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**C05**

University of Washington Master of Human  
Computer Interaction & Design

## Research Report

Team: Eclair Junchaya / Hy Nguyen / Ricardo Paz  
Capstone Sponsor: Eve Weinberg / Frog

# Exploring the Knowledge Gap Between the World of HCI Academia and Industry





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# **Executive Summary**





## Executive Summary

The research-practice gap is the divide that exists in between academic HCI research and the usage and implementation of these findings by practitioners.

This research is set out to gain a deeper understanding of the factors in the gap and uncover potential opportunities that exist to reduce this gap.

This report is showcasing the results of our 3 month primary and secondary research. We will be going over the subject matter experts we interviewed and our 12 participants. We conducted semi-structured interviews, and drove a directed storytelling component to uncover the narratives of current practitioners and academics from the HCID community. Furthermore, we conducted cognitive walkthrough of how they might go begin their processes and academic sources.

Currently our data centers around the idea of discovery and curation. We have identified that current practitioners have issues with discovering and curating information that they might use for personal and professional practice, due to many sources existing. Additionally professional and personal mentorships play an important role in assisting with this search and curation for industry and academic information.

There were six main insights that were identified after synthesizing our results from the 12 participant, 4 expert interviews, and 3 informal interviews with industry experts.

- The abundance of sources prevents designers from finding, using and implementing academic HCI research
- Mutual efforts from industry and academia promote discourse and knowledge sharing
- Mentors curate knowledge for mentees to advance their professional careers and academic knowledge
- Open communication between researchers and designers can be established by first-hand experience to research
- Popular design and research books help establish common values and goals between people from different academic and industry backgrounds
- Strong ties online lead to more resource sharing and in-person interactions within and between academic and industry communities of practice



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# **Literature Review**



## Literature Review



**There are many contributing factors that constitute the HCI academic and practice gap**



## Literature Review

The academic-practice gap in HCI persists because of various barriers that prevent access, understanding, and adoption of research in academia in industry. The barriers that discourage increased usage of academic literature include: content, accessibility, and lack of translational resources to help connect the two worlds. [2, 3, 5, 7] While current academic research papers offer a wealth of interesting design concepts and implications in the HCI field, the academic style of writing often feels inapplicable and overwhelming, undermining the practitioners interest in diving into seemingly dense material, especially under stringent time and resource constraints. Similarly, some practitioners note the issue in discovering relevant information, and extracting the resources they find into high-level insights and valuable knowledge from these academic sources. [7]

**The wealth of knowledge  
that exists in HCI research  
would serve to benefit both  
communities of practice**



## Literature Review

Though there is a seeming misunderstanding of one another's goals, both sides would benefit from improved collaboration and communication. The flow of information within the intersection of these two communities of practice presents itself as an opportunity space that we hope to explore. [2] A discipline that can better translate the content and accessibility of the academic research material into industry would help both communities align their values more easily. [3, 7] The role of HCI students that enter the industry and their continued relationship with their academic mentors serve as a unique human bridge to further the efforts in reducing the gap. These relationships act play an important role in also fostering the growth of the parties involved as well as gain an understanding for other practices. [10]

While the content and access of the material presents itself as a divide between research and academia, there is also a misalignment in the beliefs of one another's values. There are multiple studies that have investigated this problem space and the results demonstrate an overwhelming commonality in demonstrating this apparent skepticism that lies in both communities of one another's intentions [1, 2, 3, 5, 7]. While the work of academic researchers is valued in the HCI academic community, their belief is that their work is undervalued and mistreated the practicing community. On the other end of the spectrum, researchers and designers in the practicing community view the work of researchers in academia to be unbounded by real-world constraints, and inapplicable to the problems that they face in industry [1, 2, 5].

The HCI practice community would serve to benefit from the knowledge generated by HCI academic research. [6] The volume of the ideas generated itself could serve to inform innovations and fruitful discourse in in the HCI community between all parties. [4] The democratization of this research into forms that are digestible and relatable for all parties involved could help bring forth a future in HCI that is collaborative and intellectually stimulating. One conversation between those seeking knowledge and those with the expertise to provide guidance can streamline the research and implementation process.

**Enhancing discoverability of the values shared from academic to practice would foster better communication and relationships between the two communities**



## Literature Review

Though many of the aforementioned contributing issues toward the gap are systematic and administrative, the relationship between the academic and industry communities of practice are distinctly human. This research seeks to uncover how the values of the two communities can be aligned and communicated in a more engaging and transparent manner. A future look into methods to ameliorate the relationship between academic and practitioners in HCI is the most promising method [4, 6] to promote ways in which their knowledge and expertise can be shared with one another.



# Competitive Analysis

To better understand potential design opportunities and the current market, we conducted a competitive analysis on knowledge sharing resources.





## Competitive Analysis

Specifically, we looked at products and platforms currently used by designers and researchers to share, learn, and communicate ideas. Based on personal knowledge, consultation with our sponsor, and expert interviews, we geared our focus towards the following main product categories with the corresponding subgoals:

Visual Galleries - learn of ways designers currently find visual inspiration

Research Database - to see how researchers and academics share, collaborate, and communicate with one another.

Design Toolkits - see how designers use existing research and design frameworks in their processes

Blogs - to see how industry trends are being shared to designers and the public.

Massive Open Online Courses (MOOCs) - see how professionals learn and seek new knowledge through online courses.

**In each category, we investigated at least two most commonly known products:**

**1. Visual Galleries**

dribbble  
Behance

**2. Research Database**

ResearchGate  
Academia.edu  
Google Scholars

**3. Design Toolkits**

IDEO  
Google Sprint Kit

**4. Blogs**

Medium  
Designer News  
Google Design Blog

**5. MOOCs**

Udemy  
Udacity  
Lynda  
Skillshare  
Coursera

# 1. Visual Galleries



### / Dribbble

An online community for showcasing user-made artwork. This platform informs its audience through metadata tagging on what type if style or medium the content is created in which allows for the exclusive community to engage in their preferred source of inspiration.



### / Behance

A network of sites and services specializing in self-promotion, consulting, and online portfolio sites. This platform offers a collection of different specializations, and also facilitates what tools were used in the making to better direct their audience to potentially be invested in it.

# 2. Research Databases

### / Researchgate

A social networking site for scientists and researchers to share papers. The information is conveyed at a very high technical level that does not seem as actionable.

### / Google Scholar

A freely accessible web search engine that indexes the full text or meta-data of scholarly literature across an array of publishing formats and disciplines. Being that it is the most widely used database it struggles to define what users should be using and how it defines the quality of the research.

### / Academia.edu

A social networking site for academics. The information is conveyed at a very high technical level that does not seem as actionable.



# 3. Design Toolkits

### / IDEO Design Toolkit

IDEO.org's platform to learn human-centered design, a creative approach to solving the world's most difficult problems. Establishing precedence in the design community for how their toolkit is used, they act as a boiler plate for the design community.

### / Google Design Sprint Kit

Google's framework that supports both divergent thinking and convergent thinking, condensed from 300 different business strategy, design thinking and user research methods. Gives a breadth of methods that are in parallel with the current pace of the tech industry.



## 4. Blogs/Communities

### **/ Medium**

Online publishing platform. Offers a range of interpretations on how the self published authors generate information based on opinions or secondary research

### **/ Designer News**

Online links aggregation website catered specifically to designers. Designers gain most insights of new trends and ideas through this forum link based database

### **/ Google Design Blog**

Google's collective of design writings, resources, news. Allows of designers to shape their practices by informing them about how the company informs its design process.



# 5. MOOCs

### / Udemy

Online learning platform for professional adults. Allows for proactive users to participate in accelerated learning to help to shape their practices by informing them about new topic areas and how to implement them.

### / Udacity

Massive open online courses for working professionals. Allows for proactive users to become accredited in topic area with in hopes of encouraging users to apply for employment that require technical skills.

### / Lynda

Massive open online courses for working professionals, acquired by LinkedIn, owned by Microsoft. The platform has less of a expedited learning goal and users have options that facilitate soft and hard skills

### / Skillshare

e-learning community with more popular body of artists, including YouTube famous experts. Has a primary goal of making creative applications seem more approachable throughout learning process because of the more "friendly" walkthroughs

### / Coursera

Courses from universities and big tech companies; current biggest e-learning platform. Under the partnerships of the academic stakeholders who use this service, it makes users feel as they are learning at a more in depth level.





# Research Overview

**In order to learn more about the current methods and views practitioners currently adopt in their research process, we conducted a series of research activities with academic and industry HCI experts, and design and research practitioners.**



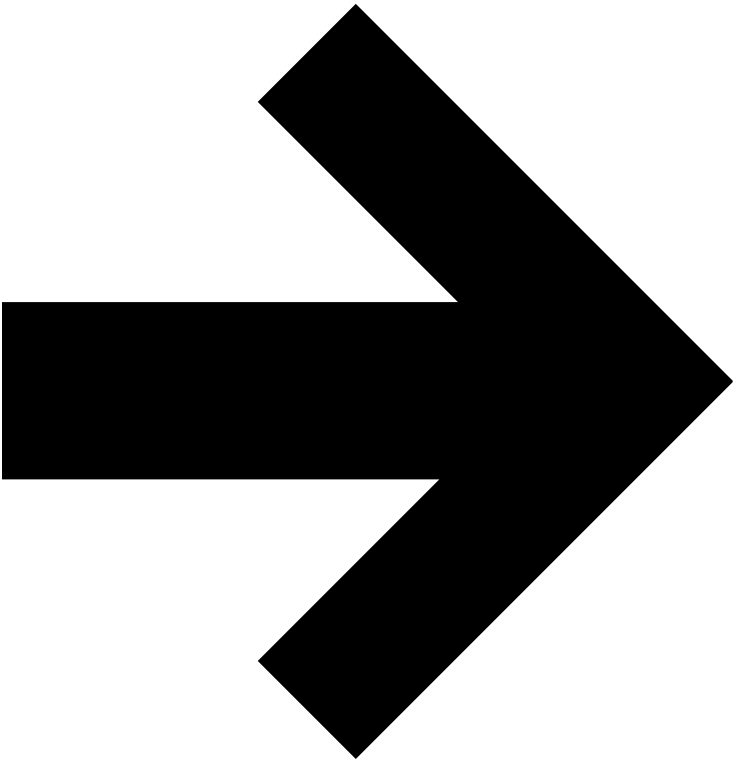
# Initial Research Questions

What aspects of academic research papers do design practitioners view as most important in their design process or decisions?

What are the current frustrations in the process of communication between practitioners and academics?



# Challenge



# **How might we improve knowledge sharing between UX designers and HCI academics?**



# Expert Profiles

These are the leading academics exploring the gap  
between HCI industry and HCI academia.



**/ Andrew J. Ko, Ph.D.**  
**/ Daniella Kim, Ph.D.**  
**/ Erik Stolterman, Ph.D.**  
**/ Gary Hsieh, Ph.D.**

A portrait of Andy Ko, Ph.D., a man with dark, wavy hair and glasses, smiling. He is wearing a blue button-down shirt. The background is slightly blurred, showing a poster on the left and a shelf on the right.

