand what factors the target audience valued most when it came to meals. The resulting priority matrix and the corresponding responses are shown in Figure 1.

With successful understanding and identification of user needs, we began conducting user research. We discovered that students were concerned about the nutrition of their meals currently, but were not taking steps to address it. Upon learning this, our research question became focused on why students were not focusing on healthy eating and how the intervention could encourage them to focus on it more.

Overall, we followed a "convergent-divergent" model from this point forward, first conducting research to converge on an idea or

	Most Important 1	2	3	4	5	6	Least Important 7
High Nutrition	9	1	4	1	5	1	0
Low Cost	2	8	5	3	3	1	0
Effective Meal Planning	3	4	2	4	4	3	0
Convenient Location For Grocery Pickup	0	4	3	3	4	2	5
Recipes For Meal	2	0	4	2	2	4	8
Security Of Sensitive Information	4	3	2	4	0	5	1
Increasing Motivation To Cook	1	1	1	4	3	5	7

Figure 1: The matrix revealed that users prioritize high nutrition most, with cost also being an immediate concern.

solution, than testing it and diverging into a list of possibilities. This model was used for iteration throughout the design process.

USER RESEARCH METHODS

To assess our users' needs, our research approach consisted of four different stages: (1) initial assessment survey, (2) paper survey, (3) user interviews and diary study, and (4) solution assessment. Throughout this process, we received feedback from the CHI Milestone committee at our university on the validity and scope of our methods. All responses were voluntary and anonymous and no compensation was offered.

INITIAL ASSESSMENT SURVEY

The initial surveys were sent digitally to students at the University of Michigan, including both international and domestic students and we received 35 responses in total. We collected information regarding their current grocery shopping and dining habits, as well as their opinions on nutritional values of their meals. The survey took approximately five minutes to complete.

PAPER SURVEY

We recruited participants for the paper surveys in person. All 21 participants were graduate students at the University of Michigan. The survey included two short-answer questions regarding their current usage of nutritional values of their everyday meals, as well as one question on ranking seven factors of interest when it comes to eating and cooking; the survey responses were coded to assess

factors that students ranked from most to least important for eating and cooking for themselves.

USER INTERVIEWS AND DIARY STUDIES

We conducted two user interviews on their current grocery shopping and grocery habits. Both were females and in their early twenties. We requested consent and received permission to record the interviews for analysis purposes. Both interviews lasted approximately 30 minutes in length and were conducted by two interviewers with one interviewee.

SOLUTION ASSESSMENT

The solution assessment was done in two formats: in-person and digital surveys. We assessed the effectiveness and user acceptance of our proposed survey by asking for feedback, additional experiences, and opinions regarding the needs we attempt to address through an online survey. Participants in this stage of research included both undergraduate and graduate students at University of Michigan.

RESULTS AND DESIGN ITERATIONS

Our initial assessment found that 94 percent of our participants were concerned about the nutritional values of food that they consumed, but 85 percent were not actively addressing the concern. From both paper surveys and user interviews, it was revealed that nutrition, convenience, cost, and time were the main issues when meal planning. The findings led us to believe that a free, one-stop mobile application that allows slow progression into meal planning and nutritious meal preparation could be a solution. One of the interviewees described, "I considered InstaCart, which is a subscription service for groceries, but I just didn't want to have to pay for a subscription model."

During the sketching phase, we thought of integrating features that are currently concentrated across disparate applications or platforms such as HelloFresh or Instacart. The application would provide suggested recipes and pre-selected grocery packages based on these recipes for easy, quick pickup.

However, Dr. Michael Niebling, a professor at the School of Information, suggested that the unification of this functionality of our initial solution may be useful, but it was not addressing the intrinsic motivations of students or why students were not using existing applications or focusing on their health.

To truly understand the perspective of students, we conducted diary studies and recorded the daily eating habits of students. We wanted to capture the students' expectations and compare them to the outcomes. This divide would be able to show us where students could use a technical intervention, if it all. The diary studies revealed the general feeling for the participants after eating an unhealthy meal was often discontentment. However, when eating with a friend, the mood was consistently reported to be better regardless of nutritional content. This is when we realized we had missing a key component of the solution: socializing. Students did not feel motivated to eat healthily because it did not fit into their existing routines and was not enjoyable. Moreover, without parents to monitor students in a university setting, there is less accountability in eating healthily. Thus, we found empowering students to overcome the various barriers of ingredients, planning, and cooking with a friend is what would motivate them to focus more on healthy eating.

To learn more about student habits, we conducted an interview with University Health Services nutritionist, Julie Stocks. Julie revealed the current university standard of "plan, cook, shop, eat" and explained how students face difficulties in the first three steps, often stopping somewhere within the pipeline. From this interview, we realized that our solution must eliminate the need for students to plan and shop for their own ingredients. Rather, a slow transition or awareness for healthy eating can be brought about by students simply cooking. Empowering them to take this first step with a friend is what could build this initial interest and remove the barriers to start. Finally, drawing from the idea of engineering makerspaces, where all tools to create are included in one space to foster ideation and innovation, we came up with the idea of MealSpace. Through research, we validated our finding that many students were also concerned about not having the proper kitchen tools and ingredients for nutritious recipes that they would like to make. To address the

concern of cost and feasibility, we conducted an interview with a current graduate student at University of Michigan Ross School of Business to assess the potential cost of our proposed solution.

PROPOSED SOLUTION: MEALSPACE

Overview

MealSpace is a physical cooking space where students can register to attend a cooking session with their friends to learn and bring home a healthy, nutritious meal anytime they want. There are two parts to this solution: registration and cooking session. Registration relies on using a website to complete the registering process; the cooking session incorporates technology into a socially engaging experience by placing social interactions among users as the priority.

Registration

Registration is a web-based process. Users first navigate to the MealSpace website, where they are directed to either login or create a new account. They are then prompted and guided through a series of steps to complete session selection. The process begins with selecting time. The duration of each cooking session ranges from 30-120 minutes. It is expected that the users can finish both a brief kitchen utensil training and the actual cooking within the duration they select. Users can also select locations of their choice based on geographical proximity. During registration, users also choose the recipe that they would like to learn or complete when they arrive at the cooking session. They have the options to specify their dietary preferences and limit their budget. The website will show the total cost of the session, which includes a detailed breakdown of the cost of each ingredient, the service fee, and the fee for all kitchen tools. The key feature of the registration is the option to invite a friend or set up a group cooking session. Users can invite through their social media accounts or emails. We encourage social engagement by promoting a cost reduction when cooking in groups. Users also make payment before attending a cooking session.

Cooking Sessions

The location of each cooking session is expected to be close by or located on college campuses. Once the students arrive at the cooking space, they will check in with a moderator and go to an assigned cooking station. Before the process begins, users have the

option for an introductory session to walk through kitchen utensil use. At each station, there will a tablet that guides the users through the recipe, starting with the kitchen tools and ingredients needed to complete the cooking. Throughout the entire cooking session, the moderator would be present to answer any questions and supervise users to ensure best practices when it comes to safety. Users then have the option to eat at the space or pack their cooked meals away. Finally, they would end the session by rating the recipes they learned and will receive the recipes through emails as a future reference.

Interface Components

The solution requires some sort of Internet-connected device to register for a session. During the cooking stations, tablets will be provided for step-by-step recipe and meal preparation instructions.

Design Principles

- Ease of use: The registration process includes a progress bar to show the users how far along they are in the registering process. Each step is indicated below the navigation menu, and the current screen is shown in a different color.
- Social engagement: Since students are cooking together in MealSpace, it encourages an atmosphere of working together to achieve a common goal. Recipes of different cuisines will be offered, encouraging diversity, inclusion, and awareness.
- Empowerment: By allowing students to have a gateway into cooking and eating healthier, students are not so intimidated by the notion of cooking at home.
- Self-actualization: Students are creating their meals to their specifications, instead of simply buying a pre-prepared meal.
- Sustainability: Students will be able to sustain their newfound skills by being able to receive the recipes via email after completing it at each cooking session.
- Scalability: If students show interest, the idea could be expanded. Leftover ingredients from dining halls could also be repurposed and utilized within MealSpace.

Inspiration of Solution

Throughout the design process, we drew inspirations from the

following designs: (1) Amazon.com for their sidebar design on preference selection, and (2) engineering makerspaces across the nation.

Prototyping

We created prototypes for both the web and tablet interfaces for MealSpace using design programs Sketch and InVision. These prototypes are interactive and react to user input. We received feedback on our interfaces and design decisions at the Socially Engaged Design competition at the University of Michigan, where we presented our prototypes and ideas to both students and judges. From this feedback, we iterated upon our prototypes and designs.

CONCLUSION

MealSpace adequately addresses user needs of socializing, eating nutritious meals, and transitioning effectively to a university environment. While the physical cooking space was not our initial idea, we found that in reality, minimal technical intervention was needed to motivate students. Rather, the motivation could come from engaging with a friend or a fellow student. Following a model of continuously iterating and converging to ideas, we conducted research to identify true user needs. This is a solution that universities across the nation could attempt to adopt, starting from a small scale. Future plans include communicating with dining halls to understand the level of ingredient waste, to determine if these wasted ingredients could be used for our solution. We aim to engage the incoming college student population in healthy eating.

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Visualization of Chinese-Mongolians' Encounters with Identity Dilemma

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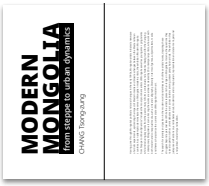
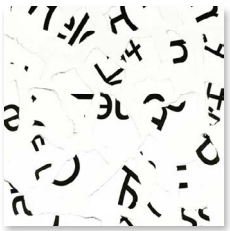
Keywords
identity visualization, identity crisis, ethnic minority studies, Chinese-Mongolian

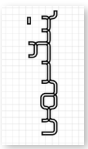
ABSTRACT

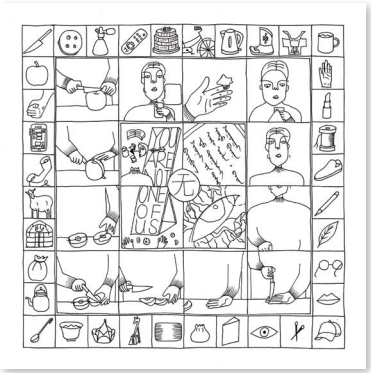
My current research project seeks to explore and examine Chinese-Mongolians' encounters with identity dilemma living as ethnic minorities in China, a post-colonial country that consists of 56 ethnic groups. Mongolian culture has its own unique history, distinctive language, writing system, and different values when compared to Chinese culture. Having been colonized by China for more than 70 years, however, Chinese-Mongolians' culture and lifestyle have been changing and adjusting to the dominant Chinese culture. In developing this project, I chose to use graphic novel as the medium, but I have also been exploring possibilities of presenting this graphic novel as murals, installations, and its usual way of appearance (prints) to find the most effective way to have a conversation with my audiences. My graphic novel tells a non-linear story of a Chinese-Mongolian family and how cultural transformations affect an ordinary family and each member's life. The story attempts to explore and reveal not only the external performance of cultural identity such as language use and physical appearance, but also inner reflections such as the sense of belonging and cultural sensitivity. Through dialogues and conflicts between two generations, this story works as a manifestation of contemporary Chinese-Mongolians' daily confrontation of identity dilemma.

VISUALIZATION OF CHINESE-MONOLIANS' ENCOUNTERS WITH IDENTITY DILEMMA









The Semiotics of Pain: Visual Pain Assessment

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Keywords
design research, semiotics, healthcare, language barrier, patient-centered design, co-creation, lexicon, taxonomy, information architecture

ADDRESSING WICKED HEALTHCARE PROBLEMS THROUGH DESIGN

Pain is the most common reason Americans access the healthcare system. Pain is complex and difficult to express. Use of numerical pain scales may have contributed to the current opioid epidemic.[1] While visual systems, such as the Wong-Baker FACES scale (Figure 1), represent pain intensity, they do not indicate its characteristics or location.

Figure 1. Wong-Baker FACES Pain Rating Scale.

How can we be comprehensive and also comprehensible when communicating pain? Visual communication may offer options that are not as language dependent. The Visual Pain Assessment is useful not only for Limited-English proficiency (LEP) patients but also for those who struggle to describe pain precisely, without needing to know a specific language. I focused on the characteristics of pain because you can communicate the intensity of pain with pain scale and numbers, but not the quality of the pain.

A literature review revealed that language barriers negatively affect LEP patient's health: increases social and racial disparities, hinders effective patient-provider communication and lowers health literacy

Figure 2. Storyboard of pain communication between LEP patient and a doctor on an appointment.

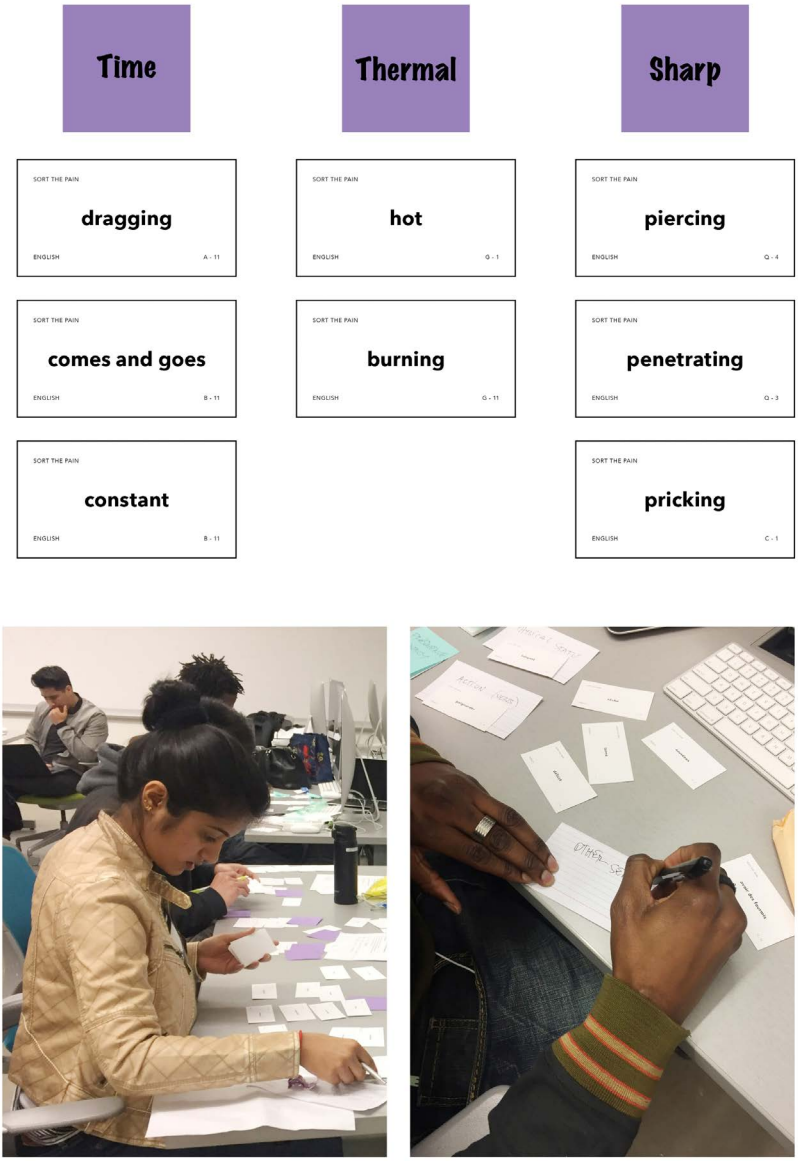

Figure 3. Card sorting revealed individuals' mental models of pain.