# Andy Ko, Ph.D

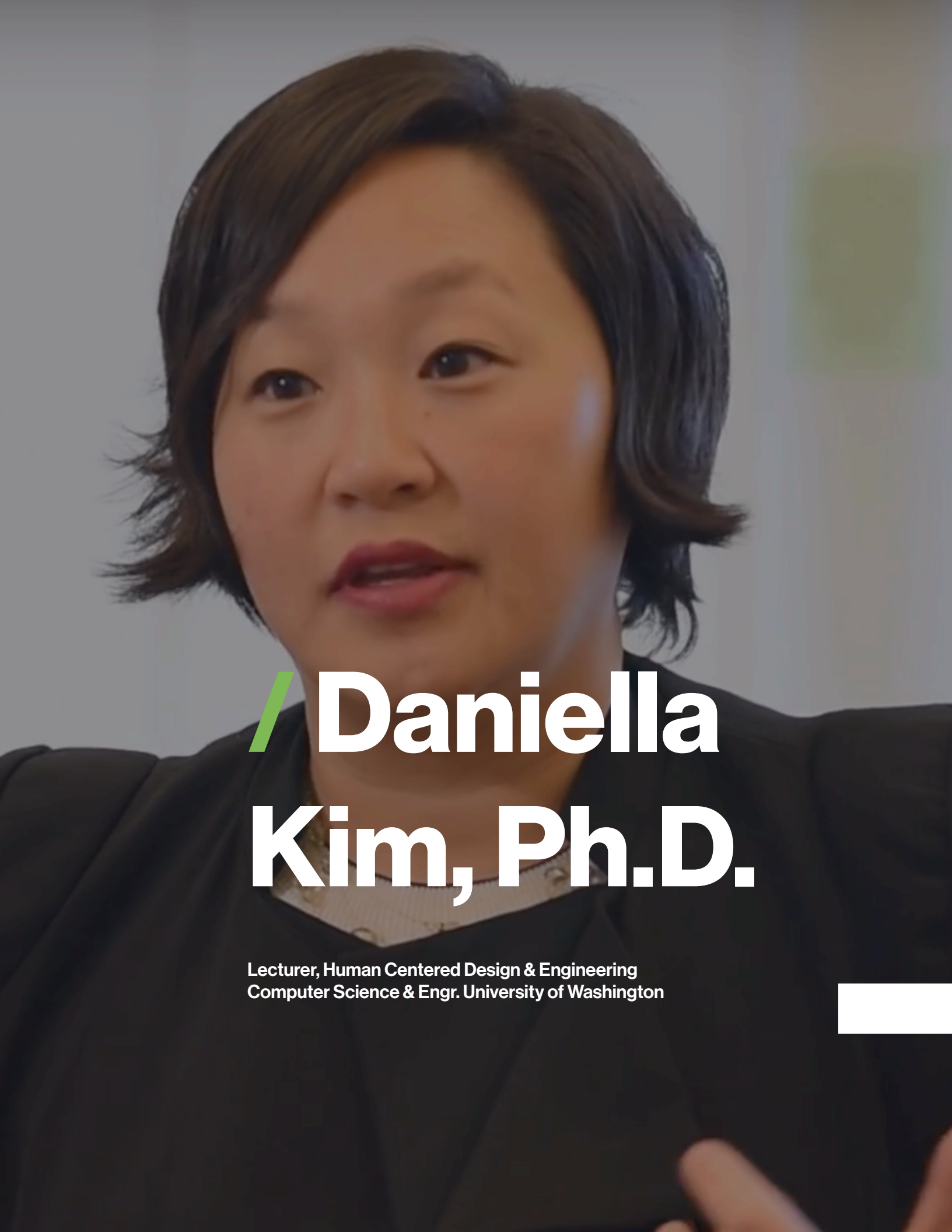
Associate Professor Program Chair, Informatics The  
Information School Computer Science & Engr.  
(adjunct) University of Washington






## Expert Profiles

Andy Ko is the Associate Professor Program Chair, Informatics The Information School Computer Science & Engr. (adjunct) University of Washington. He has been on the ACM Educational Council since 2017, consulted companies such as Google, NSF, CRA, and Code.org. His work on programming graming has been played by thousands of people online and has directly inform Apple's Swift Playgrounds. His research is in effective, equitable, scalable ways for humanity to learn computing. To achieve this, he directs the Code & Cognition Lab, working with many wonderful students to publish and share research on computing education, human-computer interaction, and software engineering. He does this work with several communities, including Sound CS Ed, DUB, UW CSE's PLSE group, the iSchool's Digital Youth Lab, and the EUSES consortium. His aim is to make outgoing designers and software engineers to walk away with the knowledge of user interface history, informational

A portrait of Daniella Kim, Ph.D., a woman with short dark hair, wearing a dark blazer over a light-colored top. She is looking slightly to the left of the camera with a neutral expression. The background is a plain, light-colored wall.

# **/ Daniella Kim, Ph.D.**

Lecturer, Human Centered Design & Engineering  
Computer Science & Engr. University of Washington

A solid white rectangular graphic element located in the bottom right corner of the slide.




## Expert Profiles

Dr. Daniella Kim is a Lecturer in the Human-Centered Design & Engineering program at University of Washington and Principal Researcher/Owner of Halibut Flats. She is a trained experimental psychologist with expertise in both current industry methods and traditional empirical research. She is currently teaching a graduate course in the HCDE program where students learn to critically examine research for use in industry and academia. Prior to teaching at UW, Daniella led qualitative research on blue sky projects at Microsoft. As we have identified one of the main pain points of translational research is communication in prior literature review, Daniella's curriculum in research critique and communication has provided valuable insights to our research questions. Furthermore, given her current position as a lecturer and a researcher at her own business, Daniella was of great value in explaining the perspective of a liaison between academia and practice.

A portrait of a middle-aged man with short brown hair, wearing a teal polo shirt. He is smiling slightly and looking towards the camera. The background is a blurred indoor setting with green and white architectural elements.

# E. Stolter- man, Ph.D

Senior Executive Associate Dean Professor of Human Computer  
Interaction, School of Informatics Indiana University





## Expert Profiles

Dr. Erik Stolterman is a Professor in Informatics and is the Senior Executive Associate Dean of the School of Informatics, Computing, and Engineering at Indiana University, Bloomington. He was the co-editor in chief of ACM's Interactions magazine from 2011-2015. His research is concerned with interactivity, design practice, philosophy and the theory of design. He is also the co-Editor for the Design Thinking/Design Theory book series by MIT Press, and on several editorial boards for international journals (The HCI journal, International Journal of Design, Design Studies, Design, Economics and Innovation, International Journal of Designs for Learning, Studies in Material Thinking, Human Computation, Artifact). He has also published many articles, and some books on Design Thinking through the MIT Press. Given his past research on the research-practice gap and extensive knowledge on the communication of academic HCI research, experience extracting research into a digestible format through these world-renown HCI and design journals, and communicating with practitioners at companies, he has been of extreme value to our project. From our interview with Erik Stolterman surrounding the research-practice gap, we identified four key insights that helped shape our overarching research questions, conversation with other experts, and Capstone Project.

A portrait of Gary Hsieh, Ph.D., a man with dark hair, wearing a blue zip-up hoodie over a white t-shirt. He is smiling slightly and looking towards the camera. In the background, a whiteboard is visible with handwritten diagrams and text, including "5m water", "Run", and "W/it".

# Gary Hsieh, Ph.D

Associate Professor in Human Centered Design  
& Engineering Department of Computer Science & Engr.  
(adjunct) University of Washington





## Expert Profiles

Dr. Gary Hsieh is an Associate Professor in the Department of Human Centered Design & Engineering (HCDE) and an Adjunct Assistant Professor in the Department of Computer Science & Engineering at University of Washington. His research group focuses on understanding, designing, and developing technologies that encourage people to communicate and interact in ways that are self- and welfare-improving. Dr. Hsieh's paper "Translational Resources: Reducing the Gap Between Academic Research and HCI Practice" has been one of the most pivotal resources that align with and give us guidance for our research. Therefore, we believe Dr. Hsieh's experience in academia and his efforts in bridging the gap will be of great value to our project.

**“We need to offer the right sort of value proposition to get the the right message ready. But that’s also not the only way - I think it’s a two sided issue. So I think there’s stuff that academic researchers can do and there’s stuff that practitioners can do”**

**- Gary Hsieh**







# Participant Interviews

Our participants were recruited through two methods. We joined different online communities to post our screener surveys and recruit people by emailing those that matched our initial participant profile. The online networks that we posted in included: Ethnobreakfast Google group, Designernews, Hexagon UX, DUB, AIGA, IxDA, the Seattle Designers Slack channel, Twitter, LinkedIn, and Facebook UX Communities. We also utilized our personal network and introduction from colleagues to find practitioners in the industry.



## Participant Interviews

# Profile

Participant	Title	Years of Experience	Size of Company
Participant 1	UX Designer	3	10,000+
Participant 2	Senior UX Designer	7	10
Participant 3	Senior UX Designer	3	10,000+
Participant 4	Senior UX Designer	5	200
Participant 5	UX Designer	3	200
Participant 6	Product Designer	3	50
Participant 7	Senior Experince Consultant	5	200
Participant 8	Senior Research Scientist	18	10,000+
Participant 9	Design Researcher	25	1
Participant 10	UX Researcher	18	10,000+
Participant 11	Senior Product Designer	4	500
Participant 12	Customer Support Agent	5	500

# Methods

We conducted 11 sessions remotely through Skype with 1 in-person in the MHCI+D Studio for our primary participant methods. These sessions were 60 minutes, and were broken down into three research methods and goals for each.

See Appendix A.1 for the Study Guide.

### **/ Semi-structured Interview**

We wanted to learn how they use external sources of information in their work environment, and how they might communicate with outside expertise.

Each session began with a 20-minute semi-structured interview with the participants, to learn more about their background and existing research methods in their design process. The questions aimed to build rapport and develop an understanding of their current roles, informational resources used, team dynamics, and past projects.

### **/ Directed Storytelling**

We wanted to better understand past design process and research methods, and uncover pain points and problems in these interactions and what their attitudes are in relation to the academic world.

We followed the semi-structured interviews with 20 minutes of directed storytelling, where we asked our participants to detail a notable project, and their role in conducting research in this space. Our questions sought to learn what their process was and dive deeper into what their thoughts were in the entire process.

### **/ Cognitive Walkthrough**

The goal was to observe how practitioners react to, organize, and extract information from HCI academic papers.

We concluded our session with a cognitive walkthrough of an academic paper. We asked them to follow the Think Aloud protocol and recount their immediate thoughts as they go through an academic paper on Fisheye Menus (See Appendix A.2). We used this to understand how they extract information under time constraints, what information matters most to them, and what their attitudes might be in regard to this type of research.



# Insights

**There were six main insights that were identified after synthesizing our results from the 12 participant sessions, 4 expert interviews, and 3 informal interviews.**



The abundance of sources prevents designers from finding, using and implementing academic HCI research

Mutual efforts from industry and academia promote discourse and knowledge sharing

Mentors curate knowledge for mentees to advance their professional careers and academic knowledge

Open communication between researchers and designers can be established by first-hand experience to research

Popular design and research books help establish common values and goals between people from different academic and industry backgrounds

Strong ties online lead to more resource sharing and in-person interactions within and between academic and industry communities of practice

# **The abundance of sources prevents designers from finding and implementing academic HCI research**

**/ 1**

## Insights

**Practitioners have a difficult time knowing what information to prioritize and extract. When asked about the limiting constraint that prevents the practitioners from conducting a more in-depth research or dive into informational sources, time, or lack of it thereof, was an overwhelming response. While there was a desire to dig deeper into material, designers often feel inundated by all that is out there, unsure about what sources they should focus on or what insights are most relevant and extractable.**

**There is already so much knowledge that exists out there as a repository, but because there is so much content that exists out there that is generated from HCI research, it's difficult to remember where the ideas came from.**

**Given this overwhelming pool of content and information is out there, practitioners view Medium as the right balance of being short enough to retain attention, and informative enough to feel reliable, but they still have some issues with it.**

"It's hard. It's information overload" - P5

"You can find a million sources, but do you have time to read?" - P8

"There's just too much out there" - P9

"If it's super analytical and in-depth and specialized topic that has a lot of research and tons of info, sometimes I might stay away from those because it's not going to really grab my attention". - P12

"It's really hard to just remember where ideas come from. So I find that a lot of people in industry just kind of view them as all free, use them, forget, and then sometimes academics notice and pointed out" - Dr. Andy Ko

"I usually go on Medium a lot...Medium articles are pretty good and in depth for certain things" - P1

"Medium is like reading an academic paper but they bubble up the main point" - P10

"Since Medium is good, everything has to go to Medium to be visible" - P5

"I should be using Medium more, but I don't" - P8

"Medium is a lot of eye-catching headlines with no substance" - P5

"Medium articles don't do much reference and citing" - P6

# **Mutual efforts from industry and academia promote discourse and knowledge sharing**

**/ 2**

## Insights

There were some critical attitudes that came to light when we conducted our cognitive walkthrough pertaining the relevance of academic material to their world. These insights served to reinforce what we discovered in our literature review regarding practitioners' views regarding academia. Particularly, these criticisms stemmed from a hesitance on their part to believe and adopt the design implications outlined in academic research.