Please circle pain you have experienced.

- aching
- biting
- blunt
- burning
- cold
- comes and goes
- constant
- crushing
- cutting
- dragging
- dull
- excruciating
- frightful
- gnawing
- hot
- intense
- nagging
- nauseating
- niggling
- numb
- penetrating
- piercing
- pins and needles
- pricking
- radiating
- scratchy
- sharp
- shooting
- smarting
- sore
- spreading
- stabbing
- stinging
- tender
- throbbing
- tingling
- tiring
- unbearable

Please list any additional physical pain you have experience but not listed above.

- scraping
- overwhelming
- rash
- bumpy
- irritable
- itchy
- poking
- pressing / pressure
- sickening
- hard
- tight
- scarring
- scalding
- pinching
- uncomfortable
- tightening

Figure 4. Visualize the Pain Questionnaire. Each participant answered a short questionnaire and visualized 38 kinds of pain with any medium they wish to use.
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VISUALIZING PAIN 3

Using any medium or media of your choice visualize different kinds of pain.

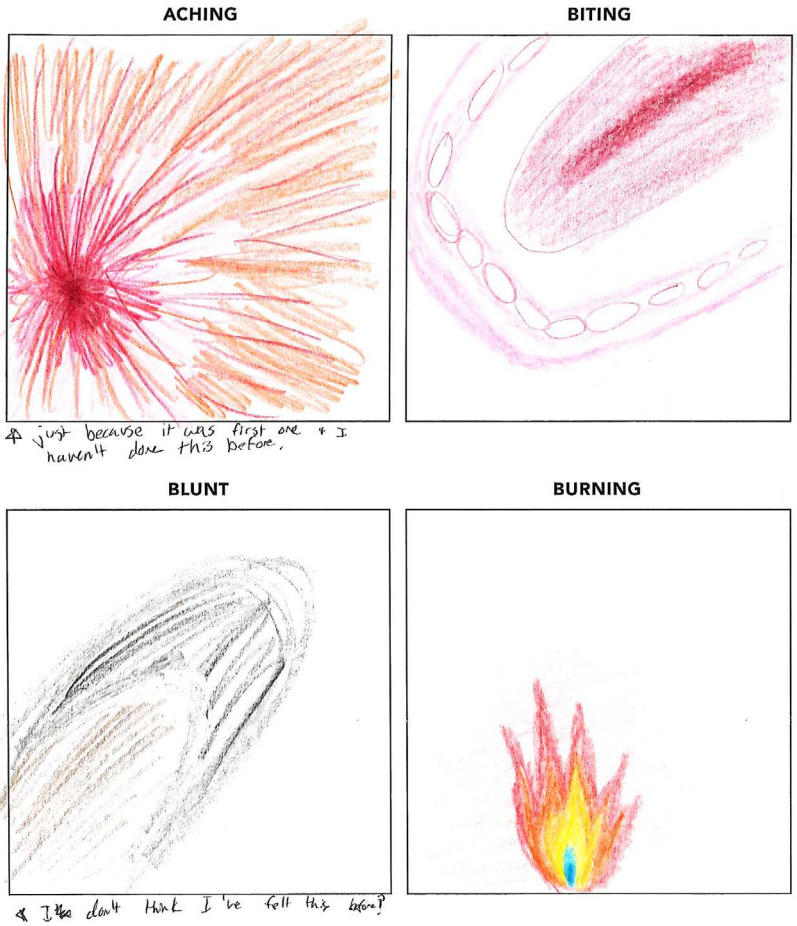

Figure 4. Visualize the Pain Questionnaire. Each participant answered a short questionnaire and visualized 38 kinds of pain with any medium they wish to use.
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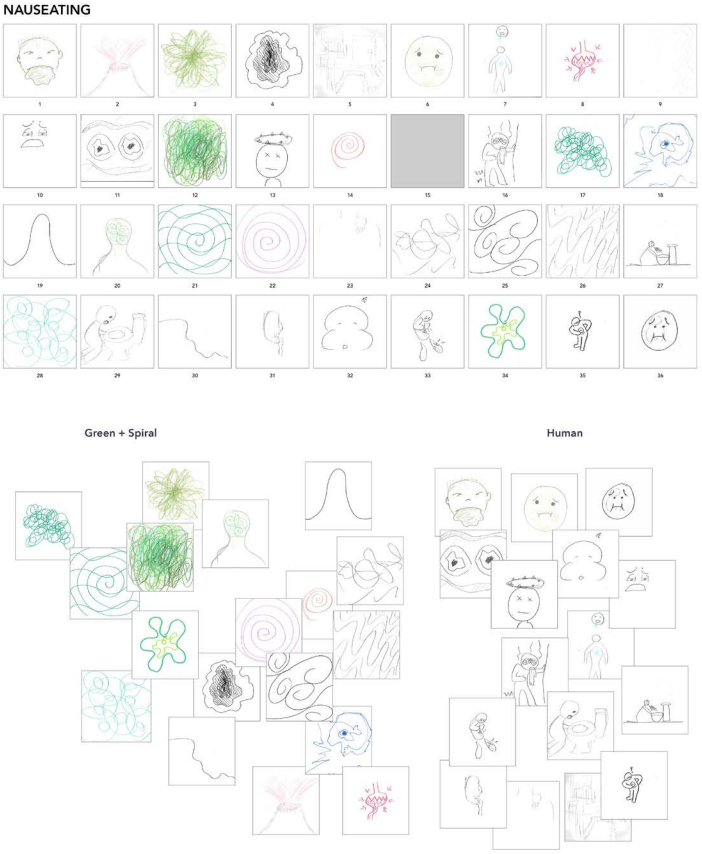

Figure 5. The Pain Lexicon, a compilation of pain visualization from "Visualize the Pain" questionnaire. The compilation revealed that Nauseating pain is visualized in two visual types: green spiral and human forms.

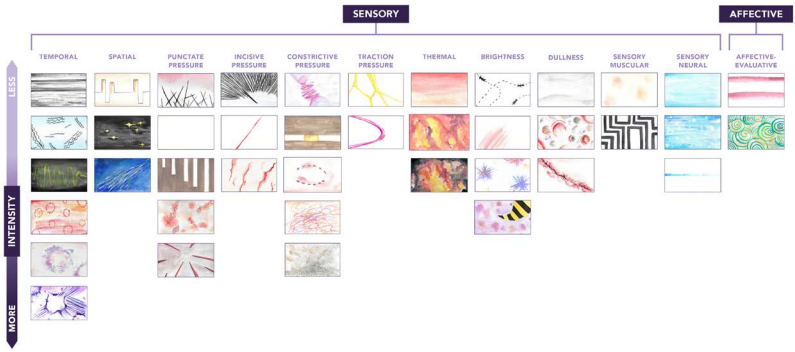

Figure 6. The Semiotics of Pain: Visual Pain Assessment.

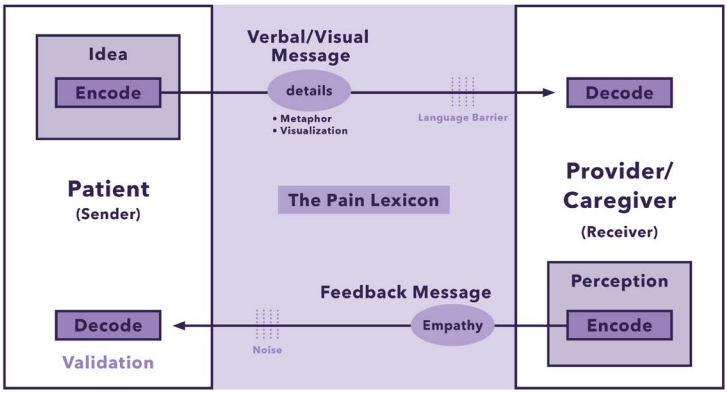

Figure 7. Pain Communication Model using the Pain Lexicon. Pain Lexicon aids better communication: more details, less noise, reduced language barrier. Above all, the receiver can empathize sender better.

and self-agency of the patient.[2]

Early storyboards (Figure 2) articulated problems faced by patients, with possible solutions added. Card sorting workshops (Figure 3) revealed user mental models and perceptions of pain. Additional visualization workshops were given (Figure 4). I then compiled a Visual Pain Lexicon (Figure 5), where colors, shapes and visual metaphors indicate meaning. I also designed a semiotic system of pain (Figure 6) to assist the communication between LEP patients and healthcare providers.

The use of the visual metaphors enhances the quality of the pain communication by adding more evocative details, which makes it easier for the receiver to empathize and comprehend the mystery of the pain (Figure 7).

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Farsi Typeface Design: the Process and Challenges

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Keywords
typeface, design, farsi, font, arabic, methodology, scripts

There is a rich source of different types of calligraphy in Farsi. Each of them has its own beauty and was created for a unique purpose. Despite very different types of calligraphy in Farsi and Arabic, there are extremely limited typefaces to choose from either for text or display. Farsi and Arabic type design have not been developed as much as Latin type did. However, in recent decades Arabic and Farsi type designers have tried to create more typefaces as well as refining the existing ones. Knowing this deficiency as an Iranian graphic designer, I started researching typeface design methods and designing a new typeface.

Farsi language has been written with several different scripts, including the Old Persian Cuneiform, Pahlavi, Aramaic, and Avestan, Cyrillic and Latin alphabets. After the Islamic conquest of the Persian Sasanian Empire in 642 AD, Arabic became the language of government, culture and especially religion. Arabic and Farsi are two completely different languages, however, their writing systems have a lot in common. Modern Farsi appeared during the 9th century. It is written in a version of the Arabic script and is full of words of Arabic origin. One of the main common characteristics of the Arabic and Farsi languages is that their alphabets are closely related. The Farsi alphabet shares all the letters and the structure of the Arabic language but differs because the letter system has an additional four letters (32 letters total). Arabic doesn't accommodate, "ch" for example. However, Arabic and Farsi share nearly 99 percent of the same letters (Iblagh, 2015). So, although an Arabic typeface is similar to a Farsi one, it needs modifications by a Farsi typeface designer to make it ready to use.

There are several important characteristics of Farsi writing or Khat which distinguish it from other writing systems. Being

cursive, connected, and directed from right to left are three main characteristics of this Alphabet. The Farsi Alphabet consists of 32 (33 including Hamze) consonants (Fazaeli, 2007). The structure of the alphabet has only 19 basic shapes, the rest of the letters are made by adding diacritical dots to the basic shapes. The letters change their shape according to their position in the word: initial, medial, final, or isolated. So, 24 letters have four alternative shapes, and nine letters have two alternative shapes. Thus, the set of glyphs will be up to 114. Moreover, the number of glyphs can

further increase if we also count all kinds of combinations within the letters if the typeface needs to fully mimic the calligraphic handwritten Farsi script. So, according to each typeface, the number of glyphs can start with 114 and end in the hundreds (Zoghbi, 2007). While there are three main heights in Latin type design; x-height, ascender, and descender; each Farsi/Arabic type designer uses different kinds of heights or guidelines to make their own typefaces. I've used five guidelines which are ascender, descender, baseline, loopline, toothline, roozline for designing my typeface. These heights help the letterform to be more consistent and to have a better-structured typeface.

Furthermore, in my exploration into Farsi type design, I decided to use scripts that haven't been used much as a reference for making new typefaces. So I used the rounded scripts to make new, modern, and legible letterforms. In fact, Farsi calligraphy can be divided into two categories: the rounded scripts like the Nastaliq, Shekasteh Nastaliq, Diwani, Andelosi (Maghrebi); and the rectangular ones like Kufi, Kufi Banai, Naskh, Thuluth, etc. Iranian designers barely use more complicated, curving calligraphies for making fonts, especially the text fonts because its letterforms are not as legible as the other scripts like Naskh (most Farsi fonts are based on Naskh). The scripts I've used are Diwani, Diwani Jali, and Andelosi. Designing a whole typeface in Farsi is very challenging and time-consuming because a lot of ligatures (connecting letters) need to be designed (Mesghali, 2011). So, I focused on designing the individual forms and the most important ligatures. Undoubtedly, I will concentrate more on the details of the typeface in the future. For making this typeface, I have tried to combine the important features of the three rounded scripts to make new forms. I want the typeface to remind us of those traditional scripts, but in a new way and with a modern look. During the whole process, I researched a lot about the history and existing methods for designing a Farsi/Arabic typeface, and I end up having my own method.

All in all, there is an enormous need for designing new Farsi/Arabic typefaces as well as improving the existing ones. There are no more than twenty reliable body or text typefaces in Farsi nowadays. Most of them are based on the Naskh or the Thuluth Style (rectangular scripts). The other styles like the Nastaliq,

Diwani, and Maghrébi (cursive scripts) are found in display or headline typefaces. During the recent semester of my MFA degree, I tried to use the cursive calligraphies like Maghrebi and Diwani to create a new typeface either for display or text. I tried to keep the basic movements of the calligraphic forms and make new, modern letters. Still, there is a lot to do to refine it to use as a text typeface. I had studied the relationship between Farsi font design characteristic and font legibility before, but this was the first time I have ever tried to design a typeface which makes me interested in this field and in finding new methods for designing Farsi typefaces.

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Lake Menomin Project: Exploring an Outdoor Museum Piece Using Design Research Techniques

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The Core Issue: Lake Menomin—fed by the Red Cedar Watershed in Western Wisconsin—is polluted with excess phosphorus, resulting in extreme blooms of cyanobacteria (blue-green algae).

The Design Problem: Not everyone fully understands the issue, and the community no longer celebrates the lake as it once did.

The Proposal: Create a museum-like experience from which the community and tourists can learn, and through which people can celebrate and enjoy the area.

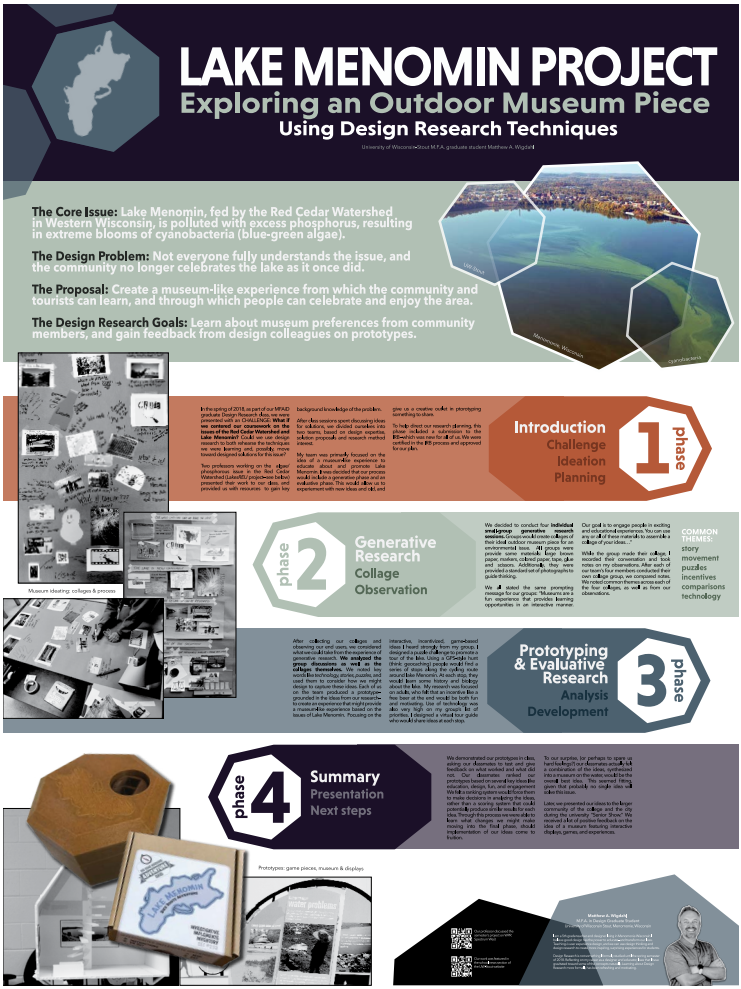
The Design Research Goals: Learn about museum preferences from community members and gain feedback from design colleagues to inform prototypes.

SUMMARY:

In the spring of 2018, as part of our MFAiD graduate design research class, we were presented with a challenge: *What if we centered our coursework on the issues of the Red Cedar Watershed and Lake Menomin*? Could we use design research to both rehearse the techniques we were learning and, possibly, move toward designed solutions for this issue?

Two professors working on the algae/phosphorous issue in the Red Cedar Watershed presented their work to our class, and provided us with resources to gain key background knowledge of the problem. After class sessions spent discussing ideas for solutions, we divided ourselves into two teams based on design expertise, solution proposals and research method interest.

My team was primarily focused on the idea of a museum-like experience to educate about and promote Lake Menomin. It was



decided that our process would include a generative phase and an evaluative phase—both qualitative in nature. This would allow us to generate new ideas and provide a creative outlet in prototyping them. The generative phase included small groups using collage to share ideas. The evaluative phase played out as sharing prototypes with our classmates and gathering feedback.

PARTICIPANT **ABSTRACTS**

DECIPHER

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

M STAMPS SCHOOL OF ART & DESIGN UNIVERSITY OF MICHIGAN

DARIA NETWORK | DESIGN AS RESEARCH IN THE AMERICAS

AIGA Design Educators Community

IN THIS SECTION

Designing Desirable Patient-Facing Healthcare Tools

AARON GANCI

healthcare, UX design, service design, product design, participatory design

Technology has introduced many new possibilities in the realm of patient and caregiver-facing healthcare tools. Our ability to make more appropriate and desirable products and services in this space allows researchers to provide ways for people to enhance the way they manage their health, track symptoms, take medication, communication with their provider, and generally improve their quality of life. In many ways, these advances allow researchers to return agency to patients and enable them to have a more active role in their care.

Doctors and nurses are naturally at the forefront of this research as they deal with patients or healthcare processes directly. They are able to easily identify the unmet needs of their patients. However, there is often a disconnect between what a provider thinks a patient needs and what they actually want. My research lives in this gap between a healthcare idea and solution. There are two distinct ways that my practice as a design researcher support this work. First, I embed myself and my students in the clinical research team to help understand and design the experience around the proposed technology, devices, or service. Second, I assist the development and engineering teams as they build software or technology-based solutions. This work often manifests as traditional UX and user interface design. These projects are especially fruitful for designers working in academia. They allow us to support our work with science and health funding, apply our skills to more complex problem spaces, and have impact for real patients.

In What Ways Can Design Strategies for Advocacy Translate into Action as a Means for Human Self-Reflection?

ALBERTO RIGAU

design strategies, advocacy, self-reflection

As far as I am aware, design and advocacy, when linked, are usually evaluated in relationship and/or contrast to civic actions, gestures or movements of a collective nature. Recent events, our interlinked digital lives, the contemporary political landscape, and our social/digital networked interactions, to name a few, validate my perception and foster this kind of evaluation. And yet, as our national social, political, and cultural ideals seem to shift and clash, how are designers crafting for the personal, private, introspected personas? Are we treating messages to produce a mass-like movements or meaningful cognitive reflections? Can we harness design strategies to advocate for self-realization? ...for individual, willful understanding? As the world keeps getting exponentially more uncertain, I am interested in ways the we, designers, can help individual evolve into a beyond resilient frame of mind that enhances personal curiosities, promotes collaboration and helps create a sense of community by increasing individual confidence.

Negotiating Social Memory through the Design of Museum Experiences

ALLAN MARTELL

experience design, social memory, museum exhibition, participatory design

My research explores how the design and production of a museum exhibition mediates the ways in which residents of a post-conflict community remember their past. Prior works in the field of social memory has suggested that design work is relevant to the creation of sites of memory, such as archives, monuments, and museum exhibits. However, these studies have primarily made allusions to the role of design while primarily focusing on other aspects related to the creation of sites of memory such as community organizing or fund raising. Therefore, researchers in social memory have yet to explore how public engagement in the design of sites of memory shapes public conceptions about the past. In order fill this gap, this study relies on ongoing efforts to design a museum exhibit with youth from a rural community in northeast El Salvador. This workshop is part of a hybrid study that combines museum experience design and ethnography to untangle the mediating role of memory in the production of memory.

Combining Design Practice, Education, and Research

ALLEN SAMUELS
Industrial Designer, Professor of Design, Design Education

In my career as an industrial Designer (L/IDSA), I have designed products for over 30 corporations for over 50 years, including Corning Glass Works, Bausch and Lomb, Black and Decker, Westinghouse, and 3M. My designs have included glassware, dinnerware, microscopes, medical and scientific instruments, public transportation, heavy industrial equipment, and furniture, and have won awards including the Reddot. My current design practice continues to push past existing technologies, and my current research is focused on creating products that deal with aging, poverty, the disabled and disaster relief.

My work as a designer went on concurrently with teaching and research in the UM Stamps School of Art and Design, and I served as Dean from 1993-1999. As a design educator, I have continually created innovative ways to engage students in conducting research on design problems. I emphasize hands-on experiences with design and the challenges of representing and developing ideas.

In my own work, I have defined design as a form of research that creates new knowledge in the world: "Industrial design is the professional service of creating and disseminating new knowledge through the creation of original designs aimed at optimizing the lives of individual users and advancing culture overall —they optimize the function, value and appreciation of products and systems ... clearly expressing purpose, place and value." I look forward to our conversations on design education and research.

Can Students Be Taught to Design a Better Way to Live, While Simultaneously Being Taught How to Design?

AMY FIDLER

Lecturer, Bowling Green State University

mental health, anxiety, adhd, autism, behavior, health, lifestyle, design school, neurodiversity, creativity, mindfulness, yoga, meditation

PERPETUATING UNHEALTHY LIFESTYLES IN DESIGN SCHOOL ULTIMATELY CREATES DISSATISFIED, MEDIOCRE DESIGN PROFESSIONALS.

It's well understood that a good classroom dynamic can create an environment where optimal learning and creativity springboard into wonderful outcomes. As we prepare our students for life in the profession, what is the responsibility to also help them acquire mental clarity, good working habits and a balanced approach to their careers? At what point does design school stop perpetuating unhealthy and unproductive practices in favor of better choices—responsible working hours, healthy habits, mindfulness + physical health, client boundaries... There is much written about practicing ethical design in terms of designer's responsibility to the client and profession, but is there anything outlining designer's responsibility to self?

Media depictions of the profession reinforce the stereotypical lifestyle of the tortured creative, celebrating terrible choices as not just a coping mechanism but as an understood lifestyle expected of the profession. Certainly, pulling an all-nighter (or two) is a rite of passage that can teach persistence and resilience...

The legend of the tortured artist may have brought artists fame and prominence years ago, but today's young makers need to be clear headed to handle the creative challenges and demands of the profession. With the myth of the creative's life seeming reliance on alcohol (numbing agent, coping mechanism and social lubricant), junk food (vending machines, energy drinks, grande

double espresso extra shot lattes, late-night takeout and pizza deliveries), and sedentarily staring at screens nonstop, amplified in the media (insert every film/tv show featuring a designer/ marketing exec)— it's no wonder that existing malaise is amplified in those engaging in these behaviors habitually.

Students entering into design programs have changed. Anxiety is prominent amongst students, as is fear of failure, fear of starting and fear of everything in between. Students are often working to support themselves (and not just for extra spending money). Social media use as well as being overall generally distracted has contributed to the collective inability to focus and a decline of satisfaction... Mental health challenges are even more prominent (and were present before but not as openly acknowledged). Also, creative fields like design tend to be landing places for those whose neurodiversity (ADHD,High functioning autism, etc) can be a detrimental challenge in a typical high school classroom, but can be a true strength when embraced for their abilities to approach creative problem solving in an atypical way during college studios— but these types of creatives are already susceptible to having co-morbidity of additional mental health challenges, that get exacerbated by the physical and mental stress of unhealthy lifestyles.

To find a place where today's student can find true creativity and innovative problem solving, accompanied by the ability to make deadlines and clearly communicate with colleagues, collaborators and clients, requires working from a place of health and vibrancy. How can design school perpetuate this alternative, healthy balanced approach to the profession, rather than reinforcing and celebrating the stereotypical irresponsible, unproductive and ultimately costly behavior? It is a must in order to adequately prepare young minds to uphold the challenges posed by the profession's projected designer of 2025.

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Basic Design Pedagogy Through Recognition of Cultural Design Identity

ANALEE PAZ

cultural design, design education, authenticity and inclusion

In support of the evolving role of design today and the unprecedented connection of a multicultural community, it is important to recognize the intersection between intrinsic cultural design elements and formal fundamental design studies.This thesis empowers knowledge of cultural identity through basic design pedagogy. It proposes education that supports learning formal elements of art and principles of design via indigenous design. This study serves as a specimen for investigating details of specific indigenous artisan creations. The concept was developed from observations of current art and design education, cultural identity and design inclusion, as well as established teaching theories that guide current pedagogical methods. The reflections considered through this research lead to the issue not solely of art and design, but of how to learn and teach art and design. By creating methodologies that organize this content, the discipline can have conscientious sources of information to begin with and build upon. Furthermore, it creates more well-rounded and knowledgeable interdisciplinary interests and empathy. This study acknowledges that art and design education and research should be geared towards addressing multicultural audiences with solutions that consider both the audience's and their own cultural orientation.

The Design of the Protest

ANDREA CARDINAL

protest, action, banners, posters, banner library, community, organizing, union

A Design allows for individuals to take ownership within a movement. I have recently completed a fellowship with my union, the Lecturer's Employee Organization, (AFT Local 6244, AFL-CIO), where I engaged with fellow members to determine how the visuals which I designed and helped to physically print and paint, helped empower them in our most recent, successful, contract negotiation. This work extended through the summer of 2018 with a series of workshops engaging students at the University of Notre Dame to learn skills for designing and printing their own paper posters and fabric banners for a variety of movements which they self-identified as being a part. The skills included: authoritative typography, compelling graphics, cutting stencils, one-color screenprinting, and oversize banner making.

These workshops began in 2017 to support the work of Black for Palestine and it was the first time that I saw how my work was animated in the environment and how participants were eager to provide their own labor. I also observed how excited people were to activate the materials and how those designs organized us. This community sourced labor has provided upwards of 10 4'x8' banners for our growing lending banner library, located at my studio, Talking Dolls, in Detroit, MI. Activists can borrow any of our banners for actions and return them when they are done. We have banners supporting water rights, family unification and re-unification, and the #metoo movement.

Design Research in the Architectural Practice

ANDREA HAYDON
design research, architecture, service design

The AIGA 2025 trend "Bridging Physical and Digital Experiences" is incredibly important. How can we continue to push that not only are digital experiences important but physical experience as well? This is something we deal with every day at RATIO. How do we "sell" our ideas of a new space to our clients? Is it mixing VR/AR technology to real models? How do we know how they will react? Older generation versus younger generation? How can we teach our students leaving the university to collaborate with those who are technologically advanced when it comes to UX design, visual animation designers and coders?

Now as a Service Designer at our firm, understanding the underlying motivations and needs of both the "administrator" and "users" of a space and how the back end is operating, we can more deeply inform the physical design of the space. For example, at St. Louis University Library (Figure 1), we eliminated barriers between students and staff by creating concierge support with a Genius Bar-style service point we call "OPEN:re:SOURCE". In this user-centric, tiered service environment, students are free to explore digital and collection-based resources, Academic Technology Services and traditional Library services with support from students and professional library staff. This leads to any traces of the traditional help desk formality being eliminated, breaking down the purely transactional relationship to create a "guide on the side" experience for students, while still making experts present and accessible when needed.

Continuing the Story: Practicing Narrative Theory in the Graphic Design Classroom

ANGELA DOW, SUSANNA K. ENGBERS

narrative, storytelling, interdisciplinary teaching, literary analysis, research dissemination, ad design, design research

The concepts of storytelling and narrative are common in the design profession, yet in the classroom, students are oftentimes instructed to "tell stories" in their design work without much guidance in effective narrative techniques.

As professors in the disciplines of English and Graphic Design, we saw this issue as an opportunity to conduct a study that would demonstrate the ways in which we could create practical connections between "academic" and "studio" work through a more nuanced understanding of narrative and an interdisciplinary teaching approach. We hypothesized that by bringing literary analysis into the design classroom, students might create more meaningful ads.

In our study, Susanna visited Angela's Advertising Design class and conducted lessons that exposed students to specific stories, films, and ads, noting and analyzing the narrative techniques used across the genres. Students were then directed to apply these techniques to their ideation and design process and asked to reflect on the ways in which their exposure to narrative strategy had influenced their ads when presenting their final solutions.

This research has been presented to an audience of English faculty, as well as having been published online and exhibited in a faculty show. We are interested in continuing our investigation and engaging a wider variety of disciplines in both the process and the results. By participating in conversations related to the theme of "Disseminating Design Research," we hope to share our experience and get some feedback on potential expansion and dissemination.

Visualization of the Space In-Between as a Means to Enhance Design Research Synthesis

ANN MCDONALD

visualization as 'doing', design research synthesis, boundary objects, in-between

What happens when we value the visualization of evolving relationships as a primary means of synthesis in the design research process? As visual communicators and researchers, we need to question, expand, and further develop the visualization methods that we currently use to synthesize within 'Doing Design Research.' What if we encourage and facilitate more open-ended processes that allow multiple means of participation in the space 'in-between.' By focusing attention on the 'in-between' we can more carefully examine the shifting relationships between diverse participants and 'expert' researchers, the time between the readily identified touchpoints that initially demand attention, and the space and exchanges between the many diverse roles that are part of a service or experience. In order to understand collectively and facilitate meaningful synthesis, we must move beyond templated, spreadsheet-framed alignment diagrams and journey maps and stop hiding behind walls of post-it notes.