However, the more we engaged with them to learn more about their beliefs on informational sources, we noticed an underlying desire to extrapolate high-level and theoretical insights that exist from research in academia and more evidence-based sources online. Some of our participants noted the value in going to conferences, reaching out to experts online to better understand the material. Some noted that they saw how some of the ideas posited by the researchers could serve to benefit them in their practice or inspire some of their design concepts.

Likewise, the expert interviews we conducted demonstrated that academic researchers that have engaged with industry see the special opportunity that exists in an open communication channel with industry practitioners where knowledge can be shared and values can be aligned.

"I'm trying to get to what they're adding to the conversation" - P2

"I know there's a lot of academics doing research, but I don't see them in my line of work" - P5

"I think the recommendations [academic papers] are bullshit" - P6

"I think [academic research] is really informative and especially for accessibility where there's a lot more research that's done" - P1

"I don't typically read academic papers but this conversation is making me remember the benefits of it because you're able to pull more nuanced application or interaction patterns" - P3

"There are so many places where academic and practice blur" - P8

"It's not even a question there is an interest and of course because this field is a practice oriented field and it's almost everything almost all research done in this field is aimed at practice it saying that it's improving practice in some way."  
- Dr. Erik Stolterman

"I am really lucky, to have a foot in academics and industry and they're like firmly in both sides. I'm not saying that I'm the bridge at all, but I read a lot of papers and a lot of Medium articles."  
- Dr. Daniella Kim

"They found out that a key person to talk to was my advisor Brad Myers since he has done most of the seminal work on user interface toolkits. On day two, they found him and me and said: can we meet? Then on day three, we spent like four hours if this was in Fort Lauderdale just kind of sitting on the beach talking about the history of UI toolkits and like gathering a USB key of the key 30 papers to read and we gave them that stick and then they disappeared and then three years later XAML came out and it had a bunch of the ideas from the research."  
- Dr. Andy Ko

# **Mentors curate knowledge for mentees to advance their professional careers and academic knowledge**

 **3**

**Although the practitioners we interviewed came from varying academic or industry backgrounds, many noted that their research and design processes were influenced by the knowledge and resources that their mentors shared with them. The way the participants were able to recount in detail the conversations that they had with their mentors in specific projects, as well as the advice that they took away demonstrated the integral role that mentors play in providing and curating knowledge for mentees.**

**The senior-level practitioners and experts felt fulfilled by the knowledge that they were able to share with their mentees. Even if they did not see their advice go to fruition, the process of communicating and connecting felt meaningful.**

“I was asking a lot of my mentors, ‘Do you have any evidence or guidelines I can use?’ A lot of them were saying you should look into scholarly papers or things that were more theoretical.” - P1

“My boss at my last job would be a mentor to me because I didn’t even know what user experience was” - P7

“Early in my career I had the fortune of working with talented researchers that had more experience than me. Several of them have stayed in my life.” - P10

“The question I would ask my students and [junior] colleagues is, ‘What do you want someone to do with what you’re giving them. What is the impact you want?’” - P10

Dr. Erik Stolterman noted that the success that his ideas may have from his teaching stem from them contacting him to stay in touch. “I take the fact that they actually reached out to come back to me now. I take that as a sign that it works in some way.”

Dr. Andy Ko noted that he enjoyed mentoring his former Ph.D students because “sometimes it’s a human resource that becomes the agent of change”

**Open communication between researchers and designers can be established by first-hand experience to research**

**/ 4**

**Many of the practitioners we interviewed noted that the value in conducting and being immersed in research reinforced how instrumental it was in the design process. As the UX design process involves the interplay between many team members, from the project manager to designer to researcher, there was instrumental value in being part of the entire process. The participants that we interviewed seemed to be part of organizations that were more horizontal and flat, and so in being exposed to research, or in turn, exposing others to the research process, the designs they made seemed more well informed and impactful.**

“I like being part of the whole process...People kind of want to get their hands on everything” - P1

“I went alongside the researcher that I’m working with, he led the research session, and I took notes...I would chime in with questions I had” - P3

“I never go alone, I always do things in pairs...it’s usually someone that doesn’t understand why I’m there...what’s amazing is how easy it is if they’re so cynical, I say give me two hours of your day, I’ll take you out for a drink, and if I can’t convince you, I’ll take you out for another drink...very rarely do people come out of the research saying it’s a complete waste of time” - P9

“We all have different backgrounds but we all kind of do the same stuff... We’re very much a team build of people with perspectives, but also kind of Swiss Army knives, just throw us into whatever and we’ll try and get it done.” - P4

“You can’t communicate empathy...you can tell somebody that it’s happened, but unless they see it, it just doesn’t have the same impact” - P7

“The best exposure for designers is to bring them along during research” - P10

**Popular design and research books help establish common values and goals between people from different academic and industry backgrounds**

**/ 5**



## Insights

**As we continued to ask our participants about what existing resources and tools they used, they demonstrated to us how their current synthesis and research process has been heavily influenced by fundamental interaction, synthesis and user experience design books. This was the case with participants who had prior HCI academic or industry background, and those without. Across the board, they would mention how these seminal design and research books shaped their professional careers and how they view design.**

“I am heavily influenced by Kolko’s books on synthesis” - P4

“Don’t trust everything you read online, read a book” - P5

“I share instrumental books about methods [with my mentees]”  
- P8

“Read those Edward Tufte books. All those classics. If you haven’t touched them, touch them...I remember it was such a revelation when those books came out.” - P9

“here should be readings if you’re going into human centered anything. You should be reading some psychology like basic fundamental psychological principles” - Dr. Daniella Kim

**Strong ties online lead to more resource sharing and in-person interactions within and between academic and industry communities of practice**

**/ 6**

**With the proliferation of people in the HCI industry community of practice, the mediums in which they communicate online also grow and diversify. Resource sharing is becoming more democratized and collaborative. Practitioners communicate with one another to point each other to resources, provide guidance, and insights in a way that have extended into real life. Different online platforms and social media outlets have opened up a more transparent and immediate way in knowledge can be shared in their design process. This predominantly includes design and research Slack communities, Facebook Groups, Google Groups. Even in instances where practitioners seek experts out online via email or other platforms, they note how much they can learn from real-life meetings. It seems apparent from the conversations we had that these virtual relationships extend into the real world, with many of them noting how they have met up with these peers to maintain this symbiotic relationship of knowledge sharing.**

“[HH Design Group on Facebook] is basically an online community. People share their perspectives, from all different companies, big and small, start up, design agencies, big tech companies and they share insights on what they’re learning” - P1

“Ethnobreakfast is a community of design researchers that we often get together with and commiserate and talk through challenges we may be having in research. That’s the kind of community with a lot of resources if I need them.” - P2

“My Slack channel sends enough links to keep me busy...I stay in touch with the design community through chats and at other social outlets” - P4

“I like [blogs] where there’s a clear network that’s engaged in the content” - P7

“One discussion about their topic is more useful to the practitioner than having a deep dive on all the papers” - Dr. Andy Ko

“Most of the time, I will email experts and say “Hey, can I talk to you on the phone or come interview you in person”. In an hour, I can get everything I need from someone.” - P10



# **Synthetic Artifacts**

## **/ Empathy Maps**

Allow for a further examination of what our participants face when trying to search and make sense of knowledge to implement. Demonstrating what factors play a role in both curation and discovery of new knowledge in HCI.

## **/ Journey Maps**

Demonstrate the differences and commonalities in the journey, thoughts, feelings, and experiences of key scenarios in the design and research process that practitioners and academic researchers may potentially encounter.

## **/ Ecosystem Map**

Depict the current state of all the participating stakeholders in the HCI academic and industry communities and how they intersect.



**Marcus, 22**

UX Designer, in-house

Graduated from an undergraduate  
design program in Seattle

**He's new to  
through the  
questions t**

## **Think**

Where do I start?  
What do I focus on?  
I wonder what they think  
Should I try to engage v

---

## **Feel**

I'm insecure about my e  
anyone on the team to a

---

**Idea: I don't kn  
make a bad im**

---


**Result: Stil  
more confi**

**to the job and joined the team halfway  
the project. He isn't sure where to start or what  
to ask.**

<p>ask of me? with the team?</p>	<p><b>Say</b></p> <p>I'd like some clarity on this</p>
<p>experience and doesn't want to bother ask on where I should start</p>	<p><b>Do</b></p> <p>I search Google and find many resources, but stumble upon many links and questions the validity of some of these sources. I ask the PM to get caught up on where the team is at, then get referred to a book to help with understanding the team's problem and process.</p>

**ow what I am doing and don't want to look incompetent. I don't want to  
pression. This book might help me learn what my process should be.**

**I feels unsure but after reading the book, is slightly  
ident about the structure of his research process .**



Empathy Maps

**Zoë, 31**

UX Designer, start-up

Completed General Assembly's  
Immersive UX Bootcamp

**The team is  
and design  
product. S**

## **Think**

I guess I have to figure t  
How much time will this  
Let's see what is availab  
are on Medium.

---

## **Feel**

A sense of urgency and  
the company and conv  
them.

---

**Idea: I've now  
move on to the**

---

**Result: Is a  
company f**

**is small so she has to do both the research  
for the revamp of the company's current  
he's new to the field but has to dive right in.**

<p>his out? s take? ole on research methods for startups</p>	<p><b>Say</b></p> <p>Can anyone point me to resources I can use? I can tell you why this matters</p>
<p>d expectations to prove my worth to ey the value of design and research to</p>	<p><b>Do</b></p> <p>I post on Slack design channels to ask for help. Medium also refers me to academic sources that I don't have access to, so I just use the summary available as validation of my findings.</p>

**looked at enough resources to have enough of an understanding to  
e whiteboard and next step.**

**ble to convey enough information to others in the  
rom the desk research they were able to do online.**



**Christine, 48**

Senior UX Researcher, in-house

Ph.D in HCI and Ethnography. Has worked in multiple tech companies

**She's been  
space, and  
public know**

## **Think**

I should probably go to  
What experts in the field  
Are there any academic

---

## **Feel**

Concerned because th  
that are easily accessib  
someone who is an exp

---

**Idea: I wish I ha  
people who kn**

---

**Result: Dev  
because of**

**I'm tasked to look at an emerging technology  
I suspect that there might not be sufficient  
knowledge on this matter yet.**

<p>I need to talk to the stakeholders to learn more soon. Who can I talk to? What papers are available on this topic?</p>	<p><b>Say</b></p> <p>I need some time to go into the field and talk to people I hope to learn from your expertise</p>
<p>There are not a lot of resources online that are easy to find and available. I'm confident I can find an expert in the field to learn from.</p>	<p><b>Do</b></p> <p>Conducts literature review by looking at databases online to see what has already been done. Email and reaches out to experts in the area to conduct some informational interviews.</p>

**I need more time to do this research. I'm learning so much from talking to  
experts about this technology, and just being out in the field.**

**I develop a deeper understanding of the topic space  
from the conversations she's had with experts.**



## David, 50

Associate Professor of Informatics, UW

Ph.D in HCI. Regularly attends and publishes papers in the HCI community

**He's been in consulting**

### Think

What do they want to know?  
How can I learn about their needs?  
How can I help them in a meaningful way?

---

### Feel

Confident I can empathize with them  
so they too can see the value of the process  
humbled and fulfilled by their success

---

**Idea: My experience aligns with the company's goals**

---

**Result: More contributions to the community**

**Invited by a company to provide some  
and research advice in his area of expertise.**

<p>now? their working styles and beliefs? way that is meaningful to them?</p>	<p><b>Say</b></p> <p>I want to know how my research can be of use to you</p>
<p>ize and learn what the industry needs value in my expertise and work. I'm y the request for his advice.</p>	<p><b>Do</b></p> <p>I visit the business to learn more about the business needs and goals. I generate pertinent and tailored insights to audience</p>

**rtise and research can be applied and adapted to better resonate and  
company values .**

**tivated to continue collaborating with industry and  
ng to public HCI knowledge.**

## Opportunities

Blog post about experience with survey, Chatbot

N/A

Accessible feedback and process channel, loose rubric to follow insights

## Experience

Comfortability in own expertise, Engagement, Industry knowledge, Effectiveness of lecture.