As outlined in AIGA Designer 2025 required competencies, design students will need to meaningfully "identify and visually map the interdependent relationships among people, places, things, and activities in a complex system." The attention to developing richer and multiple means of visualizations of relationships at various scales and time intervals should be central to design education. The act of acknowledging and bringing to light hard-to-discern spaces 'in-between' can potentially help hold teams accountable to closely observe existing conditions and evaluate the consequences of design actions from more nuanced and varied perspectives.

Design Internships Re-Visited and Re-Created

ASHLEY LIPPARD

internships, preparing designer for industry jobs, design internships, experience based learning

Drawing on my experience as an overseer of design internships in the university context, as a mentor for design interns preparing for transition from the academy to the marketplace, and as a supervisor of design interns in the industry, I sense a need for an assessment of the relevancy of the traditional design internship. The purpose of this exercise is to create a career-shaping experience for today's student.

The experience of an intern is invaluable from a real-life standpoint which is much more than simply the refinement of skills. Through observation and actual practice of client management, project conception, process definition, strategic operation, creative problem-solving, etc., tomorrow's designer becomes better prepared to excel.

The experience of an employer is crucial as well. Likely the intern will not have the instincts and experience to handle all facets of a project. Helping employers to intentionally seize project based teaching methods will transform those moments into defining moments. In addition, the open-minded employer who gives his or her intern the opportunity to apply raw, developing talent can reap a return on investment. In other words, internships certainly have the potential to be "win-win-win" for the employer, student, and client.

A review of the standard design internship is the starting point for developing more contextually-appropriate experiences for the student and employer. A well-crafted internship can ensure that the student experiences all the necessary components of the role demanded by the industry as well as desired by the academy preparing its students for their futures.

Functional Forms: Empowerment through design research

ASHLEY MOON

empowerment, design, research, functional, form, government

Applying for public assistance can feel like a daunting task due to inefficient system processing and barriers to access applications that are required. It is essential that interdisciplinary design research seeks to achieve improved government service design and delivery to attain optimal user experiences, eliminate injustices, and demonstrate cost-effectiveness to taxpayers.

My undergraduate research thesis "Functional Forms" sought to accomplish this through ethnographic research to redesign public assistance forms. As technology evolves, design research in education allows educators, students, and practitioners the opportunity to explore new framework in analyzing and applying strategies to improve existing government programs' design and delivery of public services.

It is evident that design research is fundamental in the pursuit of design education and other disciplines. Now is the time to engage in research with design education utilizing real-world scenarios and problem-solving.

From Corporate-Centered to Human-Centered: The Steady Rise of Research in Graphic Design

AUDREY BENNETT

graphic design research, human-centered design, cross-cultural design

Whereas the work of graphic design practice has had a lucrative career adding value to large corporate brands that tend to exploit humanity for economic gain, the work of graphic design research has the potential to do the opposite--engender economic agency in global communities, particularly those underserved. Graphic design, as an act of research, can fully realize its humanitarian potential, when it works with underserved communities on addressing socio-economic challenges. However, to do so requires input from a culturally diverse team of stakeholders that likely will include experts from different disciplines who have varied research methods and agendas. How do graphic designers engage in human-centered 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 underserved communities? How do they seek funding for multidisciplinary research? What new knowledge (if any) do graphic designers need to participate in human-centered design research? How do graphic designers make a living conducting human-centered design research? These are a few of the many questions that need to be addressed as graphic design evolves from a practice for-hire to a self-sustaining discipline.

The Future is Not Flat: Developing Pedagogical Tools that Prepare Design Students for a Multi-Sensory and Multi-Dimensional World

BRANDON WAYBRIGHT

design pedagogy, research, projects, practical, technology, experience, sensory engagement, future, teaching

The history and contemporary practice of design is inseparable from the history and development of technology. Each introduction of new tools for the creation of images and dissemination of messages provokes critical conversations over what it means to practice design and how to best adapt to the contemporary world. The move from cuneiform to metal type, from lettering to *Letraset*, from screen-based computer systems to the internet of things each have opened up new possibilities while also forcing designers to reckon with the benefits and pitfalls of our work.

Historically, design pedagogy has been slow to respond to the shifting technological landscape and the considerations it demands. To this day, our course structures and offerings continue to resemble those developed in the wake of the industrial revolution rather than those enlightened by the advent of the internet. While designers often trace the history of the practice back to the formation of language and times when the output pursued by designers was highly dimensional and physically engaged; the rise of the industrial age, the swiftness of the press, and the eventual creation of the modern computer led to an increased flattening of the practice of graphic design. In the decades following the industrial revolution, graphic design increasingly fixated on the relative flatness of the printed page. This trend was further amplified by the similar flatness of the backlit computer screen. In essence, design came of age during a time when technology produced flat surfaces on which a designer might work. Within this flattened, industrial context, historical narratives, pedagogical methods, and the core design principles were formed.

Yet for the last decade and quite possibly further back still, the technology used to communicate and navigate the terrain has steadily evolved away from flat, static surfaces. Instead, the contemporary technological landscape is moving in counterpoint to the flatness of the industrial age and has begun reasserting itself in multi-dimensional space, creating objects and experiences that engage human beings in robust multi-sensory and time-based experiences. Evidence of this trajectory can be observed in the rise of the 3D printer, multi-sensory communication tools, virtual and augmented reality, haptic technology, and the popular adoption of holographic projectors as useful beyond novelty.

In spite of these trends, graphic designers continue to focus the bulk of their energies on visual, two-dimensional surfaces. We continue to teach design rooted and oriented around concern for printed ephemera, two-dimensional interactive spaces, and the communication tools of the recent past. If we continue blindly on this course, we risk the relevancy of our discipline and its ability to impact contemporary culture. Why should graphic design remain flat and visual when the world it lives within and the technology that surrounds us is full of dimension and diverse ways of processing information?

This line of inquiry, while decentralized from popular design conversation, is hardly new. Walter Benjamin explored the alteration to the fundamental ideas, presence and production of art in the age of industry. In his seminal work, *Designing Design*, Kenya Hara questioned whether designers have done enough to critically consider their relationship with technology or whether we have simply been driven by a counter-human desire for greater speed and more robust features. To this point, design's relationship with technology has historically been even more significant than designs relationship to natural biology and the messaging potentials of the human mind and body—a thought that should be concerning given that graphic design often positions itself as a form of communication or information delivery between, towards, or for humans.

As AIGA considers the needs of the designer of 2025, we must observe the trajectory of technological development and find ways to encourage design students to both utilize and question the

tools they are using as well as how they influence the trajectory of human communication. Embedded in that conversation should be a consideration of emergent technologies that make new forms of interaction and communication possible and the myriad ways that human beings process information.

The central question for our future of design pedagogy might be phrased in this manner: how do we as design educators adequately prepare students to enter a multi-dimensional, multi-sensory future while also thinking critically about the affect their work might have on human interaction, communication, and development?

As educators who seek to prepare our students for the world they will encounter outside the walls of our institutions, we must consider the significance of the changes that have occurred over the last few decades and allow our vision to elicit new pedagogical goals and methods. Therefore, this workshop will partner the construction of a manifesto about how design education must shift in light of technological development—with a particular concern for the new multi-dimensional and multi-sensory platforms available to designers—and the creation of practical curricular documents such as objective statements, project prompts, rubrics, discussion points, and assignment structures designed to help students consider and develop design for a multi-sensory and multi-dimensional future.

INTENDED AUDIENCE

The primary audience members for this session are undergraduate and graduate-level educators who are actively teaching design. Teachers at schools and universities with interdisciplinary structures, opportunities for research-based design, or liberal arts backing are the most likely to find institutional support for the forms of inquiry that we will discuss. The practical goal of developing project ideas and assessment methods that guide students towards engagement with and critical consideration of future technology should however be of relevance to all educators.

PLANNED ACTIVITIES

Participants in this workshop will work in small teams, focused on particular challenges and questions driven by the multi-sensory,

multi-dimensional world. Within their teams, the will work together on:

1) Discussion and ideation around new technological possibilities.
2) Collaborative manifesto writing.
3) Curricular-level objective creation.
4) Construction of potential project prompts and structures that meet curricular objectives.
5) Development of rubrics for the prompts that align with larger objectives.

LEARNING OUTCOMES

Participants in this workshop will walk away with:

1) A model for thinking about larger objectives in design education and how to work from those objectives down to specifics of creating projects and reviewing projects.
2) Increased abilities to discern shifts in the technological landscape and construct ways of responding to those shifts through curricular modification.
3) An understanding of how conceptual, ethical, and technological concern can drive practical forms of making through design pedagogy.
4) An experience of inter-institutional dialogue and conversation about the ways that different institutions might try to address the shifting circumstances that design is operating within.

OUTPUT

The output of this workshop will be the creation of an education-focused manifesto on multi-dimensional, multi-sensory design that is paired with actionable, practical course documents. The documents produced will allow teachers to prompt students towards higher levels of engagement and consideration of multi-dimensional and multi-sensory technology and the way it affects humanity. The manifesto and accompanying documents will be pooled together to form a resource that will be openly shared with design educators. These documents will collectively initiate a

conversation about why institutions need to consider adjusting the approach to design as well as practical ideas about what changes might be made at the curricular and project level.

LOGISTICS

Workshop Length: This workshop is best executed in 3 hours. However, it can also be scaled down to 1.5 hours. The shortened version would produce less refined results, but still initiate helpful forms of ideation and discussion.

Ideal Room Configuration: Multiple tables in generally quiet environment that seat 6–8 people, a main projector or screen for viewing documents, a microphone for voice amplification (depending on attendance). Rooms with accessible butcher paper or white boards are also helpful for collaborative ideation, though paper can also be provided.

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Using Conceptual Frameworks Toward Design Investigation into Online Communities

BREE MCMAHON

community, online community, online platform, participation, conversation, relationships, user needs, theory, theoretical framework, conceptual framework

When designing for communities, particularly virtual communities with multiple participants, designers have a role to play in "raising or widening the circle of participation" to foster membership growth (Putnam, 2001). Often this occurs through conversation, which also encourages membership solidarity (Anderson, 2006). Designers are responsible for both anticipating the needs of unique users and their groupings, and recognizing the needs of entire formed communities. My investigation led to several theoretical frameworks exploring the implications of various designed tools used by online community members. These frameworks serve as a guide for making new "things," and also to better evaluate "things" already made. To that end, I devised a conceptual framework to further questions the diverse needs of individual participants and the community as a whole. Specifically, I combined several theories into a conceptual theoretical matrix to understand the multiple factors that affect users and their specific needs. In order to investigate further the nature of unpredictable online community members, I consulted the works of Elizabeth Tunstall, Etienne Wenger, Nancy White and John D. Smith. Their theories address different facets of communities. While Tunstall identifies five aspects–or dimensions– through which users internally experience their communities, Wenger, White, and Smith posit nine orientations representing standard patterns of community activity. I used this research to inform a new framework that defines the needs of users and communities while further examining the relationships between various community activities and internal experiences.

Re-examining the Thesis Project in a New Era of Design Research

BRUCE HANINGTON

graduate, masters, thesis, project

The thesis, or thesis project, is a cornerstone of many masters' programs in design. The range of theses supported across various design schools includes traditional explorations in "design studies" or research 'of' design; human-centered design projects constituted of research 'for' design; and, more recently, research 'through' design, recognizing the value of making as a valid form of research exploration, particularly when developed as reflective practice. The benefits of a thesis include the tangible demonstration of mastery over design subject matter, the ability to craft and self-manage an independent design project while working with a mentor-advisor, gaining hands-on research experience, and creating a portfolio piece. However, in the shifting landscape of design, questions arise. Are schools maintaining outdated models of thesis preparation, conduct, and advising? Do thesis projects crafted as independent studies contradict experience for a field that is largely based on team collaboration? Do subject areas such as design for service or social innovation require a different model than traditional design explorations? Does the introduction of research-through-design require new forms of thesis documentation, exhibition, and archiving? These questions suggest that it is timely to examine how we support new models of design research within thesis projects, and how a diversity of models might be guided and evaluated in parallel, even within the same school. A reexamination of the thesis experience is critical for the success of our students and schools, if we are to continue offering a beneficial educational experience while also meeting the needs of employment and design practice.

Design Research and Public Life

CARL DISALVO

public, democracy, politics

We often think of design research as an activity primarily oriented towards the familiar fields of design, to inform designers of contexts of use, to explore new materials, or to assess the usefulness of a product or service. But as the breadth of design continues to expand, the values and purposes of design research also expands. Design research can also contribute to public life; it can be practiced as a mode of collaborative inquiry that contributes to new forms of politics and ethics. My particular interest is in the role of design research in staging experiments in civics, where collective making and doing becomes a way to explore what other worlds might be possible. This requires shifts not just in how we practice design research, but also how we teach and judge design research. This is not necessarily a challenge to existing modes of design research, teaching, and critique, it should be seen an additional perspective and practices that can exist in parallel. At the same time, such a mode of design research will call into question some fundamental assumptions of both design and research, including the presumed relevancy of "the economy" to design and the desire for "generalizability" in research.

Experiential Typography

CHAD REICHERT
typography, motion, branding systems, type design

The future of typographic development will be defined by human interaction, non-conventional ideas of legibility, and how it functions to give more meaning and depth to linguistic messages.

The Genre of the Document as a Tool for Unpacking Graphic Design's Relationship to Systems of Authority (or, The Banality of Excel)

CHRISTOPHER LEE

documents, evidence, authority, historiography, bureaucracy

In her book "Paper Knowledge: Towards a Media History of the Document." Lisa Gitelman argues that "...the document triangulates the relationship between the individual and authority." Johanna Drucker, in her book "Graphesis: Visual Forms of Knowledge Production," contends that "...visualizations are forms of argumentation." My contribution to Decipher would be based on an adaptation and synthesis of the above, with the following formulation: "Documents are forms of argumentation that interpellate (Althusser) individual and collective subjects in relation to authority."

I wish to add to the scope of AIGA 2025's principle of "Complexity," and suggest that the genre of the document be proactively included and questioned through the disciplinary and pedagogical lens of graphic design. For instance, what would it mean to teach documents (i.e. tax forms, money, passports, etc.) in a design studio course? What historiographical shifts does this suggest? What theoretical concepts need to be revised, introduced, or abandoned?

Highlighting this banal category (Foucault, Latour) of design opens a way to charge, consider, and make/research, towards unpacking the ways that graphic design can be entangled with forms of power that range from the administrative/bureaucratic (Anderson, Scott) to the networked (Singh Grewal). My research the ways in which documents are designed to remember—tell stories, archive, be evidence. It asks how historio-graphy might be considered a form of design (Lee, Stevenson). It explores how graphic design can map the relationship between subjects and the authority(ies) by which they are interpellated, towards cultivating a method for mapping the political and ethical topology of complex social systems.