Comfortability in own expertise, Engagement, Industry knowledge, Effectiveness of lecture.

Comfortability in own expertise, Engagement, Industry knowledge, Effectiveness of lecture.

## Feeling

Flattered for being contacted, Unsure of company's intention, Confident in their expertise

Inquisitive, Engaged, Excited, Zealous

Challenged, Eager, Helpful

## Thinking

I wonder how my work will be of use to them? Why are they reaching out to me? Should I agree to come? Will they agree with my conditions?

I wonder what are they currently working on? What do they value? What are the processes and methods? What is relevant to them?

I wonder how I can revise my work to reflect theirs? Should I be less academic? Maybe this is what they need to know? Definitely don't tell them what to do, but suggest insights?

## Doing

Corresponding with company's representative via email, Responding with conditions, Setting up date

-Google  
-Design Blogs  
-Internal Docs  
-Medium



Building rapport, Understanding company values by listening and observing

-Google  
-Design Blogs  
-Internal Docs  
-Medium



Extracting insights from observations and discussions, Aligning expertise knowledge to match audience needs

-Choosing Methods



Initial Contact

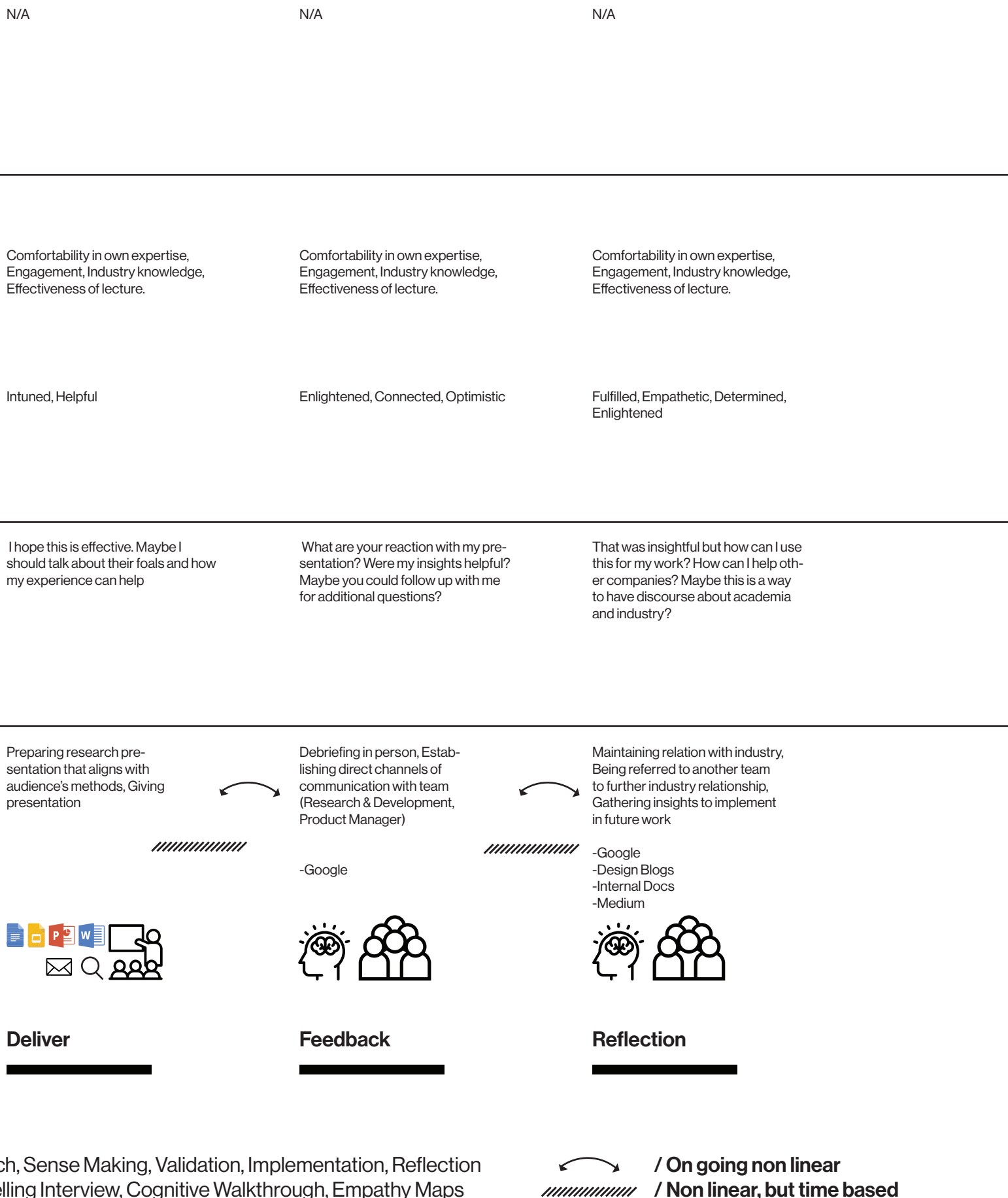
In Person

Sense Making

# Professor of Informatics

## Journey Map | HCI Academic

/ Phases: Planning, Research  
/ Sources: Directed Storytelling



## Oppurtunities

N/A

Suggested sources that are both curat-  
ed internally and externally.

N/A

## Experience

Confidence while identifying  
stakeholders, and begins to  
refine search for information

Some confidence in plan develop-  
ment, still unsure about the informa-  
tion they uncovered is relevant to  
the field component

Comfortable, Eager, Slight pres-  
sure from time, slight ambiguity.

## Feeling

Curious, inquisitive, slightly unsure  
about this new field. Eager to get  
started.

Comfortable, Eager, Slight pressure  
from time, slight ambiguity.

Confident in research readout  
due to experience, and is standard  
practice.

## Thinking

There seems to be no info on this,  
where should I start? Which meth-  
od will be a good one to start  
with? Maybe the method from the  
last project will help?

Maybe I should reach out to this  
expert? Do I know anyone? Maybe i  
can look at old docs? I should check  
internal some additional outside  
sources to see what I can shape. This  
should be enough, I will feel it out when  
I am in field.

How should I frame this? What  
findings should I include? Who's  
my audience today?

## Doing

Identify Stakeholders, uses  
established personal methods  
to analyze scope. Plans the  
field research that needs to be  
conducted.

-Choosing methods



"desk research", Also uses  
google scholar and internal  
databases. Then begins field  
research.

-Field Research  
-Google Scholar  
-JSTOR  
-Internal Database



Assembles research deck  
after being in the field.  
-Does readout  
-Send to other internal team  
members

-Powerpoint  
-Google Slides  
-Google Docs  
-Microsoft Word



## Planning

## Research

## Delivery

# Sr. UX Researcher

## Journey Map | In house

/ **Phases:** Planning, Research, Sense Making  
/ **Sources:** Directed Storytelling Interview, (

Suggested sources that are both curated internally and externally.	Suggested sources that are both curated internally and externally.	?
--	--	---

Diverse audience feedback, time pressure to read out dense report, slight difficulty implementing feedback into new slides and conveying to broad audience.	Establishes a work mentorship,. They also experience some humility in the process as the designer makes kind suggestions on how to communicate it better next time.	Satisfaction of being able to deliver research with a story, and empathizing with the audience.
---	---	---

Self doubt, frustrated, confused, misunderstood, apprehensive, insecure, slightly hopeful.	Less worried, more confident, wise and helpful, optimistic	Fulfilled, understood, empathetic, humble
--	--	---

Did I not understand my audience as well as I should have? Were my slides to dense? I've incorporated the feedback and reduced the density, the team seemed to have responded well and they are moving on with the project. There seems to be still one team member from the design team who doesn't find my findings reasonable, maybe i should meet with them in person.	It seems as though they are interested in seeing what I did. I hope I can assist them in some way.	The readouts have been going well, and it was not my data that was wrong, just that the way I was illustrating the narrative around the data. It's also helpful that the other teams have been me recommending books, and I also have been recommending some of my essentials to them.
--	--	--

Receiving feedback from readout, and implements feedbac from the team. Sends out the revision, and hears back quickly and team decides to move on with project. Soon after hears from an individual team member and still is confused, so they by offering and in person session with them.	Follows up with designer who reached out, to establish a meeting to clear up findings. They suggest that they go in field together. They agree and have go into the field for the next project.	They continue to take the designer in field. They also implementing new methods to communicate that make the presentations engaging.
---	---	--



## Implement and Reflection



## Mentorship



## Reflection

ng, Validation, Implementation, Reflection  
Cognitive Walkthrough, Empathy Maps


 / On going non linear  

 / Non linear, but time based

## Opportunities

Clearer structure of search rationale, Curated information, direct professional and support immediately

Clearer structure of search rationale, Curated information, direct professional and support immediately

Have established criteria and deliverable to follow when sense making  
Showcase estimated time and resources for time constraints

## Experience

Clearer structure of search rationale, Curated information, direct professional and support immediately

Clearer structure of search rationale, Curated information, direct professional and support immediately

Frustrated of not finding the "right" source, the ambiguity of the scope causes lack of confidence, agitated but engaged with project.

## Feeling

Intimidated, insecure, confused, overwhelmed, judged, under time pressure, worried about experience level

Skeptical of validity, Under pressure, unsure if they are equipped for this role

Skeptical of validity, Under pressure, unsure if they are equipped for this role

## Thinking

Where do I start?  
I wonder what other projects are similar to this?  
What sources should I look at?

What constraints are there?  
What might they want from me today?  
I only have till end of day to deliver my findings

What does this mean? What type of methods are these? Is this the right order to present these in? Should I google what this means? I should also look for a medium post that might explain this. Will this post help me? I really don't know what I am doing

## Doing

Identify Stakeholders, asses tools, examines team dynamic, and looks at inspiration sources.

-Google  
-Design Blogs  
-Internal Docs  
-Medium



Searches through internal and external sources. Bookmarks a few sources.

-Google  
-Design Blogs  
-Internal Docs  
-Medium

## Research

Struggling with how to apply sources that have been given to them. Analyzing the sources, while checking the time before the presentation to PM

-Choosing Methods



## Sense Making

## Planning

# UX Designer

## Journey Map | In house designer

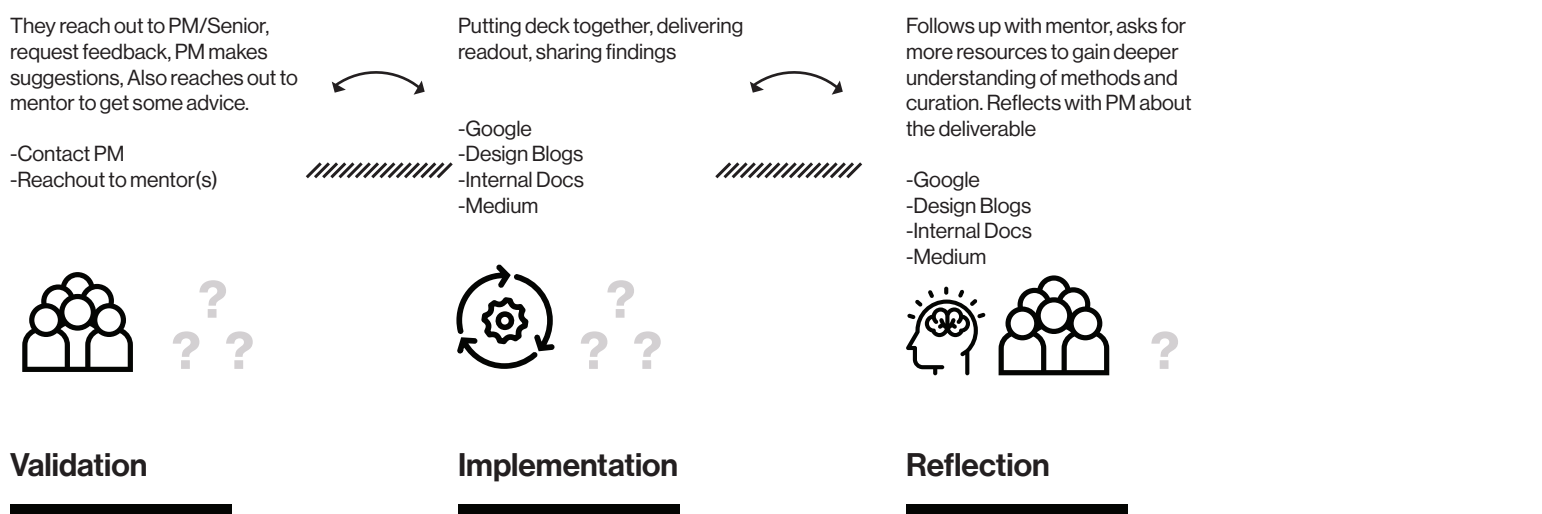
/ **Phases:** Planning, Research, Sense Making  
/ **Sources:** Directed Storytelling Interview, etc.