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Research: A Common Ground for Healthcare and Design

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healthcare, collaboration, research, IRB, interdisciplinary, experience design

ABSTRACT

The hospital may not be the first setting that comes to mind when thinking about design research. As healthcare experience designers embedded in a hospital, we have discovered that through design research we have been able to forge significant relationships and powerful collaborations across disciplines. The design process initially seems foreign to healthcare professionals, but participating in design research demystifies this process.

One of our projects led to an IRB approved study piloting a program created as a result of our extensive research, which included environmental scans, numerous interviews, observations, and co-creative workshops with stakeholders such as patients, clinical care teams, EHR analysts, state employees, and others. The study and its results serve as a bridge between the languages of clinical medicine and design. Our clinical and public health collaborators affirmed the value of our design research process in helping interdisciplinary teams uncover important insights about the explicit and implicit needs of patients, families, and care teams. This work demonstrates how these highly collaborative and inclusive design research methods lead to better outcomes and higher rates of engagement in healthcare settings.

A common challenge faced by healthcare design researchers is how to merge qualitative data with clinical metrics. The field is capable of overcoming this challenge and will contribute meaningfully to improving healthcare systems and experiences.

The Science of Design Science

COLLEEN SEIFERT
cognition, science, psychology

In an interdisciplinary project involving industrial design, mechanical engineering, and psychology, our research team has investigated how product designers create multiple concepts in the early stages of design. We gathered evidence in four empirical studies of design processes and outcomes, including award-winning products, multiple concepts by an experienced industrial designer, and concept sets from 48 industrial and engineering designers for a single design problem. This compilation of over 3450 design process outcomes was analyzed to extract concept variations. The resulting set of patterns, in the form of 77 Design Heuristics, catalog how designers appear to introduce intentional variation into conceptual product designs. These heuristics provide 'cognitive shortcuts' that can help designers generate more, and more varied, candidate concepts to consider in the early phases of design. (Yilmaz et al. 2016 Design Studies). With Professor Shanna Daly in Mechanical Engineering and Prof. Aileen Huang-Saad in Biomedical Engineering, we have extended this approach to the empirical study of design and designers in diverse fields. My research program grew from a collaboration with a graduate student, Seda Yilmaz, in the Design Science Program here at Michigan, an interdisciplinary Ph.D. program connecting diverse areas of design science on campus. As the current director of this program, I look forward to making more connections in design research!

Bringing research practice into the student graphic design studio

COURTNEY BARR, LUISA RESTREPO

student, studio, internship, work-study, professional practice, curriculum, collaborative, mentorship, learning

The Graphic Design Student Office (GDSO) is a student design studio that has been in practice at Louisiana State University College of Art & Design for twenty years. The GDSO has evolved into a full-service studio that creates professional design solutions for university departments and community clients, giving students the opportunity to gain first-hand experience with professional practices in graphic design. Students selected to participate in GDSO, who exhibit strong conceptual skills as well as a team-oriented mindset, range from sophomore to graduate level, and practice in a unique mentor-based, collaborative learning environment in which they are guided by graphic design faculty.

In addition to providing traditional graphic design services, the GDSO is invited by scholars to participate in research-driven, grant-funded projects that involve the development of design deliverables over a long-term process. Past collaborators have included the LSU Coastal Sustainability Studio, LSU Department of Oceanography, LSU Center for Computation and Technology, and the Coastal Protection and Restoration Authority. These opportunities create a unique intersection of research and professional practice in the learning environment. Sometimes project deliverables will evolve multiple times over the course of the research process; sometimes the research process will lead to a completely different solution than the initial expectations, and sometimes research projects do not come to fruition in terms of tangible solutions. Students may learn more from the process itself than from the final product.

Participation in research initiatives is a more complex challenge for the students, but from the challenge they gain a unique appreciation for research practice that gives them relevant skills for the future of design practice. The faculty advisors to the GDSO would like to discuss research in this unique learning situation, and learn how other campus design studios are incorporating design research into their practices.

Does the Digital Medium Discourage Student Ideation and Refinement of Projects?

DAVID SMITH

digital, process, student

The creative process can be broken down into different methodologies and steps. One common breakdown would be as follows: Research > Idea Generation > Refinement > Final Product. In an effort to get the job done, a visual arts student may short-change one or more of these steps. As educators, we try to teach our students to make the most of each step so that a project's full potential is realized.

For the visual arts student, one very important method for generating ideas, as well as refining ideas, is sketching. When working in a traditional medium, one that is executed by hand, sketching by hand seems to be a natural extension. In contrast, when working in a digital medium, one where the computer assists in the execution of the work, sketching may seem out of place. Students already reluctant to give proper time to exploring through sketching with a "hand" medium, are even more so when working in a digital medium. The fact that elements generated on a computer are usually more easily edited than traditionally created work, and that elements generated on a computer can be more easily be precise may contribute to this problem.

The reality is that digital tools are not necessarily easier or faster, and they certainly won't generate ideas on their own. My argument is that the digital tools are just that—tools. The head directs the hand, and the hand directs the tool. Part of the tension between hand and digital is the tendency of students to skip developmental steps in the creative process when using digital tools.

Education in Reverse or Fast Forward

DOUG KISOR

eurocentric, mediumlessness, mutable, systems, subjectivity, empathy, intent

A fair portion of design education is rooted in a twentieth-century Eurocentric model of form giving. As McLuhan states, "We look at the present through a rear-view mirror." The palette of the communication designer has grown exponentially. Previously anchored in a text, symbols, images, and formats the current state of information is "Mediumlessness." A message beginning in one state easily transforms to sound, motion, proximity, data visualization, haptic feedback, user's channels, etc.

How do we structure a design education model that embraces the existing reality of messaging? Adding AI to the mix the, the initial message is subject to shifting hierarchies and cultural translation potentially removed from the initial intention of the designer/author. Geography is removed with the instantaneous dissemination of content. Any ridged educational model of organizing information is inherently doomed in our current information reality.

At the ground level, a communication designer should understand the systemic interrelationship of communication channels. Understanding that every gesture has meaning and the meaning is mutable within our current information model requires a reconsideration of the foundational knowledge required to be an effective and ethical communication designer.

The traditional communication design educational model generally begins with simple methods of organizing information, ie. a typography course. Is a more complex model of foundational learning more appropriate to the current conditions within which design functions? The form is inherently linked with meaning. Should those initial experiences be linked to subjectivity analysis, sentiment analysis, systems thinking?

It appears research, form, systems, empathy, and intent should be formulated as co-educational occurrences. How do we restructure the model?

Learning About Design Research by Doing Design Research

ELIZABETH SANDERS

co-design, mindset, constructivism, transdisciplinary, future

Students today need to learn how to design for people as well as how to design with people.

Design research will play an increasingly important role in both of these approaches but the role of the designer/design researcher will differ between the approaches.

The difference between designing with and for people cannot be found in the methods and tools because these are drawn from the same toolbox. The difference is in the mindset that one holds about the role of people in the design process. In the traditional process of designing for people, the methods and tools are in the hands of the designers/design researchers. In co-designing, the designers must relinquish control of the creative process and put the methods and tools into the hands of the people who will be served by design. In the traditional process of designing for people, the focus is usually on commercial applications. In the co-design process, the focus is more likely to be on complex social challenges.

We will need traditional designers as well as co-design facilitators to meet the challenges of the future. As educators, we must ensure that our students are well prepared to be able to decide which mindset and approach makes the most sense for them. A constructivist perspective toward learning where educators offer hands-on, transdisciplinary learning experiences will work for both approaches. Students and educators will learn together through exploration, experimentation and projects that take place in the real world.

Re-evaluating the Future of Trend Forecasting in Pedagogy and Practice

EMILY FLANNERY

trend, forecasting, speculation, analysis

Trend research has been traditionally used to inspire design novelty and advance aesthetic execution. Despite an intrinsic connection to the design process, as a practice Trend Forecasting is challenged as being "too fuzzy" or not easily translated to an array of product, service, or experience applications. Concurrently, a tidal wave of DIY trend spotters has risen from the convergence of clout-centric social networks and the democratization of design. Everyone with an internet connection can now feel capable of approximating the next "big" design movement or cultural trend, leaving the profession and practice of Trend Forecasting at a crossroads.

Research indicates an emerging shift from mainstream trend reporting toward "Predictive Innovation" practices; from passive futures thinking, to active futures doing. This shift segments the forecasting profession into three futures zones: analytics, forecasting, and speculation.

To adequately prepare students for the future of trend forecasting, as design educators, we must adapt and address the different trend translation methods inherent in each of these zones. The goal of the on-going research is to prototype and test solutions that address this shift within each of the zones. Specifically, "forecast as decision-making tool" for near-term design interventions and "forecasts as cultural artifact" which manifests a path toward a desired future-state. Codification of these prototypes aims is to better prepare young designers at the University of Cincinnati, College of Design, Architecture, Art and Planning, Myron E. Ullman Jr. School of Design for participation in, and as future leaders of, the creative industry.

Design Education: Adding Narrative in an Intentional Way

EVA ROBERTS

narrative, story, education

Recently, I had the opportunity to spend time considering the role of narrative within design education; this investigation represents a new direction in my interests. As a design educator, I have been struck by the struggle that students have in bringing concepts to life and moving beyond dry reporting. While narrative may seem accepted as a self-evident component of design and by extension, of design education, there seems to have been little attention paid to narrative or storytelling design education. More recently, as "graphic design" has come to encompass UI / UX and Experience Design generally, the concepts of persona and scenarios have become more commonplace within design education, but these are framed in a somewhat formulaic manner. We now have the welcomed addition of Ellen Lupton's book, Design is Storytelling, but this too frames narrative primarily as personas and scenarios. It is my belief that paying more direct attention to storytelling activities in the design classroom will enable young designers to have a more empathic and robust appreciation of their personas, the characters of their scenarios, which are a story. My step into this area is a small one at this point. While at the University of Sussex, I had the opportunity to work with Dr. Pollie Barden to develop and conduct workshops attended by faculty across a wide range of disciplines. Our goal was to test some activities on these educators and assess whether these seemed of potential value to their classroom. Much remains to be done.

What is Arts Research?

GABRIEL HARP

research, knowledge production, categorization, ontological reasoning, higher education, organizational change

The practical goal and task of my current work is to share a ground-up set of perspectives on arts-and-design-driven research that can help in communicating the many facets and cultural frames in common use. These perspectives and topics were synthesized from over 600 interviews with faculty, staff, and academic leadership from over 38 institutions of higher education. The definitions and descriptions that emerge provide practical insight for articulating everything from job descriptions to economic policy, as well as tenure and promotion criteria, grant programs, and even the mission descriptions of institutions themselves. The main task of this work is not to get the right answer; rather, it is to untangle and see the multiple paths and branches for their material and metaphysical commitments, how they are practiced, and what they mean as outcomes and experiences. In the context of research universities, the work here does not seek to describe an authoritative definition for arts (or design) research that can encompass all creative and scholarly pursuits. Nor does this project seek to advance a scholarly review of the subject. Instead, this work seeks to add to our understanding of how diverse faculty, administrators, and students view research involving the arts and design within the institutional context of research universities.

Design Research and Feedback Loop

GEORGE GARRASTEGUI

process, adaptability, feedback, sense-making

The future of the profession is not always going to be visual. A student who can ask the proper questions, collaborate, and handle complexity within the physical, digital and hypothetical spaces will be a better asset to society as a whole. This is an opportunity to redefine what designer research IS, and should be. Technology has democratized the practice and has opened the world to the tools of design. Adding to the perception that design this a technology-driven, which continues to pigeonhole any emerging creative into a pixel pusher, not systems thinker. As technology advances so should the 21st-century designer. We need to adapt and codify new ways of being perceived and further establish the value, direction, and influence of the designer as researcher.

Creative outlets and experiences have become more curated. Audiences have more control over how they interact with media today. This has transformed design into a conversation instead of a monologue. In the AIGA Designer 2025, they identify this trend as a New Form of Sensemaking. It is "a shift from asymmetrical, one-directional relationships between users and information to communication strategies built on models of conversation, participation, and community"[1] are new parts of the creative ecosystem. We should explore how the responsive feedback loop such as the like, share, tweet, and comment help to shape and form connections of deeper understanding. What is the impact of evolving investigation and how can it continue to reshape and shift the research.

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Role of Design Research Methods in Revival and Preservation of Indian Crafts

GOWRI BALASUBRAMANIAM

craft documentation, preservation, design intervention

Craft practices in India and surrounding regions exhibit distinct geographical and socio-cultural characterizations of the region. These craft practices often reveal valuable cultural notions and meaning beyond their primary purpose of adornment and artistic representation. Historically, crafts were conceived and manufactured by local craftspeople within their communities. However, with growth in technology, communication and shrinking boundaries of the world, there has been an increased demand for innovative materials and methods with current measures of quality and perfection. Due to changes in these social, political and economic structures the crafts community is increasingly vulnerable to disrupted realities and potential extinction. Though the strengths of these crafts are being recognized both globally and domestically, the qualitative exchange between the urban market-place and the craftspersons is non-existent.

Design methods and research play an instrumental part in facilitating the crafts community and initiating the dialogue between designers and craftspeople for a mutually beneficial exchange of expertise. Knowledge empowerment and creation of efficient multidisciplinary networks between the community and designers can bring a cutting-edge advantage to Indian crafts. Knowledge can only be empowered when documented. Indian handicrafts and its wisdom have been transferred within families from generation to generation, remaining virtually undocumented. Further, millions of Indians still depend on native methods of making, indigenous skills and techniques to make a living based on handcrafted products. As a designer in India having access to this cultural wealth, it is vital to research and document, and intervene respecting these cultural barriers.

Inspired by this line of thought I undertook a craft documentation in the Kathmandu valley, Nepal. The study aimed to document the traditional attire of the Newars (indigenous people of the region), to observe their practices from a designer's lens to map possible areas of intervention and methods of preservation. It provides valuable insight into the craft person's dexterity in handling raw materials and their skills to combine utility and beauty. Documenting this traditional wisdom in its purest form was crucial. Methods of immersive qualitative research allowed experiencing the craft in the making in its actual environment. The experience of carrying out this research helped conclude and confirm that though the quality of production, identification of market gaps and understanding changing audiences help set the foundation for the growth of the Indian craft sector, design documentation and research play a vital role in the protection of traditional wisdom and craft practices.

Collaboration / Co-Design

HANNAH SMOTRICH

collaboration, co-design, visual communication design

Much of my teaching and design research is centered on collaboration, and ways to engage diverse participants in co-design processes. As a visual communication designer, I am particularly interested in the role that designers can play in making the tacit explicit and developing ways to help communities, individuals, and marginalized populations surface and move their interests forward.

This semester, my "Doing" and "Teaching" take the form of two project-based, collaborative classes.

The first, Detroit Neighborhood Entrepreneurs Project, is a reciprocal learning initiative and collaboration among the Stamps School of Art and Design, the Ross School of Business, the Law School, and the Ford School of Public Policy. Minority entrepreneurs in Detroit's low-income neighborhoods allow University of Michigan faculty and students access to the inner workings of their businesses in exchange for integrated, pro bono design, legal, accounting, analytic and business services. Our experience to date is that the research-supported advice that students and faculty offer substantially changes how entrepreneurs operate, which leads to overall improved operations, customer engagement, profitability, and community development impact. In addition to the learning experience of their multidisciplinary teams, students emerge with a more nuanced understanding of the systemic barriers minority entrepreneurs face, the difficulties of launching and operating businesses in economically challenging environments in Detroit, and experience in working with entrepreneurs directly to help overcome those barriers.