Accessible feedback and process channel, loose rubric to follow insights	Available case studies to compare to, quick glance of important facts of problem space	Available case studies to compare to, quick glance of important facts of problem space.
--	--	---

Frustrated of not finding the "right" source, the ambiguity of the scope causes lack of confidence, agitated but engaged with project.	Frustrated of not finding the "right" source, the ambiguity of the scope causes lack of confidence, agitated but engaged with project.	Relief
--	--	--------

Under pressure, unsure if they are equipped for this role	Anxious and insecure, feel unprepared.	Less worried, more confident, optimistic
---	--	--

I think this should be enough to present? Will they be satisfied? Maybe they can point me in the right direction after today? I'll take a quick break and email my mentor.	I hope my findings are somewhat clear? I wonder if my slides will be judged? How short should my presentation be? I wonder what the response will be?	That seemed to go better than expected, but got valuable feedback. Was less intimidating than expected, and now I know what to consider for next time. I should definitely go back to that blog I found, and the few books my mentor recommended.
--	---	---



ng, Validation, Implementation, Reflection  
Cognitive Walkthrough, Empathy Maps

 / On going non linear  
 / Non linear, but time based



# Principles

From the insights we got from our secondary and primary research, we were able to craft some design principles that will help guide us moving forward.

# [insights]

## **Providing guidance and assurance in their search for new knowledge**

Insights: 1, 2, 3, 5

## **Mindful of skepticism that exists between both communities**

Insights: 2, 4

## **Facilitating two-way knowledge sharing and communication**

Insights: 2, 4, 6

## **Translating ambiguous research into specific examples**

Insights: 1, 3, 5



# Next Steps

**Our research study was an exploration into learning about ways to foster better communication among academia and industry in the HCI field. We are confident that the knowledge that we have accrued over the course of this research phase will guide our concept development. We will continue to conduct primary and secondary research throughout our process, ensuring that our initial concepts and prototypes are rooted in addressing the problems and needs that persist in the current state of knowledge sharing and communication between academia and industry in HCI.**

# Opportunities

The ideas that we identified as opportunity spaces for our potential responses include a platform that would help:

**Curate relevant informational sources**

**Provide dynamic guidance throughout the re-search and implementation process.**



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# Appendices

## **A - Research Materials**

A.1 - Research Kit  
A.2 - Cognitive Walkthrough Paper  
A.3 - Expert Interview Guides

## **B - Processed Data**

B.1 - Participant Survey Results  
B.2 - Participant Interview Notes  
B.3 - Expert Interview Transcripts

# Session Overview

<b>Before Session</b>	[Allow plenty of time to set up for interview - review Item Checklist]
	[Set up audio recording]
	[Greet participant and make introductions. Review the consent form with the participant and remind them that their participation is voluntary]
<b>Introduction</b> ~2-3 minutes	Hi, my name is [ ], this is [ ] who will be taking notes and recording the session today, [ ] will be taking some photos. Thank you so much for agreeing to share your thoughts about and experiences with academic research in your design workflow. For the next 60 minutes or less, we will be asking some general questions.
	[Read out consent form]
	This form states that we'll be sharing your responses anonymously between our UW research team and Capstone Sponsor. When we report results of this study, we will only include the findings and key insights. This form also states that we would like to audio-record our interview with you so that we can transcribe your responses for analysis, and take photos for research documentation for our project.
	Do you have any questions you want to ask us?
	Are these conditions okay with you? [Yes] Great, thank you. We'll go ahead and start recording the interview now. [No] Ok that's fine too. We'll go ahead with our interview without recording.
<b>Semi-structured Interview</b> ~10-15 minutes	During the interview, if there are questions you don't want to answer, you are free to decline, or stop at any time. Is there anything you need before we get started? Do you have any questions for us?
	What is your name?
	How would you best describe your role in the company?
	What is your level of experience?
	What are your day-to-day operations?
	What types of tasks do you typically do?
	What is your team dynamic like?
	How often do you work from home?
	What types of projects are you currently working on?
	What types of resources do you use to help inform your for decisions for these projects?
	[Medium] Do you follow up with the authors and in what way? [Visual Resources] Do you follow up with the creators and in what way? [Website] Do you follow up with authors?

## Appendix A.1 - Research Kit

### Directed Storytelling ~20-25 minutes

For these projects, do you refer to academic papers in any way?  
[Yes] What type of papers, and do you find them useful in these moments?  
[No] Move on

Let's go through a particular project that you're working, on or just wrapped up.  
Choose a really impactful moment in the project where you incorporated research and tell us about that who on your team did that.

Who is responsible for the research?  
[Me] How do you communicate their findings to the team?  
[Not me] Would you be interested in it?  
How do you communicate with others that do research?

Are there currently any conferences that you are interested in? Why/why not?  
[Probe on the type]  
[If academic] What are your current interests? Any particular type of publication?  
Do you reach out to authors/experts? Why/why not?

Let's go back a few years, and tell us what school you attended for your BFA/BS MS/ MA/MFA?

What was the most memorable experience from there that has played a important role for the current position you hold?

If they mention a professor probe on this person deeper to identify how they maintain communication/ if not then why?

What would incentivise you to keep this line of discussion?

[Probe further or make notes on:  
Pivots in design process  
Incentives - personal or external]

### Cognitive Walkthrough ~15-20 minutes

[Hand them an academic paper]

How would you get information from this paper in [x] minute(s)?

What are your takeaways?

To dive deeper, how would you go about contacting these authors?

How do these differ from your usual sources?

### Wrap Up ~2-3 minutes

Thank you so much for joining us, and for sharing your thoughts with us. Is there anything else you might want to ask or tell us?

This is a small token of appreciation from us.

[Release gratuity, ask for signature]

Please sign this form to verify that we've given this gift to you and that we've provided you with our contact information so that you can reach out to us further.

## Item Checklist

- ☐ Audio recorder
- ☐ Notebook or laptop for note taking
- ☐ Comfortable interview environment
- ☐ Interview partners
- ☐ Consent Form
- ☐ Gratuuity Release Form
- ☐ Interview Guide
- ☐ Camera (use DSLR or phone)



Appendix A.1 - Research Kit



# Consent Form

I volunteer to participate in a research project conducted by representatives from the University of Washington.

My participation in the study activities are voluntary.

I understand that I will be compensated a \$20 gift card for my participation. I may withdraw and discontinue participation at any time without penalty. If I feel uncomfortable in any way during the study session, I have the right to decline to participate fully in any activity or to leave the study session, knowing that my compensation will not be reduced in such an event.

Participation involves answering questions asked by the researchers, and showing the researchers communications between me and the parents of my students.

Photos will be taken during both activities, and I give my consent to be photographed and for the communications to be photographed. I understand that the researchers will do their best to respect any sensitive information in the communications.

An audio recording of the interview will be captured, and I give my consent to be recorded.

Notes will be written about me during the interview. I understand that the researcher will not identify me by name in any reports using information obtained from this interview, and that my confidentiality as a participant in this study will remain secure. Subsequent uses of records and data will be subject to standard data use policies which protect the anonymity of individuals and institutions.

I have read and understand the explanation provided to me. I have had all my questions answered to my satisfaction, and I voluntarily agree to participate in this study.

NAME

\_\_\_\_\_

SIGNATURE

\_\_\_\_\_

DATE

\_\_\_\_\_



# Gratuity Release Form

I acknowledge that I have received a \$20 gift card from students at the University of Washington for my participation in their study on the date written below.

I acknowledge that I have been given the appropriate contact information should I have any concerns about the study and/or the gratuity.

NAME

\_\_\_\_\_

SIGNATURE

\_\_\_\_\_

DATE

\_\_\_\_\_



# Screeners Survey

**Design Survey**

We are graduate students in the Master of Human-Computer Interaction + Design (MHCI+D) at University of Washington looking to explore what sources of informations designers currently use. If you would like to know more about our research, reach out to us at [pazluna+research@uw.edu](mailto:pazluna+research@uw.edu)

\* Required

**Basic Information**

1. Name \*
2. Preferred Email \*
3. Level of Education \*  
*Mark only one oval.*  

☐ High school degree or equivalent (e.g. GED)

☐ Associate degree (e.g. AA, AS)

☐ Bachelor's degree (e.g. BA, BS)

☐ Master's degree (e.g. MA, MS, MEd)

☐ Professional degree (e.g. MD, DDS, DVM)

☐ Doctorate (e.g. PhD, EdD)
4. Was your degree in HCI or related fields? \*  
*Mark only one oval.*  

☐ Yes

☐ No

**Professional Experience**

5. Official Title \*
6. Years of Experience \*
7. Affiliation/Company \*
8. Please briefly describe your current responsibilities \*
9. Team size (no. of people) \*
10. How often do you use these sources ? \*  
*Mark only one oval per row.*

	Never	Rarely	Sometimes	Often	Always
Visual (Dribbble, Behance, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Design blogs (Medium, Tech Company, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Toolkits (IDEO, Google Sprint, UX Collective, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Video Tutorials (YouTube, Vimeo, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Academic Resources (Peer Reviewed Papers)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. Have you heard of the following academic conferences? \*  
*Check all that apply.*

☐ ACM

☐ CHI

☐ SIGCHI

☐ DIS

☐ UIST

☐ None of the above

☐ Other: \_\_\_\_\_

# Fisheye Menus

**Benjamin B. Bederson**

Human-Computer Interaction Lab  
Institute for Advanced Computer Studies  
Computer Science Department  
University of Maryland, College Park, MD 20742  
+1 301 405-2764  
bederson@cs.umd.edu

### ABSTRACT

We introduce “fisheye menus” which apply traditional fisheye graphical visualization techniques to linear menus. This provides for an efficient mechanism to select items from long menus, which are becoming more common as menus are used to select data items in, for example, e-commerce applications. Fisheye menus dynamically change the size of menu items to provide a focus area around the mouse pointer. This makes it possible to present the entire menu on a single screen without requiring buttons, scrollbars, or hierarchies.

A pilot study with 10 users compared user preference of fisheye menus with traditional pull-down menus that use scrolling arrows, scrollbars, and hierarchies. Users preferred the fisheye menus for browsing tasks, and hierarchical menus for goal-directed tasks.

### Keywords

Fisheye view, menu selection, widgets, information visualization.