The second, Voting is Sexy, co-taught with my Stamps colleague Stephanie Rowden, is a collaborative class in which students are creating "a high-energy, non-partisan campaign to make voting irresistable" to their peers. Starting from a foundation of behavioral insights, students are producing a range of entertaining, educational and engaging projects — from installations to short videos to pop-up events. The class is part of larger university and national efforts to increase voter participation. We hope students emerge with a greater sense of civic agency and understanding of the contributions that artists and designers are poised to make.

Leveraging Machine Learning to Develop User-Centered Inclusive Design Methods

HELEN ARMSTRONG

machine learning, accessible, inclusive, user-centered design, disability

Our lives fluctuate along a spectrum of impairment. Impairments might be permanent, temporary, or situational. Lennard J. Davis notes in Bending Over Backwards, "Impairment is the rule, and normalcy is the fantasy" [1]. Design consultant Graham Pullin suggests a similar idea in reference to the concept of disability: the boundaries between disability and ability are unstable, changing depending upon environment, activities, or even states of mind [2]. A user-centered design approach that focuses not just on lowering barriers to access, but also upon improving the overall user experience, asks designers to question binary conceptions of ability and disability. Once designers begin to understand ability as a fluid state, they can utilize user-centered design methods to map out a spectrum of impairment for specific users. This deeper understanding of the variability of impairment supports the need for interventions through which technology can sense and respond uniquely to each user. One emerging technology—machine learning (ML)—is particularly adept at learning and responding to individuals. ML enables a computer to sense and analyze the world—and human users—more like a human does. Using ML a computer can engage with unstructured data—images, language, videos—interpret that data, and then predict outcomes. How might we leverage this new technology to open up possibilities not only for responsive and inclusive interface design but also responsive and inclusive user-centered design methods? How can we use ML to develop innovative research methods that meet our changing understanding of disability?

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Resources for Design Research Educators

JAMIE VANDER BROEK
library, research, support

I have been the Librarian for Art & Design for almost four years. In that time, the school I serve has become increasingly design focused, hiring three new cohorts of design educators. Our Library has traditionally supported the contemporary art and making activities of the school well. I am interested in learning more about design research education so that I can better provide support, collections, and tools for students and faculty.

Overcoming the Rustbelt Stigma: Teaching Creative Placemaking in Design Education

JENN STUCKER

scholarship, engagement, placemaking

In the mode of Scholarship of Engagement my creative collaborative work is committed to fostering the growth of the community and promoting positivity in the public about the Northwest Ohio region. This follows BGSU's commitment to Scholarship of Engagement, "...a method of engagement that 'addresses critical concerns, uses the expertise and insights of scholarship to help solve pressing public problems, and contributes to the public good. It does so in true collaboration with community...'" In such work the designer and community work together, and the impact of such projects is measured by recognition both in the field and the community. My approach to graphic design's role in building and transforming community identity is corroborated in books like "Just Design: Socially Conscious Design for Critical Causes" by Christopher Simmons, "Designing for Social Change" by Andrew Shea and "Developing Citizen Designers" by Elizabeth Resnick. Some ways in which I have contributed to Scholarship of Engagement is through forming a participatory design workshop, creatively directing projects through AIGA Toledo, and authoring and producing large-scale creative placemaking projects. The architecture in creating these type projects are shared with to students as classroom models to reveal and empower them in creating and authoring their own community-based work for the public good.

Destination Pt. Defiance: Waterfront Phase 1 Advocating for Design Research Methods for a Better Public Realm

JENNIFER LOW

public realm, defining design research, environment, design leadership

Design in the public realm demands a highly collaborative, design research-based process to ensure the successful execution of work that aims to improve the quality of life for its communities. Designers of the built environment leverage design research methods that provide critical leadership to navigate projects that require thorough coordination, responsiveness, and consensus building with the client, consultant teams, community, municipal agencies, and other stakeholders.

Pt. Defiance Park is a 760-acre large urban park located 40 miles south of Seattle on Puget Sound. At its south end is a 20-acre peninsula formed from black slag, a bi-product of a copper smelter facility. For over 100 years the Asarco Company dumped slag here. The slag caused lead and arsenic contamination in the air, water, and for decades beyond the facility's closing in 1985. Shortly thereafter, Washington State reached a settlement with the Asarco Company to pay for the site's environmental remediation. The city leveraged this clean-up to reclaim this piece of land as a public park.

This 20-acre peninsula is now undergoing a transformation as a waterfront remediation and park project. As a lead designer on this project, I was able to apply and observe the application of designer skill-sets such as creative problem-solving, comfort with iteration and non-linear thinking, and observation as critical practices in the successful navigation of projects of this scale and complexity from design development through construction.

The landscape architecture design team continues to lead the reclamation, remediation, and transformation of the 20-acre Superfund site into a public park. The new park will provide

connection to the Commencement Bay waterfront through a network of pedestrian trails, a new 625-foot long pedestrian bridge, and 20 acres of recreational open space to this previously inaccessible part of the city. Construction is slated for completion by the end of this year.

Defining and Teaching Design Research to Undergraduate Students

JILL GREENE

design, research, lived experience, framework, human-centered

Teaching design research at the undergraduate level is challenging. These young students, in many cases have limited lived experience. They lack the ability to be open-minded and resourceful in their investigations, their explorations. They are quick to settle on that one right solution. Not to mention lacking a meaningful understanding of their audience.

In the classroom students often don't know each other's names even by the end of the semester, let alone anything about themselves because they assume they all have similar experiences. I find it difficult to encourage students to have meaningful conversations, to get to know one another, to explore their community, and be insightful when we are afraid to disagree or offend. This carries over to their research as well as critiques where students are afraid to ask questions and "like" everything for fear of hurting someone's feelings.

I look for ways for students to engage with one another, to explore beyond their own experience, and to really explore the community in which they operate, even if it is uncomfortable. I try to continually develops and provide a framework for human-centered design that promotes not only quantitative, but qualitative research, both breadth and depth, to be insightful and consider the diverse contexts of their work, to define and understand their audience, as well as the impact design can have on that audience.

New Ecologies Created by the Intersection of Objects, Tangible Interaction, and Networks

JOHN MARSHALL

tangible interaction, cross-disciplinary collaboration, problem-based learning

I am a designer, educator, and creative technologist with over 20 years' experience. I am interested in the new ecologies created by the intersection of objects, tangible interaction, and networks. As co-director of rootoftwo, LLC I have worked with clients, collaborators, and institutions to present work in Australia, Austria, Brazil, China, Denmark, Finland, France, Japan, Macedonia, the Netherlands, Norway, Spain, Sweden, Turkey, the United Kingdom, and the United States. Recent projects have been featured in Wired, FastCompany, Dezeen, Dwell, Studio International, and The Guardian. We were selected to represent Detroit UNESCO City of Design at the 11th Annual Meeting of the UNESCO Creative Cities Network. We are currently working on a proposal to develop an urban and landscape design strategy and cultural center connection framework for the Detroit Institute of Arts and over a dozen neighboring institutions. As an educator at University of Michigan, I am pursuing new educational models, technologies and tools for teaching and learning. My previous research has focused on how pedagogies that lie at the core of studio-based design education can enhance student learning in engineering. Previous studies have contributed a rubric for measuring students' development of increasingly refined epistemological understanding in regards to wickedly complex and ill-defined design problems.

Teaching Design for Social Good

JORDAN BECK

design education, social good, theory and practice

Design educators face a number of challenges in their work. They have to keep pace with increasingly rapid, changing needs in industry to ensure that students possess the required knowledge and skills for success in internships and entry-level positions. Design educators also function as crucial nodes connecting design theory and (future) design practitioners. This is in itself a significant undertaking as research output increases year-over-year and shows no signs of slowing. In addition to these tasks, in recent years, a set of questions has emerged for us, practicing design educators, emphasizing concerns that may tend to occupy the periphery. They include: How do we train the next generation of radical thinkers? How do we engage with politically or socially charged topics relevant to the design community? How can we teach students to recognize inequalities built into the systems that we use every day? These questions can usefully be framed with the broader question, How can we teach students to design for social good? Drawing upon our own experiences as design educators for whom social good is a key feature of the studio, we discuss the challenges that we have experienced both in the studio (e.g. students' responses to divisive topics such gun control or freedom of speech) and at the level of the institution (e.g. being encouraged to 'water down' design prompts). We discuss potential best practices and share failures, and we call for more design educators and researchers to engage with the question of teaching design for social good.

Defining and Assessing Collaborative, Practice-based Research in Visual Communication Design

JULIE SPIVEY

multidisciplinary, applied, practice, collaboration, public, assessment

I have expanded the focus of my creative/research in recent years by engaging with multi-disciplinary teams in collaborative projects that allow me to use design to communicate complex ideas, visualize information and data, and advocate for users and readers. The core of this work addresses critical issues relevant to sustainability, and environmental and climate concerns. My practice-based research endeavours to bring clarity to information in a time of prolific data and messaging.

Design practitioner/academics are increasingly participating in collaborative, public, community-engaged or people-centered work with multidisciplinary teams or public partners to address problems, co-produce new knowledge, increase understanding of complex topics, and create outcomes that have positive impact. But defining and assessing this type of applied research as research (that is valid and meritorious) within the culture of academe can be challenging, as institutions require evidence of acceptance by disciplinary peers and/or "validation of quality" when often the very value of the work may be in its meaningful use (plus the contribution of further expanding the understanding of design within the institution and community, ultimately elevating the discipline). Design facilitation, service design and participatory approaches place users and partners in the role of contributors and co-creators, and outcomes may not be objects but systems or experiences.

As both a practitioner and external reviewer of such applied research or practice-as-research, I am interested in best practices for institutional support, assessment, and peer-review of such scholarship.

Building T-Shaped Competencies: Cross-Disciplinary Learning in Undergraduate Graphic Design Education

KARIN JAGER

t-shape, graphic design education, design thinking, undergraduate, cross-disciplinary

Many graphic designers today work in businesses and organizations where design is not a core service, and more than half of those employed in the creative industry are engaged in freelance work in addition to their primary employment. This shifting workplace challenges design educators to create a learning experience that prepares students to be cross-disciplinary, adaptable and flexible. Essentially building "T-shaped" skills – giving students a solid foundation in professional practice and the ability to collaborate, and apply integrated design knowledge. How can undergraduate design educators work collaboratively with other disciplines to meet this challenge?

Justice in Non-Linearity in Design and Information Sciences

LAUREN BERIONT

non-linear, teaching, engaged learning, complexity, equity

I am not a linear thinker. To me, the world is an emerging and interconnected jungle where one must design understanding that changes and complexities that are inherent in the world. In my work around design in community organizing, coalition building, community-university partnerships, and now teaching and coaching undergraduate and graduate students about design and information sciences, I am living in the tension between linearity and nonlinearity. How can we teach students a straightforward path to design while maintaining the iteration in the design problems to appropriately work on complex social problems? How can we design a simple technological interface for clients and customers with a sophisticated backend? I work on trying to extend this idea of complexity not just to the project process but to the partnership relationships through a firm foundation in justice. In our teams we think about the social identities of our team members, and the identities of the users of our designs. We reflect deeply on the ways in which our team culture and practices of management and communication foster or impede on inclusivity. We forecast potential consequences and benefits of our designs to different individuals, organizations, and communities. I'm excited to continue to explore with colleagues the ways in which we define design research, who we define our research with, how we design, and how we teach design research impacts the effectiveness and impact of our research and work. Peers regarding their own pedagogical approaches to enhancing community through aesthetic innovation.

Feedback Loop: From the Classroom to Industry to the Classroom

LILIAN CRUM
graphic design, brand design, community design, business, entrepreneurship, economic development

Not only might there be a disconnect between theory and practice in design-related curricula, but studio courses do not always teach future-looking industry practices. Several sessions of AIGA's 2017 annual conference focused on "AIGA Designer 2025," which examined the ways in which design educators can more effectively prepare students for a shifting professional landscape. Prompted by similar questions about the future of design professions within the knowledge economy paradigm shift, I initiated an applied research project, Woodward & Willis, in early 2017. W&W is a student-run, faculty-directed design firm that operates as a real-world studio outside of the classroom. The studio provides local socially-conscious businesses and organizations in the Detroit region with professional design services. This interdisciplinary team of students provides support for non-profits and local businesses in their infancy, presenting coalesced business and designed collateral. Building on Lawrence Technological University's motto of "Theory and Practice," students develop deeper conceptual understanding of providing real-world professional services while operating the studio and practicing their design skills. Questions of human-centered design, team dynamics, mentorship, technology, ethics, and social, cultural and economic impact underlie our project work. Ultimately, W&W intends to generate knowledge and experiences that allow students to become professionally and creatively nimble, independent and accountable, and able to adapt to an ever-changing design field. W&W also generates a feedback loop about such competencies between the classroom and the professional world.

Facilitating Production & Publication of International, Collaborative Creative Practice by Fostering a Culture of Creative Trust

LISA WINSTANLEY

Today's media is permeated with accounts of social division and disconnect (O'Neil 2017). In 2016–17 the number of hate crimes, in the UK alone, increased by 29%, the largest increase seen since 2011–12 and it would seem that the world's media is increasingly intent on highlighting these divisions. With this in mind, I propose to discuss the methodology and creative intentions of my ongoing academic and practice-based research project, which utilizes design as a means of bringing culturally divergent communities together; promoting inclusion, collaboration and altruism as a counter to this perceived discord. Thus, serving as a catalyst for change.

This project intends to foster a culture of creative trust by inviting participants from around the world to engage in an international, collaborative form of the Surrealist parlor game, Cadavre exquis or "The Exquisite Corpse." The initial active phase of the project is to be conducted digitally and outcomes submitted and aggregated online, whilst phase two repositions the project from digital to analog with a series of hands-on workshops. The artworks generated from both phases will be curated to form a collection of salable art prints and greetings cards. It is this project's intention that the proceeds from all sales be donated to international charities who aid in social inclusion through creative practice; thus, coalescing creative communities from around the world, building bridges and providing a conduit for international collaboration to encourage a philanthropic approach to design-with-purpose.

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Growing Interest in Design Methods

MAGGIE STEELE

sustainability, collaboration, process, stakeholders, research

My interest in design research blossomed during the pursuit of my undergraduate degree at the University of Michigan where I was a member of BLUElab, an organization focused on sustainable human centered design.

During my time with BLUElab I lead Woven Wind, a team that built wind turbines for educational use, and later joined the executive board. Throughout my time with the organization I learned valuable design skills about ethnographic research, defining user requirements, concept generation, and prototyping. I saw that the most important part of design was developing an understanding of your end user and communicating appropriately with stakeholders throughout the process. I was also able to work on building the design methods skillset of members through improving the recruitment and member development process.

Professionally I took a different path, applying my industrial engineering knowledge to roles in supply chain and manufacturing engineering. While in process engineering at General Motors I was able to see the negative effects of lack of end user feedback, in this case from plant workers. The process group often failed to comprehend how the assumptions they apply may not reflect reality. There is little opportunity for interaction with users and even with a human-centered design approach in use, it is difficult to challenge the prevailing mindset. This drastically undermines ability to serve customers.

In my career I hope to combat issues such as that and advocate for end users through utilizing appropriate design methods and effectively sharing with stakeholders.

Memory and Oblivion

MARIANETTA PORTER, DEBORAH LABELLE
African American, slavery, history

My creative pursuits are intellectually supported through the study of black Atlantic history and its influence on contemporary artistic practice and dialogue. This study focuses on the iniquities, struggles and resistances of the black Diaspora and intends to reposition these concerns within present cultural and artistic debates.

Through the efficacy of language, texts and visual interpretations, my ongoing research project, Memory and Oblivion, chronicles the journey of slavery and seeks to recover the historical import of these passages, returning them to our social memory and conscience. Research for the project draws from an array of subject matter: narrative accounts such as oral histories, literature and folklore, historic documents, maps, archeological findings as well as visual artifacts and imagery in the fields of sculpture, painting, photography and the graphic arts. Utilizing sculpture and multi-media constructions, my artwork abstractly and metaphorically interprets this history and reflects upon the contemporary experiences that have grown out of it.

The seeds of my work within the university environment have found fertile ground for the cultivation of new ideas and approaches in examining the rumblings of myth and memory that constitute America's troubled past. I strive through my engagement with other artists and scholars, to contribute to the critical discourse surrounding African American artistic practice, history and cultural enterprise and to increase public awareness and understanding of the rich cultural contributions that African Americans have added to the framework of American history and pluralism.

Resistance as Existing Between the Gaps

MASIMBA HWATI

resistance, feint, malicia, dance, movement

In conventional dance attention is usually fixed on either the technical movement of the body or the music and sometimes we look at how the body moves to/with the rhythm of the music. However, most dances dealing with resistance appear more complex and usually extend beyond the entertainment realm into that of feint and malicia.

Observing Jit and Mbende dances in my current project I noticed how the movement is not entirely in sync with the beat. Sometimes the movement is faster or slower than the beat. There seems to be another space within the whole process that is neither music nor movement. What is this space ? This gap ? What does it hold? In Mbende/Jerusarema you see similar phenomena at play, where gestures are located in between beats there are designed to exist in the gaps. Why is this? The real dance exists in the craft of negotiating between the music and the movement creating a new space in which the 'dance' (the essence and meaning of movement) can exist.

This ephemeral space exists to show several things. First, that the music and the movement are more of pillars that create the framework in which the essence and the message of the movement (that is dance) may potentially exist. The dance is the epiphenomenal quality that is located in between the music and the movement. In my current work I introduce sculpture as another pillar in addition to music and movement. Similar to the distillation process that separates different components making up a substance, the dance process in this context exists respectively in alchemical function. In context of dances of 'Resistance,' the intangible scientific and political material that exists among the movement the music and sometimes the sculpture is the elixir that we call dance. The body being a repository of memory, history, culture and various socio-political aspirations usually finds a site

of negotiation in dance, enabling it to aestheticize the complex information stored in it. This somatic Archive usually makes use of the ephemeral gap between the movement and the music to create what could become dance. This form goes beyond entertainment and lands somewhere in between strategy and therapy. Kodwo Eshun says "Humans are entire Galaxies of processes;" sometimes we attain glimpses of these processes in the site of 'Dance'.

Zora Neale Hurston says of African American Dance "No matter how violent it looks it always seems to suggest that it can do more." Master Loka, a Brazilian Capoerista, says "Capoeira is a dance where the fighting is always lingering in the background." Similar to Mbende/Jerusarema, Capoeira was criminalized by the Portuguese colonial government in Brazil many times. This portent martial Arts and revolutionary tool would be presented as mere dance in the face of the colonizer. Like most dance forms of resistance, the essence of the dance in Capoeira exists in between music from the 'Berimbau' and the martial-arts-like movement.

There are aestheticized arsenals and euphemized lexicons of warfare and strategy packaged within most of oppressed or colonized peoples' dances, which could be described as nascent indicators in intentional revolt and struggle. Capoeira, for instance, especially Capoeira Angola, looks like entertainment but is actually a site of euphemized revolutionary processes expressed by the body with several shades of subtle and aestheticized warfare towards a dominant aggressor. In colonial Brazil, Capoeira was seen as a threat to the plantation system. Because of this its teaching was banned. As a result, Capoeira was put to music and disguised as a dance. The military and revolutionary underbelly of this type of dance is also evidenced by the criminalization of Mbende/Jerusarema in 1910 in Rhodesia. Most colonial governments are quick to censor what they deem violent or sexual elements of culture, especially in dance. This attempted sanitization and cultural curatorship is based on the discomfort caused by most of these dances to colonial and oppressive regimes.

Building Trust in Legacy Institutions with Digital Experience Design

MEGAN FREUND

education, design, experience design, ux design, change management, transformation

The goal of my current work is to transform preconceived notions of traditional educational institutions through digital experience design. Considered digital experiences are a hallmark of the tech industry. Market share is primarily driven by the ease with which products and services are discovered, purchased and delivered to customers. As service expectations rise, consumers instill trust in organizations offering superior service experiences. So what might design educators learn from tech's example? A thoughtfully designed digital experience has the potential to profoundly impact student behavior.

A project I recently completed in the culinary education space brought a suite of digital features to an industry largely overlooked by technological innovation. This particular institute lacked a digital interface for student interaction and relied on manual processes for enrollment and record keeping. I reimagined the service experience by installing a digital "introduction" into the student journey. This experiential component bridged the discovery and purchase phases. It comprised of user account tools for carrying out basic support functions, a companion mobile site and clear points of entry for various student audiences to accomplish goals. This resulted in increased student enrollment, improved educational outcomes and increased confidence in the institution.

As digital natives constitute a larger portion of the student population, it's critical that educational institutions recognize the influence of designed digital experience in garnering student fidelity.

Adaptive AI-Driven Design: The Rebirth of Design Hacking

MEIRA CHEFITZ

AI-driven design, decision making, adaptive products

When users repurpose a design artifact, they add functions to a design. In turn, a designer may update a design to accommodate the repurposing. Think Ikea hacks. A modular design remains the same throughout the seasons, but a cabinet can become a litter box and a shelf can become a bike rack. Alternatively, a designer may choose to redesign to limit the repurposing. Public benches with guard rails or inclined seats are a deliberate attempt to disallow repurposing of a bench into a cot—or merely an extended stay.

I'm interested in the application of these decisions when designing AI-driven products. Artificial intelligence can become a critical component of software or service related artifacts. AI could theoretically allow for a repurposing of products beyond what the design intended. If not this extreme, it would permit for user experiences that the designer had not conceived. To account for this, designers must choose to set limits at conception and through iteration, or choose to omit restrictions. I'm interested in the designer's process of making these decisions as well as the impact that the decisions have on user relationships with products. In particular, I am interested in how we teach this area of design research to designers. This is a topic that encompasses design process, decision making, and organizational structure.

Design Research and the Borrowing of Methodologies

MICHAEL LAHEY

cultural studies, design, design education, design research, methodology

Aiming to grapple with the question, "What is not design research?" is a vexing and thorny dilemma namely because what counts as design research seems ill-defined in its clearest moments.

To be sure, "design research" is a contestable phrase that shares something in common with the transdisciplinary field of "cultural studies." Both are seen as hybrid fields that borrow methods and insights from established disciplines. This means that we can see design research and/or cultural studies scholarship pop up in a wide range of academic disciplines.

First, I will chart the similarities between cultural studies and design research as a way to broadly define the loose strands that hold design research together. Second, I will point out some of the commitments to self-reflexive definition building that cultural studies scholars have done through conferences and journals as a way to offer some cohesion to their bricolage of theories, methods, and ideas.

The goal of comparing and contrasting design research and cultural studies would be to lay a foundation to chart the various methods that count as design research. Additionally, this would allow us to take the tentative steps toward understanding how comfortably the odd mishmash of theories from anthropology, computer science, fine art, and psychology live under the same umbrella. Finally, we might ask who is qualified to teach design research if design research borrows from such disparate domains.

The Abstraction of the Individual

NICOLE BEATTIE

public housing, chile, chilean history, mapping, urban planning, architecture, sunlight, mass production, individual scale

As part of my doctoral research work on public housing development in Chile, I gathered data to create my own maps of the cities and public housing developments visited using Geographic Information System (ArchGIS). These maps were created using existing government metadata for purposes of accuracy and scale. Borrowing from James C. Scott ideas in his book Seeing Like a State, about how map-making by necessity highlights what is relevant to the mapmaker leaving other information out, I decided to test Scott's idea by zooming in on the city maps I had created. A main hypothesis in my thesis stipulates that at the strategic planning level, public housing development in Chile is missing important information that would lead to more site-sensitive design projects. The question being, where is the information getting lost? To try to answer this question I created a series of design diagrams following a progressive close-up of the city maps from the regional scale to the level of individual public home. Given the scale and graphic choices made at the regional scale this ended up eliminating the specificity of each resident as I zoomed in. By using Artistic/Design Research to caricature an underlying condition in the public housing design process I was able to visually synthesize what each family, with its individual characteristics and needs appears for the planning team, a collapsed square of flat red paint. In an increasingly visual culture, image making (as well as image omission) are powerful social movers (or paralyzers) and is an area where artistic/design research can prove to be a formidable investigation tool.

Applying Design Research in Community Development and City Building

OLGA SEMENOVYCH

community development, city building, innovation

Given my background in urban planning, I have been interested in exploring how to apply design research methods and approaches to innovate community development and city building. These processes are often dominated by expert-driven policy agendas, funder-prescribed mandates and "starchitect"-led large-scale developments, and as a result, end up producing same old solutions that are far removed from the lived experiences of people they are meant to benefit. Design research provides an opportunity to ask new questions, incorporate more diverse voices, and develop more actionable local projects that connect to systemic change.

At Groundswell Projects we are working in two ways to support this. One is by applying design research methods in citizen engagement and community consultation processes. We have been able to demonstrate the value of creative and human-centred methods in producing more meaningful resident input for urban design and development projects. The second is working more deeply with local champion organizations that are embedded within communities but are also connected into the policy dialogue. For example, we have been supporting a food bank in developing sustainable food security solutions through design research initiatives. We helped to explore social enterprise opportunities that would reframe the role of the food bank and leverage its existing strengths in food distribution and delivery. Currently we are supporting the development of a community supermarket in a low-income neighborhood, where we engaged a diverse stakeholder group in a design exercise to envision a variety of solutions for addressing local food access and related social needs.

Cognitive Processes And Latent Knowledge Structures In Design Methods And Interpretation

PHILIP PLOWRIGHT

architecture, cognitive linguistics, qualitative analysis, design thinking, cognitive structure, semantics, methodology

The work described in this abstract is not design that uses research but research that studies design. The purpose of the work is to bring structure and firmness to aspects of design that we do not believe, falsely, is describable. This has generated two major directions, namely 1) the study of the cognitive structure and tools found in design methods (process), and 2) the investigation of value structures found as latent knowledge in architecture (interpretation). The first project uses cognitive theory and grounded theory to analyze case-studies through decomposition, identifying core operations in design methods. Abandoning the attempt to document methods used in architectural design, the research instead focused on the larger cognitive frameworks and reoccurring tactics that where shared between methods. The outcome showed persistent, underlying frameworks that are orientated to certain information structures. The second direction applies methods and theory based in discourse analysis and cognitive linguistics. Critical Discourse Analysis (CDA), Latent Semantic Analysis (LSA) and Conceptual Metaphor Theory (CMT) are applied to study value systems found in design disciplines. CMT, in particular, allows reveals conceptual patterns of metaphors found in human cognitive space that form foundational mechanisms of thinking built on sensori-motor and environmental schema and gestalts. This project traces latent metaphor instances back to established schemata structures and suggests that while architectural discourse can be considered to be specific to the discipline and maintains exclusionary style and terminology, that discourse is built upon the same cognitive structure as all other use of the English language.

Why We Have to Do Research When We Are Designing

RAN XU
graphic design, artistic design, art and science

It's being a long time that I have been interested in designing research as a topic. The theoretical system of art&design has now become more and more mature and complete, unlike in the old times, designers have been groping in the dark. The answer to how the contemporary designers improve their self-ability and how to complete a mature design has been answered by studying designing research.

Different from other subjects, the process of designing research is not only based on abstract data but also the reaction of data or visual referent in the designer's brain, this process it's a coexistence of Rationality and Sensibility, because design should be the product of the unification of science and art.[Zhan Jun, Don. 2012. The history of modern western design art. Second edition. Shandong, China: The Shandong Education Press.] On the one hand, the design must be quite logical, when you track back to the reason for any result of design, it should always be reasonable, on the other hand, designing also should have the perceptual part, providing the visual enjoyment for their audience, making a design not a cold tool but a masterpiece of human nature. These two points are the prerequisite of a great design in my view so far.

Therefore, the reason why designers need to do research in art studying, it is to precisely repeat the exercise of their logical thinking and the ability to create beauty. In the specific case study, to see the information, to communicate with other designers, to get the final results or conclusions step by step, then, not only the final result or conclusion is important, but also this process will help us to gain a lot.

Play for Desirable Futures

ROLAND GRAF

playful interactivity, speculative design, technology development

Playful interactivity can be an effective strategy to engage a wider public with critical topics and speculative ideas. To what extent, however, can speculative play and design also be a "serious" strategy for the development of new technologies or future modes of human interactions? Building on findings of two case studies of speculative design projects that led to patent applications — "Solar Pink Pong" and "Internet of Shoes" — I started to explore what might appear to be a highly speculative question itself: can the extensive research on the benefits of play in childhood development (i.e. the ability to creatively adapt to, survive, thrive in and shape social and physical environments even in unpredictable or stressful situations) serve as a lens for technology development vis-à-vis uncertain future scenarios? In other words, could more play elements in engineering and design practice and education better train for the unexpected and help to prototype and build more effectively and more often desirable futures?

Design Research to Align Organizations' Values with the People they Serve

RUTH SILVER

design research, values, ethics, organizational change, design criteria, decision making, futures, foresight

For more than 10 years we've been using Design Research methodology to help clients ask better questions, understand the people they care about most and to change from the outside in. The clients who've chosen to work with us at Groundswell Projects are predominantly those who've realized the world around them has changed and they need to adapt in order to survive. Our best work takes a long time and requires our client to take risks, it's not for everybody. Essentially the best projects boil down to examining an organization's reason to exist, the resources they have and the people they serve. We help them define these in terms of values so that they can make values based decisions about their future. Working cross sectorally, but with clients all set out to make the world a better place, we are starting to collect and define values of the future. This practice is about defining design research by doing design research. More and more, our practice includes more than consulting, but teaching and disseminating these new values within organizations.