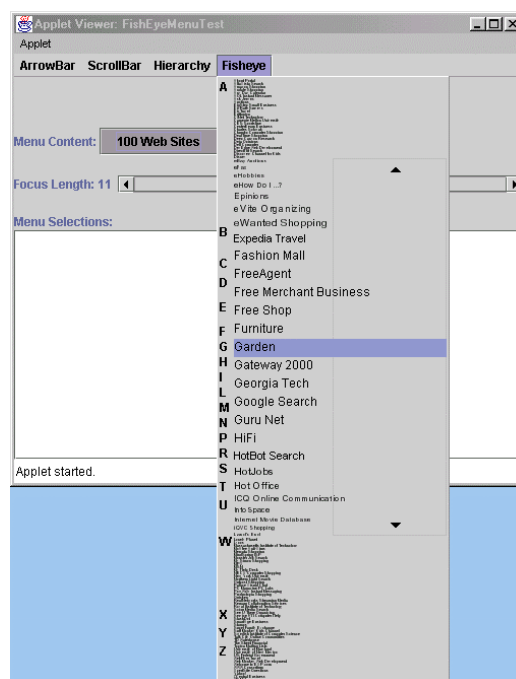
### INTRODUCTION

The concept of a “fisheye” distortion in a computer interface to present detailed information in context has been around a long time. Furnas first introduced the concept by discussing the cognitive aspects of how people remembered information [7]. Several researchers then applied fisheye distortion to a broad variety of applications [4, 15, 24, 25]. Several variations of the fisheye technique have been explored. They have been used in one dimension for word processing [9], access to time [12], and for long lists [13, 14]. They have been used in two dimensions for tables [17], graphical maps [20] and space-scale diagrams [8]. They have even been used in three dimensions for document browsing [19]. Some applications of fisheye distortion techniques have been carefully evaluated, often finding a significant advantage to fisheye views [5, 11, 21].

However, despite the careful investigation of fisheye view distortion techniques, and their application to a broad set of complex tasks, fisheye views have never been applied to

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**Figure 1: A screen shot of the fisheye menu in use. This shows 100 web sites taken from the most popular list of PC Magazine.**

the mundane challenge of ordinary menus. This paper applies standard fisheye techniques to menus in Graphical User Interfaces with the goal of improving performance in user's ability to select one item from a long list.

Selecting items from menus is another well-studied area, and the trade-offs of menu design are well understood [10, 16]. Menu design has become quite standard with well-grouped menu items in consistent locations using common names. This is appropriate for carefully designed applications where every element of the menus can be chosen in advance.

However, with the introduction of the Web and e-commerce applications, it is becoming increasingly common to use menus for selecting data items, as opposed

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to selecting operations. For example, menus are used to select from a long list of fonts, to select one state out of 50, to select one country out of 250, or to select a web site from a list of favorites.

It was this last example that motivated the application of fisheye views to menus. Managing ones favorite locations on the web is an important application of web browsers, but one study showed that most web browser users don't put more than about 35 items in their favorite lists before resorting to using hierarchies [1]. While hierarchies certainly help to organize information, this study found that while some people used hierarchies, many stopped adding new favorites altogether. The user interface for managing favorites may contribute to this. Since web browsers use pull-down menus to store favorites, and since these menus don't work very well as the number of elements within the menu grows, it is not surprising that people don't put more than that many items in the menus before using hierarchies. Some researchers have looked at alternative interfaces for managing web favorites [18], but they have not yet made it into commercial products. Also, those approaches are fine-tuned to web favorite organization, and may not apply very well to other menu selection tasks.

Selecting data items from menus is different than selecting functions because the data items in the menu are likely to change from use to use, and there are typically many more data elements in a menu than there are in functional menus. In addition, since the user is not as familiar with the menu, it is more likely that they won't know the exact text of each item. Thus, supporting browsing as well as searching is important. The length of the menu is crucial in determining usability. It takes users a time proportional to the location of an item in a menu to access it [6, 22]. However, the real problem comes with menus that have more items than fit on the screen. AlphaSliders are one approach for selecting textual items from a long list in a small space [2]. However that approach only displays one item at a time, and does not fit into the pull-down menu metaphor.

The existing approaches to selecting from one of many displayed items in a long list are limited. There are three commonly used approaches which are to use scrolling arrows at the top and bottom of the list, to use hierarchical "cascading" menus to make the list smaller, or to use scrollbars. Let us look at each of these approaches in more detail.

Standard GUI toolkits today provide support for long pull-down menus by adding small scrolling arrows to the top and bottom of the list if the entire list doesn't fit on the display. When the user clicks on those arrows, the list is scrolled up or down. Each toolkit implements these arrows differently, some having fast scrolling if you hold the arrow down (Microsoft MFC), and some slow (Swing). Some automatically scroll when the mouse is just placed over the arrows without clicking (Internet Explorer). However, in any case, the user is required to first move the mouse to the arrow, and then scroll until the desired element becomes

visible. An additional, but uncommon problem is that if the menu is scrolled too far, the mouse must be moved to the arrow on the opposite side of the menu, and the user must then scroll in the other direction.

A common alternative to long lists is to use hierarchical "cascading" menus. This works by having the application developer, or sometimes the user, organize the menu elements into groups. Then, one entry that represents each group is placed in the menu. When the user selects that group element, the members of the group are displayed in a second menu off to the side. This approach solves the problem of physically navigating a long list, but replaces it with a new problem of requiring the user to know what group the desired element is in. If the user knows the hierarchy structure well, then this approach works. However, if the user does not know the hierarchy structure well, then the user must look in each group, which is potentially time consuming. Typical applications with stable menu structures regularly use hierarchical cascading menus because presumably the user will rapidly learn where each element belongs. However, it is uncommon in practice to find hierarchical menus that are used for organizing data driven menus.

Finally, the last common solution for managing long menus is to use a scrollbar that controls the portion of the menu that is visible. This seems like an excellent approach because it gives fixed time access to menus of any length unlike the more common scrolling arrows, which takes time proportional to the menu length. However, while scrollbars are commonly used in dialog boxes, they are rarely if ever used in pull-down menus. Perhaps this is because current toolkits do not provide this as a default behavior, although it is possible to implement it with some toolkits.

In addition to these visualization methods, nearly all toolkits support keyboard shortcuts for selecting menu items. There are often modeless shortcuts (such as Ctrl-C for "Copy") that select a menu element throughout the application, even when the menu is closed. In addition to those shortcuts, the keyboard can be used to select items in the menu when it is open. Developers can either specify which key should apply to each item by specifying a "mnemonic", or if it is left unspecified, the first character of the item is used. Thus, in an alphabetically sorted list, pressing any key will jump the cursor to the first item starting with that letter. Pressing it again will move to the next item starting with that letter, and so on.

These keyboard accelerators are very powerful as they bypass some of the shortcomings of the mouse-based interaction techniques just described. They give users direct access to either the target element, or at least to the general area if there is more than one element sharing the mnemonic. However, despite their power, many users do not use them at all. Some users are not aware of them, but others are aware of them and choose not to use them anyway. Perhaps this is because their hand is already on the

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mouse and takes too long to reacquire the keyboard, or perhaps they don't know the keyboard well enough to justify searching for the right key. Or they may not know the exact text and actually are browsing the menu. And finally, some users may just not like using the keyboard when interacting with menus. People that only use the mouse for selecting menu items are likely to be the largest beneficiaries of fisheye menus.

### FISHEYE MENU DESIGN ISSUES

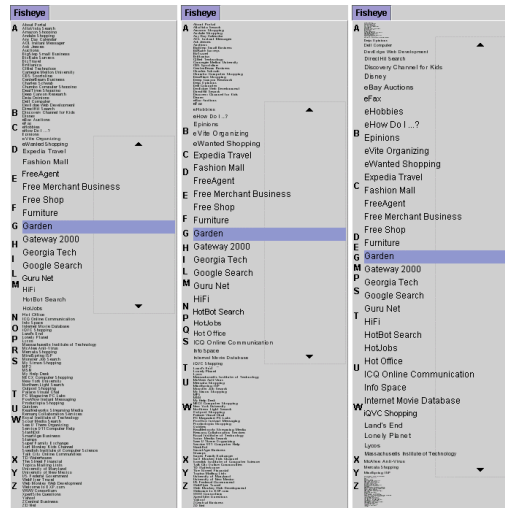
We offer a new solution to the problem of menus that have more items than fit on the screen by using a fisheye view to display the menu elements. In fisheye menus, all of the elements are always displayed in a single window that is completely visible, but the items near the cursor are displayed at full size, and items further away from the cursor are displayed at a smaller size. In addition, the interline spacing between items is also increased in the focus area, and decreased further away from the focus area. In this manner, the entire list of items fits on a single screen. The items are dynamically scaled so that as the cursor moves, a "bubble" of readable items moves with the cursor (Figure 1). A fisheye menu applet can be found at <http://www.cs.umd.edu/hcil/fisheymenu>.

The fisheye menu uses all the available screen space, and will calculate a distortion function so that the menu items always just fill the menu. There are two principal parameters of the fisheye menu that the application developer can control: maximum font size, and focus length. As with traditional menus, the designer can specify the font size, which for the fisheye menu translates in to the maximum font size, since some elements are rendered smaller. However, the designer can also specify the desired focus length. This specifies the number of items that are rendered at maximum size near the cursor.

The focus length parameter is important because it controls the trade-off between the number of menu items at full size versus the size that is used to render the smallest items. The fisheye menu dynamically computes the distortion function based on the available space and these input parameters. So, if the focus length is set to a large number (i.e., 20), then this will push the peripheral items to be very small, and as the user moves the cursor, there will be a lot of distortion. If, however, the focus length is set to a small number (i.e., 5), then there will be more room for peripheral items and they will all be a bit larger. Figure 2 shows this trade-off.

### Alphabetic Index

A fundamental characteristic of the fisheye menu is that many of the menu items are too small to read at any given position. However, since it is common to organize menu items alphabetically for data menus, we can encourage this organization for fisheye menus without undue burden. Then, users can use their alphabetic knowledge to move the cursor to the area they expect the item to be at, thus bringing that portion of the menu into focus at which point they can read the menu items and select the particular item



**Figure 2: The same menu of 100 items displayed with varying focus lengths (7, 12, and 20). There is a fixed maximum font size.**

they want. This is similar to how people use telephone directory books. Despite the fact that items are listed sequentially in the phone book, people use their alphabetic knowledge to jump to the portion of the phone book where they expect the item they are looking for to be. They then see where they actually are, and fine-tune their search.

This telephone book analogy guides the design. One of the reasons people can find items in telephone books so quickly is that telephone books have index information at the top of every page specifying in a large clear font what information is on that page. These indices allow users to just look at the indices while looking for the right page, and then look at the content when they have found the page they are looking for. It has been shown that indexes can decrease search time with lists [3].

We designed the fisheye menus to have an alphabetic index with the goal of making it easier for users to target the portion of the menu that contains the item they are looking for. The alphabetic index appears on the left side of the menu. Each letter of the alphabet for which there is room is displayed in the specified maximum font size.

The index letters are positioned so that when the pointer is moved to the same vertical position as an index letter, the first item starting with that letter will be just under the mouse pointer. This provides the user with the ability to rapidly move to the general area of the list they are targeting.

This is our second design of the index letters. The first design always positioned the letters at the current position of the first item starting with that letter. Thus, as the fisheye focus changed, the index letters would move around, following the items. This turned out to be

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Figure 3: The same menu displayed with the cursor at three positions.

distracting and not useful. By the time a user moved the pointer to the position an index letter was at, that index letter would have moved (since the focus and thus item positioning would have changed.) We quickly realized the value of the index letters was to inform pointer motion, and shifted to the current stable design described above. Figure 3 shows the fisheye menu at different focus points.

### High-Resolution Selection (Focus Lock Mode)

One difficulty with the fisheye menu mechanism as described so far is that small mouse movements result in a change of fisheye focus. With traditional menus, the mouse must move over the full height of a menu item to change the focus to the next item. However, with fisheye menus, the amount the mouse must move to go to the next item is equal to the *smallest* font size in the menu. This is a fundamental result of the fisheye algorithm since all of the menu items must be selectable by pointer movement in the fixed vertical space of the menu.

This is a significant liability because despite the fact that the focused elements are large and plainly readable, they are difficult to select.

We overcame this problem by offering a "focus lock" mode to the fisheye menu. Users operate the menu as described above until they get near the item of interest. They then move the pointer to the right side of the menu, which locks the focus on the item the cursor is over. Then, when users move the pointer up and down, the focus stays fixed, but individual menu elements can still be selected. The focus region on the right side of the menu gets highlighted to indicate that the menu is in focus lock mode.

Further, if the pointer is moved above or below the focus region (staying on the right side of the menu), the focus area is expanded. Eventually all of the menu items become

full-size and thus easy to select. But, of course, not all of the items are visible anymore as the ends get pushed off the screen as the focus area is expanded. Since the menu layout is quite different in focus lock mode, the index characters become inaccurate, and so they are faded out as the focus area is expanded in focus lock mode.

If users decide to continue looking in a different portion of the menu, moving the pointer back to the left side of the menu turns off focus lock mode, and the menu returns to regular behavior. This focus lock approach to high-resolution selection within a fisheye view solves the resolution problem at the cost of a small mouse movement.

We considered several alternative approaches to entering the focus lock mode. We first tried using the right button, but gave that up as it seemed too unlikely that users would discover it on their own – especially since it did not follow the standard Windows model of pressing the right button for a context-sensitive menu. And, of course, it would not work at all for systems without a second mouse button. We also considered using the speed of the mouse to determine the focus mode, but that seemed to be too unpredictable by users. Also, an earlier study of the AlphaSlider confirmed this intuition [2].

We ended up with the current design, which offers an affordance for the focus lock feature. There is a subtly shaded box on the right side of the menu that moves up and down with the focus. This was intended to draw user's attention to the right side of the menu. In addition, the two small arrows on the right side are intended to suggest to users that they can move the pointer up and down in focus lock mode. When the pointer is moved towards the arrows,

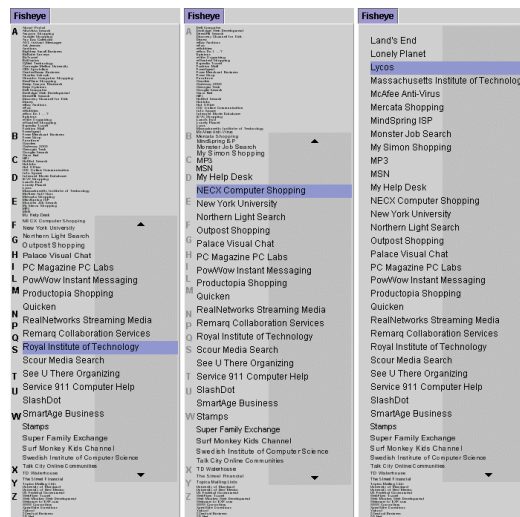
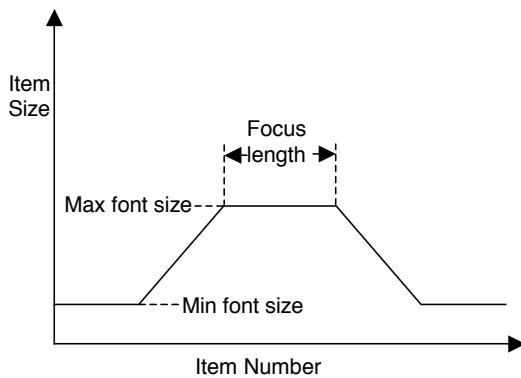


Figure 4: A fisheye menu in focus lock mode whose focus area is being extended upwards

the focus area is extended, and the arrows move accordingly. The users can thus discover that the focus can



**Figure 5: The basic Degree of Interest function used for the fisheye menu.**

be extended. Figure 4 shows the focus lock mode with the focus area being extended upwards.

### IMPLEMENTATION

The fisheye menu is a drop-in replacement for Java's standard "JMenu" component in the Swing GUI toolkit. This new widget, called `FishEyeMenu`, is written in Java 1, and works for applications and applets. This means that any Java code that currently uses traditional Swing menus can switch to using the fisheye menu with a one-word change by replacing `"new JMenu()"` with `"new FishEyeMenu()"`<sup>1</sup>.

The standard approach to implementing fisheye distortion techniques is to compute a "Degree of Interest" (DOI) function for each element to be displayed. The DOI function calculates whether to display an item or not, and it calculates the item's size. Typical degree of interest functions include both the distance of an item from the focus point as well as the item's a priori importance [7]. Thus, certain landmark items may be shown at a large size even though they are far from the focus point.

The fisheye menu uses a very simple DOI function that only includes distance from the focus point, and does not use a priori importance. A simple function that captures the essence of the fisheye menu is shown in Figure 5. It keeps several menu items near the focus point at the maximum size, where the exact number is specifiable. Then, the menu items get smaller, one point in font size at a time until the minimum font size is reached at which time, all more distant items stay at the minimum font size.

Using this DOI function, the fisheye menu calculates the largest minimum size font that will result in a menu that fits on the screen. If there are so many items in the menu, or if there is so little available screen space that there is not enough room for the menu, then the DOI function parameters are adjusted so there is enough room. First, the focus length is reduced. If there is still not enough room

when the focus length is set to 1, then the maximum font size is reduced.

### Complexities

In practice, the DOI function is actually a little more complex than just described for two reasons. The first reason is that we want the menu items to be visually stable outside of the focus area. That is, if the focus is on the first half of the menu, it is important that the second half of the menu doesn't move at all as the focus changes. The fisheye menu is stable using the above DOI function when the focus is not near one of the ends of the menu. However, when it is near the ends of the menu, there is a surprising side effect of the algorithm, which results in the entire menu shifting.

Since we render each item based on the position of the item before it, one item alone changing size will slide all other lower menu items up or down. Moving the focus in the middle of the menu doesn't cause a problem because for every item that gets bigger, another item gets smaller by the same amount. To understand the issue here, let us look at the simplest case where the focus is on the first item in the menu. In this case, there are no items before the focus item to get rendered, and the items after the focus item get smaller until the minimum size is reached. Compare this with the focus being on the second item in the menu. Now, one item before the focus is rendered at a large size while the items after the focus get smaller in the same way. Thus, more space is taken altogether, and the entire menu shifts down a little bit. The entire menu continues to grow as the focus moves down from the end until the distortion no longer goes to the end of the menu and the menu becomes stable.

Our solution is to increase the size of the focus area just enough to account for the smaller number of focus items when the focus point is near the menu end. This way, the total amount of space used by the focus area is always constant, and the entire menu remains visually stable.

The fisheye menu uses this modified DOI function to calculate the required size of the popup menu. This leads to the second reason that our DOI function is more complex in practice. We use integer calculations since text is only rendered in integer sizes, and so the popup menu size can end up being substantially smaller than the available space. We want to use as large a menu size as possible since the bigger the menu is, the more items we can render in a large enough font to read, and the more usable the fisheye menu will be.

Once the minimum size font is calculated, a menu that uses all the available screen space is created. Then the DOI function is modified using the same technique that we used to solve the first problem - the focus area is expanded until the text fills up the full menu space.

One remaining issue has to do with the alphabetic index. Since the index characters are always rendered at full size, they would overlap each other when they are far from the

<sup>1</sup> Note that the online applet uses Java 2 to decrease the portability problems associated with accessing Swing from Java 1.

focus area, since the associated menu items at that point are quite small. The fisheye menu avoids this overlapping problem by simply not rendering indices that would overlap with another. Thus, in the periphery, not every index character is shown.

The fisheye menu is implemented by pre-calculating the size of every item and the space between each item for each focus position, and storing that information in look-up-tables. This pre-calculation is necessary in order to calculate the position of the index letters. This also improves performance since there is very little calculation during rendering. One final, but important optimization is the use of region management. Since the fisheye menu is visually stable, only the changing focus portion of the menu changes as the pointer moves. Our implementation keeps track of the area on the screen that changes, and only renders that portion. Thus, for a menu of 200 items, typically less than 30 items need to be rendered for each mouse movement.

### EVALUATION

We conducted a pilot study of fisheye menus comparing user preference of them against the three menu mechanisms commonly used today: arrow buttons to scroll up and down, scrollbars, and hierarchies. The intent of this study was to get a preliminary idea of whether fisheye menus had potential. We did not expect that the results of this study would provide a definitive understanding of whether fisheye menus were faster, more appropriate, or preferable for tasks. Rather, we hoped to get a rough idea of user's preferences that would let us know if our intuitions were realistic, and to inform future evaluations.

We picked 10 users that were not from our lab, and were not familiar with fisheye menus before the study. Five of the subjects were computer science students with programming experience, and five of the subjects were administrative staff that work in our building, and did not have programming experience. We felt that looking at programmers vs. non-programmers was important because fisheye menus are somewhat technical, and we sensed that people with less technical experience may not feel immediately comfortable with them. As it turned out, there was a difference between these two classes of users that will be reported in the *Results* section.

Seven of the subjects were female and three were male. Five were in their 20's, two were in their 30's, two were in their 40's, and one was over 50. All but one reported using computers more than 20 hours per week.

The test was entirely automated using a custom Java program. The program requested demographic information, and explained that the purpose of the test was to get feedback on the four types of menus for selecting an item from a list. The subjects were then instructed to try out each of the menu types, spending as much time as they liked. At that point, they were instructed to ask any questions about how the menus worked (the test was administered by the author of this paper.)

The four menu types were labeled ArrowBar, ScrollBar, Hierarchy, and Fisheye. All menu items were ordered alphabetically. The ArrowBar was implemented with arrows at the top and bottom of the screen. When the arrows were pressed, the list would scroll at a rate of 20 items per second. The ScrollBar was implemented with a standard scrollbar on the right side of the menu that could be used to scroll the menu. The Hierarchy was constructed with one menu item for each letter of the alphabet. Menu items were placed in cascading menus under the first letter of the text of that item. Finally, the Fisheye menu was that described in this paper. Each of these menus are available for trial at the fisheye menu website.

Then, the subject was instructed to select three different specific items from each menu. Each menu was populated with 100 websites that were selected from the list of most popular websites from PC magazine (with four well known universities that replaced four entries that did not have a short descriptive title.) The items that the subjects were told to select were chosen from near the beginning, middle, and end of each list. The subjects were also asked to browse the lists for a website they would like to visit. The selected item was displayed for the user to see, however, information was not logged as to whether to the subjects correctly selected the specified item.

The subjects were asked to rate the menus. They were asked to rate each menu using a 9-point Likert scale according to seven characteristics taken from QUIS – the Questionnaire for User Interface Satisfaction [23]. The seven characteristics were:

- terrible – wonderful
- frustrating – satisfying
- difficult – easy
- slow – fast
- hard to learn – easy to learn
- boring – fun
- annoying – pleasant

Finally, the subjects were asked to rank the four menu types in order of preference for goal-directed tasks and browsing tasks. They were also offered the option of typing in any comments they had about the four menu types.

### Results

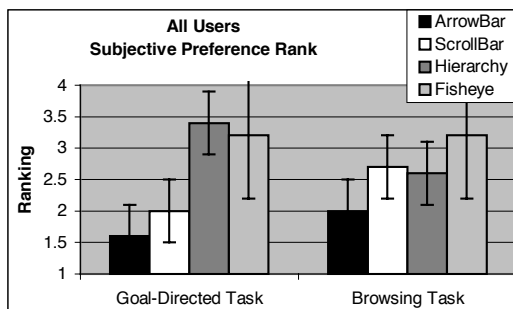
The average subjective satisfaction of the four menu types was recorded for all users, and separated by programmer vs. non-programmer. For all users, on a scale from 1 – 9 (with 9 being most positive), Hierarchy was the favorite (6.8), Fisheye (6.4) was rated slightly higher than Scrollbar (6.2), and ArrowBar (4.9) was the lowest.

When split by programmer, an interesting difference appears. The ratings of ArrowBar and ScrollBar did not change very much, but Fisheye and Hierarchy did. For programmers, Fisheye (7.0) and Hierarchy (6.9) were about the same. For non-programmers, the spread between Fisheye (5.8) and Hierarchy (6.8) substantially increased.

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When looking at the individual questions, we see that the subjects had widely differing opinions about Hierarchy vs. Fisheye in different categories. Hierarchy was preferred over Fisheye in the three categories of 'frustrating – satisfying', 'hard – easy', and 'hard-to-learn – easy-to-learn'. However, Fisheye was preferred over Hierarchy in the four categories of 'terrible – wonderful', 'slow – fast', 'boring – fun', and 'annoying – pleasant'.