Thinking through Making

SANTANU MAJUMDAR

making, analyzing, collaborative, multidisciplinary,
hands-on experience, holistic approach

Design is a creative process through acts of making. Drawing the initial sketch of a fuzzy idea is the start of an engagement that can begin to take a form or shape on a sketchbook or a paper towel. The initial doodle begins its road to realization through various permutations and combinations of these fuzzy ideas. Present day design students might have a partial understanding of design as a topic, but not enough grasp of the discipline to articulate an individual and original response sometimes. Students do not acquire in-depth knowledge of the conceptual side of design through traditional teaching practices such as only lectures and/or computer generated assignments. Students will more likely come up with new ideas and interesting concepts in a more an active learning process that includes hands-on engagement. Design knowledge is always context driven, which is acquired through analytical thinking, experiencing challenges and involvement in real-world situations.

An emphasis should be given to the translation of concepts into form by a step-by-step process that is carefully crafted through hands-on learning experience that will enhance students' design thinking ability. It is becoming increasingly common in design schools to investigative case studies and practice method and problem-based learning, replacing traditional teaching methods. It has been observed over a period of time that students often struggle to translate in-depth understanding acquired through lectures into a usable form that is required by the professional design practice. Thus, learning outcomes through critical thinking and problem-solving have become particularly important. Engaging students in a variety of large-scale multidisciplinary hands-on projects can achieve this outcome.

A well-thought design activity and assignments not only will allow students to acquire foundational knowledge but also will allow students to think like a professional designers. The investigative learning assignments help students understand design research,

allow them to value assigned work and understand its relevance and application to real-life situations. As a result, students not only will invest time and effort in their assigned work but also will recognize the experiences provided by their teachers as valuable. Design innovations are rarely found among young inexperienced design students who only follow assignment requirements. A lack of genuine curiosity, exploration and reading habits make students teacher dependent and less innovative. The young generation of design students should not limit their imagination and aptitudes by framing their domain of design only within their comfort zone.

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Focused Research and Community Outreach in College-level Foundational Design Courses

SHELI PETERSEN, CARLEY PETERSEN-DURDEN

focused research and aesthetics, community outreach, service leadership

The traditional Bauhaus model remains a key pedagogical tool in helping students hone visual language skills in "reading" and "speaking" imagery. In today's world, it's also essential that entry-level students bring focused research, innovative ideas, and aesthetics to solving real-world problems for the betterment of their community. This wholistic approach to foundational design courses prepares students for service leadership in the 21st century.

In Spring 2018, my Peru State College 2D Design class created posters for the Power of Wind Exhibition, hosted by the University of Nebraska-Lincoln Kimmel Education & Research Center. 460 POW entries, including art, poetry, and design from 30 countries and K-16 regional schools, educated viewers interested in traditional and alternative energy. After researching specific aspects of Wind Technology, students fused content with imagery to produce powerfully-messaged designs.

My Fall 2017 PSC Graphic Design class created display panels for the College Marketing Office highlighting PSC's acceptance of African-Americans during the early 20th century. While the College broke ground fostering educational opportunities for black students, little was recorded of their progress. Nonetheless, the Design class incorporated information about John H. Miller, a civil war veteran, and Eulalia Overall, an Omaha public school teacher, to posthumously celebrate their accomplishments.

Students researching and developing community-based projects engage in real-world learning and produce impactful design. Through discussion at the AIGA Decipher Conference, I will share strategies for combining aesthetics with research to make

community outreach a key component of foundational design courses. In my new position as Graphic Design faculty at Texas Woman's University, I will expand the use of research in advanced and graduate courses to promote student leadership in local and regional communities. I invite input from peers regarding their own pedagogical approaches to enhancing community through aesthetic innovation.

Smartphone as a Design Research Tool

SHIRIN RABAN

physical, experience, digital, research, Storytelling, collaboration, culture, film, smartphone, history

The challenge I see as a graphic design educator is that students search the first page of Google without in-depth questioning before addressing design projects. I would like to start a dialogue about design research that bridges the gap between "physical and digital experiences"[1] to help students become more agile with their research methods. One versatile research tool most students have in their pocket is their smartphone. When students are out and about, they get to curate their own experience of environments. The smartphone provides that lens they choose to see the world through as they film sections of that experience. During an experimental visual storytelling workshop I designed for my Design History in Context students, three students filmed sections of Venice Beach on their smartphones. The prompt was to explain a local culture in a collaborative short film[2]. The smartphone became a powerful research tool in revealing new meanings through each student's own artistic and international lens. The Italian architect focused on the canals and building murals, the Greek communication specialist sought the people, and the Turkish painter followed the communicator's interactions and explorations of the area. Students unified their collaborative footage of real life events and historical paintings into a four-minute black and white musical film. Without any words they created an experiential history of Venice Beach, an accurate reflection of conversations in our times. I am looking forward to discussions regarding finding agency in defining design research contexts.

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culture ethnographic research. Thanks to Nancy Larrew who kindly allowed us to use her beautiful studio for learning about various storytelling methods and then editing the film in collaboration. Thanks to my colleague, Marguerite Courtney, for lending her editing expertise in articulating this proposal.

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Designing for Pediatric Patients with Chronic Illness

SUN YOUNG PARK

healthcare, pediatric patients, human-computer interaction, socio-technical systems

My research lies at the intersection of HCI, Design, and Health Informatics. Specifically, I'm interested in designing human-centered technology that enables people to gain and develop more informed relationships with their health data, and examining socio-technological impacts of health technology in both clinical and non-clinical settings. In my current research, I study designing a health communication technology for pediatric patients with chronic illness not only to improve their information-sharing with their caregivers and providers but also to help their communication about their emotional, social, and other relevant needs in daily lives. Involvement of pediatric patients is not sufficiently supported in the current practice because pediatric patients lack the abilities to express their needs, manage their treatment, and make appropriate health decisions. Furthermore, existing mobile health applications and online tools enable learning about health information and provide distractions from pain, yet provide little support for pediatric patients in terms of what information should be shared, how to communicate the information, and how to express their needs.

The long-term goals of my research are 1) to understand the ways in which pediatric patients communicate and share health-related information with their caregivers and clinicians; 2) to help pediatric patients become active communicators and participants in their own care; and 3) to inform clinicians of the information needs and emotional sensitivities of pediatric patients in order to provide better care.

Developing A Research Method To Study Cultural Influences In Visual Forms

SUNGHYUN R. KANG
Professor of Graphic Design, College of Design, Iowa State University

research methods. cultural artifact, cross-culture, visual forms

Even though some countries share similar roots in religion and philosophy, those countries' arts, customs, and languages are often different. Designing visual information and experience requires more in-depth understanding, not only of design and technology but also of human behavior and culture as known are bound up in each other (Winston, 209). This study will share the journey of answering the two following hypotheses; 1) familiar visual elements which can be easily found in the living environment or from cultural inheritance will create a more comfortable feeling, and people will be attracted to these familiar visual elements and 2) familiar visual elements which can be easily found in the living environment or from cultural inheritance will not have visual attention or appeal because people see it as old rather than new. The first step was to collect images and forms from three countries in which have similar influences from religion, art, and philosophy. These visual elements often appeared in the building, customs, products, etc. Also, those visual forms have been adopted by various media including websites, corporate identity symbols, posters, etc. The second step was to identify the visual forms that can be recognized by people who share the same history, culture, and living environment. The initial study was done to verify the relevance of the selected images in one country and data is collected from one hundred people through face to face interviews. The research process and methods will be introduced along with the initial data.

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Where the Rubber Meets the Road: Teaching Design Research Outside of a Traditional Academic Classroom while Inside Academia

SUSAN SPRARAGEN
user research, teaching, design research, educators

THE CHALLENGES OF TEACHING DESIGN RESEARCH

Design research is a process that requires an open mindset that welcomes the discovery of user interactions, reactions, and outcomes emerging from an often transient, socio – technical environment. The craft of conducting research becomes mature and most impactful with the appreciation of cognitive science, human factors engineering, empathy, and keen observation skills.

Organizations frequently need to conduct design research, but they may not recognize that need nor have enough researchers to perform the work. Providing onsite in-house training is one approach for bridging this chasm. As a UX researcher and instructor tasked with delivering this training, I am discovering a myriad of challenges. I often find myself seeking the optimal fulcrum between teaching research fundamentals and giving the class time to conduct focused practice on a research method, like conducting user interviews. At the end of the class, students should have an increased awareness of the research design craft and enough confidence and desire to learn more so they can apply their learnings to their projects. My aspirations are high while my class time is constrained to three hours. I tweak lesson plans, incorporate student feedback, and offer communication channels beyond the class with each class iteration all while wondering if the next class will be well balanced between learning and doing design research.

I am curious to learn how others teach design research. During this AIGA conference I look to share lesson examples, build on my teaching know-how, join activity groups, and meet design educators!

Design data? Possibilities and Pitfalls

TANIA SCHLATTER
visual communication design, interaction design, information design, design education, design research, design data, user centered design, UX, design practice

I wear two hats professionally. I work as the UX & UI lead in a team of software developers. I conduct research (interviews, create and evaluate conceptual prototypes, facilitate participatory design sessions, design and conduct usability tests), and lead two design researchers. Our work is to design tools for (traditional, science-based) researchers. Our largest and most successful tool is Dataverse, open source data repository software. There is a Dataverse installation at Harvard, and at 33 other organizations around the world. I wonder what implications for visual communication design might be if "data" from design research were archived, and shared, as in a Dataverse.

In my other role, I teach information and interaction design to students at Northeastern University. I teach design research practices as part of the artifact creation processes that are the emphasis of courses. I worry about teaching design research methods sufficiently. Materials and examples are readily available, but time is short, and there are no clear standards.

When we talk about design research, I wonder if "scholarly" design research is accessible. Unlike what I'll call practical UX or UCD design research, scholarly design research is hard to find, can be expensive, and hard to read. Topics tend to be obscure. These concerns parallel pitfalls of non-design scholarly research and publishing, which is in flux. Practical design research is vital to interactive design practice today. What can we learn from research-based disciplines, and practical (UX/UCD) design research to help inform, and model active, relevant scholarly design research?

Teaching Interdisciplinary Design Research

TRACI RIDER

interdisciplinary, research education, research paradigms, research methods, practice-based research

The line is often blurred between design research and design practice. Research and exploring design alternatives become confused. Understanding the best way to frame and scaffold design research education at the doctorate level, particularly within an interdisciplinary design group, is a challenge. Within the interdisciplinary PhD in Design and emerging Doctor of Design (DDes) programs at North Carolina State University, we strive to provide a strong foundation to those interested in design research, interested in both academic and professional futures. I am interested in sharing our processes and practices, and hearing about how others immersed in research are approaching the development of a strong research foundation across experience levels, interests and fields in design.

Specifically, the foundational courses I teach in both programs are geared toward the framing and basics of how to do design research. We start with paradigms, generating different types of knowledge, and theoretical perspectives, then segue into a review of potential methods from simulation to ethnography and beyond, establishing a toolkit for our students and future researchers. With the implementation of our new DDes program, a distance learning program for practitioners, which joins our on-campus PhD program, synergies and challenges are emerging between the two degrees focused on industry and academia, respectively.

With research gaining momentum, I am interested in conversations that can help our students frame inquiries that support both academia and practice, advocate for strength in design research, and help to further establish the value of research in the design fields.

Spreading Understanding of and Appreciation for Good Design

VINCENT QIU

design, research, dissemination, teaching, advocacy, perspective, interdisciplinary, integration

Good design makes the difference between an obtuse tool that slows us down and an intuitive tool that enhances our ability to work effectively and efficiently. Too often, I see poorly designed tools taking up space and their corresponding users getting frustrated until either resigning themselves to accept and deal with the ineffectual objects or being forced to seek another means of tackling their task. However, what I do not often see is sufficient praise given to well-designed tools, and this implies to me a lack of understanding on the part of the population of the true value of good design. Consequently, I believe that it is important to educate people on this topic and to integrate robust design methods into more disciplines. Furthermore, I believe that spreading the understanding of and appreciation for good design is essential for the overall continued health and development of the field. It would motivate more individuals to pursue design research, would foster greater support for design research efforts, and would promote further sharing of design and design research topics. How best to go about working towards these ends, however, is an area where I do not have much knowledge or experience. I hope to devote at least some portion of my graduate education to learning, researching, and exploring methods for realizing these goals.

Putting it All Together

VINICIUS LIMA

design research, promotion, tenure, scholarship, creative work, doing

Although I am fortunate to be a part of an institution that defines research in design in an expansive fashion, I have been observing a personal need to frame my opportunities within a wealth of provided options. When looking at the themes for Decipher 2018, I have an interest in all areas. But looking at it with a practical eye, the "Doing" theme interests me the most.

I am a faculty at a teaching institution. The university expects that faculty will uphold the teacher-scholar model by having an active scholarship program that will inform their teaching. Additionally, this practice must be peer-reviewed.

Since starting, I have worked in a variety of projects: self-initiated pieces, experimental work, exhibitions, academic papers, conference presentations, design award submissions, interdisciplinary collaborations. I am thankful for the chance I was granted to work in such a diverse scope of work and receiving recognition for most of it. But with diversity may come to a sense of divergence as well. To me, these projects do not feel like part of a single program.

Having a unified research agenda would benefit future dissemination plans, define possible collaborators, and frame my practice for an upcoming tenure process. Moreover, I hope that attending Decipher will help me understand my opportunities to bring design research into the classroom. Being through leveraging the AIGA Designer 2025 themes in my research or understanding other practices that could inform the ways I teach students.

Realigning Gestalt Theory and Design Practice

XINRAN HU

gestalt, eye-tracking, visual principles, apply, design

As a student, I learned Gestalt visual principles; as a designer, I apply those principles to my work; as a design educator, I have taught Gestalt principles for over 15 years. But recently when I used an eye tracker to test how viewers see Gestalt visual patterns and design works applying those visual principles, I was surprised to discover a gap between understanding Gestalt visual principles and applying them to design works. My research addresses using an eye tracker to discover how viewers respond to Gestalt visual principles so that we can apply Gestalt theory to design practice more specifically and effectively.

Visual Translation: Typographic Study on Cross-Cultural Branding

YVONNE CAO

cross-cultural, typography, branding, chinese, teaching/education

When an American brand attempts to expand its market overseas, it needs to translate the brand into the local language in order for it to be understood by the new market. It is often difficult, however, for graphic designers to find a typeface in the local language to match the look of their English brand identity. This is particularly significant in Asian and other countries that do not use the Roman alphabet. My research "Visual Translation" seeks to identify US brands that require more work on their overseas brand identities and to provide creative solutions for the problem. It develops smooth transitional type design methodologies for the designer who is working in a cross-cultural environment for international brands.

The logo of a multinational brand needs to be recognizable in any language, which is why so much time and effort goes into developing a strong design. But it's still fun to see what Subway's logo looks like in Chinese, or what FedEx looks like in Arabic. Based on the number of global companies that have rendered their brand marks in local languages and alphabets as they expand to foreign markets. Logos evidently don't operate on quite such an abstract level after all; they are ultimately linguistic artifacts and must be reckoned with as such. How do you render a famous brand mark in a new language and/or alphabet, while preserving its general look and character? So, we have a great design challenge.