When asked to directly rank the four menu types in order of preference, there was a difference for goal-directed and browsing tasks (Figure 6). For goal-directed tasks, ArrowBar and ScrollBar were clear losers with Hierarchy just beating out Fisheye. For browsing tasks, ArrowBar was at the bottom, ScrollBar and Hierarchy were about tied in the middle, and Fisheye was the most preferred. However, the large standard deviation of Fisheye shows that there was a broader range of reaction. Some users ranked it about the same as ScrollBar and Hierarchy, and some users ranked it much higher.



**Figure 6: Rankings of four menu types by direct comparison for goal-directed and browsing tasks. Error bars mark 1 standard deviation.**

When separated out by programmer vs. non-programmer, there was a similar effect as with the satisfaction ratings. Programmers preferred Fisheye to Hierarchy in all cases, with a small margin (0.2) for goal-directed tasks, and a big margin (1.0) for browsing tasks. Non-programmers preferred Hierarchy to Fisheye for goal-directed tasks by a margin of 0.6 and they were tied for browsing tasks.

The subjects' comments were informative and mirrored the rating and ranking results. Two non-programmers specifically said that they did not like fisheye at all. The other eight subjects all liked fisheye, but frequently had concerns about the difficulty of learning to use it. However, they also expressed optimism that with more training, it would become more enjoyable and perhaps preferable. A few typical comments were:

*"Fisheye was the most difficult to learn yet with continued use may actually become the most useful."*

*"ArrowBar and ScrollBar are boring but very easy to use. I am used to it. Hierarchy and Fisheye are very interesting."*

*"Once one understands that one has to go to the colored area in Fisheye it becomes easier. But if one doesn't know that it's frustrating."*

### Analysis

While the study contained a small number of subjects and the results were not analyzed statistically, we noted some trends. These should be interpreted with caution, but do seem to make sense. The test was administered without a description of what fisheye menus were or how they worked. Instead, the subjects were told to play with them for as long as they wanted and only then could they ask questions.

By observing this initial exposure to fisheye menus, and by responding to the subjects' questions, it was clear that at least in the minute or two that they tried them, most subjects did not understand how to use the fisheye menu fully. All of the subjects quickly discovered that moving the mouse up and down on the left side of the menu operated the basic fisheye functionality. However, several were confused about the exact function of the alphabetic index on the left side. Several users tried clicking on them – which just selected the item that was currently highlighted. After one or two tries with this, they then realized that the index was just informative, and not interactive.

A more important problem was that only a single subject truly discovered how the "focus lock" mode on the right side of the menu worked. Despite the visual feedback, subjects were just not expecting to have different behavior when the mouse pointer was on different sides of the menu. Some subjects never moved the pointer to the right side and so never discovered that behavior at all. Other subjects moved the pointer to the right side of the menu accidentally or erratically. They just noticed that the menu would sometimes change behavior in an inconsistent manner. They did not correlate the change in menu behavior with the side of the menu that the pointer was over.

Once the subjects were done exploring the menus and asked questions, the focus-lock mode was explained. Interestingly enough, all 10 subjects completely understood how it worked in just a few seconds of explanation. Thus, the visual design of the menu clearly needs some work to make the focus-lock mode more discoverable.

Another major lesson learned from these studies is that subjects' response varied widely. Looking at the average results only tells part of the story. Two of the subjects did not like the fisheye menus at all. It had nothing to do with the difficulty they had to discover how they worked. Rather they just didn't like them. One of those users reported that the small menu items made her feel badly because she felt that her eyesight was poor.

On the other hand, several of the users were eager to start using fisheye menus in their regular work immediately. This bimodal preference suggests that fisheye menus, if

deployed in an application, should be optional. Some users are likely to prefer them, and some are likely not to.

The last lesson we learned from this study is that application designers should consider the use of scrollbar and hierarchical menus instead of the traditional arrow menus used by default by current operating systems. Or better yet, let users set an option to specify how long menus will be presented.

The ArrowBar menu was the clear loser in all cases. Subjects felt it was boring, slow, and frustrating. Yet, this is the most common type of long menu in commercial systems. The ScrollBar menu, on the other hand, provided a nice compromise for goal-directed and browsing tasks, and was generally enjoyed by users. While the Hierarchy menu was often preferred for goal-directed tasks, the same menu will be used in different ways by different users. Some users will know exactly what they want while some will browse. So, the Hierarchy menu should be used cautiously if at all, and only when it is clear that users know exactly what they are looking for.

### Expert Timing

We also performed a very simple test to see how fast an expert could use each of the menu types. The author of this paper selected an item from the middle of the menu from each of the menus 10 times working as quickly as possible. The fastest time was recorded. This was done for the 100 web sites, and also for a list of 266 countries.

For the 100 websites, the times were: ArrowBar (3.4 secs); ScrollBar (2.2 secs); Hierarchy (1.5 secs); Fisheye (1.7 secs). For the 266 countries, the times were: ArrowBar (8.8 secs); ScrollBar (2.6 secs); Hierarchy (2.1 secs); Fisheye (2.3 secs).

These timing results match closely with the subjective preferences for goal-directed tasks, and so suggest that these data may reflect a broader trend than would be indicated by so few subjects.

### CONCLUSION

Selecting an item from a list is an important and frequent task. We have presented here fisheye menus, a new mechanism that supports this kind of selection. Based on our preliminary evaluation, we believe that this approach is promising. It clearly is not for all users, but just as clearly, many users prefer it, so at this point we recommend considering fisheye menus for optional use where selection from a long list is required.

We plan on continuing the investigation of fisheye menus by conducting a controlled empirical evaluation, including analysis of the speed users can select items with the different menu types. We also will consider other menu types such as matrix or multi-column layouts, and will look at other factors such as the number of items in the menu.

Finally, we have begun to look at putting content aside from text in fisheye menus, and using them for tasks other than menu selection. Putting in a horizontal bar indicating

a numerical value (similar to the strategy of Table Lens [17]) in the linear fisheye menu appears to be an interesting way to monitor time-varying data.

### ACKNOWLEDGEMENTS

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## Appendix A.2 - Cognitive Walkthrough Paper

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# Andy Ko

## Goals

1. To learn about the curriculum and methods currently used in his UIST course
2. To gather qualitative information on the reasoning of the course development
3. To hear personal example of translational resources and how he defines its success
4. To understand his rationale behind teaching the course in the MHCID program
5. To gain insights about his methods of research translation through his personal blog post

## Section 1 | Research Inquiries | 5 minutes

When we talked to you about this last quarter, you mentioned that there's not a lot of work being done in this field.

- Is there any current work or research that excites you in this problem space that you've been following?

When you introduced UIST to us, you told us that there were no other classes like this anywhere else.

- What inspired you to create the class like this in a design program?
- What did you envision for the class and did your expectations match reality?
- How did you go about selecting the white paper - were these from past experiences in your education?

## Section 2 | Communication with others | 10 minutes

You're very active on different online platforms like Medium and Twitter, and you use those to convey both your research and personal insights.

- What has your experience been like using these platforms?
- Have people reached out to you on these before?

We are curious to know about your relationships with design practitioners in the industry.

- Have you seen examples of your research being interpreted and or applied in practice?
- If so, have designers tried to contact you in the past? How often?
  - What channel did they reach you at?
  - Was it convenient? Why? How would you prefer to be contacted?
- Have you given talks at companies or practitioner conferences like SXSW?
  - Why? What incentivizes you to go?

## Appendix A.3 - Expert Interview Guides

- Why not? What keeps you from Participating?

Can you tell me about a time when you've had a productive conversation with a practicing designer in the industry on your research?

- How about the inverse. Can you tell me about problems that you've had to communicate with practitioners?

### Section 3 | Thought Exercise | 5 mins

If you have a minute to explain paper X to a practitioner, what would you do?

- Where would you focus on explaining beyond the abstract?
- What would your process be?
- Will you be asking about their background on the problem?
- What would you ask?

### Section 4 | Wrap-up | 3 minutes

We really appreciate the help that you've given us on our topic, and for giving up your time.

Is there anything else you'd like to share to us that you think would be helpful for us to look further for our project?

If we have any follow-up questions, would you be okay if we can ask you further down the line of our project?

# Daniella Kim

### Goals

1. To learn about the curriculum and methods currently used in her course
2. To gather statistics of successful implementation of her methods in the industry and her definition of success
3. To understand her inspiration/incentives behind teaching the course

### Section 1 | Curriculum & Methods | 10 minutes

We know that you've done a lot of teaching on bettering the relationship between HCI research and practice. We're curious to learn about your process of creating the curriculum.

- First of all, what topics do you cover in your class?
- How did you go about creating the syllabus for this class?
- Are there any particular types of research do you focus on teaching?
- How many iterations of the class have you gone through? What did you change?
- What is the demographic in your course? Mostly designers or researchers?

### Section 2 | Success in Teaching | 6 minutes

Given your past experience as an experimental psychologist transitioned into the role of UX researcher/instructor, we are interested in learning more about how you've had to communicate research to people outside of the immediate community.

- How do you measure the success of your course outcome?
- Do you have students reaching back to you talking about their experience applying research in the industry? How is the experience?
- Which promotes stronger connection or communication between the researcher/writer and practitioner?

### Section 3 | Communication with Practitioners | 10 minutes

We are curious to know about your relationships with design practitioners in the industry.

- Have you seen examples of your research being interpreted and or applied in practice?
- If so, have designers tried to contact you in the past? How often?
  - What channel did they reach you at?
  - Was it convenient? Why? How would you prefer to be contacted?

We know that you owned and are currently the principal researcher of Halibut Flats.



## Appendix A.3 - Expert Interview Guides

- How do clients usually find you? Who are they? What fields are they in?
- What are the usual methods of communication? In person? Meet at office?
- How do you usually communicate findings?
- Do you focus on primary research or secondary research?

### **Section 4 | Wrap-up | 3 minutes**

We really appreciate the help that you've given us on our topic, and for giving up your time.

Is there anything else you'd like to share to us that you think would be helpful for us to look further for our project?

If we have any follow-up questions, would you be okay if we can ask you further down the line of our project?

# Erik Stolterman

## Goals

1. To learn about new developments on research-practice gap
2. To get an expert opinion on how research is being communicated in current HCI journals and at conferences
3. To gather insights on past communicative experiences with design practitioners

## Section 1 | Research Inquiries | 5 minutes

We know that you've done a lot of research on bettering the relationship between HCI research and practice. We're curious to learn about some recent developments.

- Is there any current work or research that excites you in this problem space that you've been following?

## Section 2 | Research Communication in Journals | 10 minutes

Given your past experience as a co-editor in chief of Interactions and are on many other HCI and design journals, we are interested in learning more about how you've had to communicate research to people outside of the immediate community.

- What type of process did you run through in order to strike this balance between presenting research insights and making it digestible for readers?
- Are there journals you think present its information most effectively? Why?
- Which promotes stronger connection or communication between the researcher/writer and practitioner?

## Section 3 | Communication with Practitioners | 10 minutes

We are curious to know about your relationships with design practitioners in the industry.

- Have you seen examples of your research being interpreted and or applied in practice?
- If so, have designers tried to contact you in the past? How often?
  - What channel did they reach you at?
  - Was it convenient? Why? How would you prefer to be contacted?

We understand through your paper and some others that there's some apathy or lack of awareness for practitioners to attend more research-heavy conferences like CHI.

- Is this similar to other conferences you've been to?
- Have you given talks at companies or practitioner conferences like SXSW?

## Appendix A.3 - Expert Interview Guides

- Why? What incentivizes you to go?
- Why not? What keeps you from participating?

### Section 4 | Thought Exercise | 5 mins

If you have a minute to explain your paper, *How Human Should Social Robots Be?* to a practitioner, what would you do?

- Where would you focus on explaining beyond the abstract?
- What would your process be?
- Will you be asking about their background on the problem?
- What would you ask?

### Section 5 | Wrap-up | 3 minutes

We really appreciate the help that you've given us on our topic, and for giving up your time.

Is there anything else you'd like to share to us that you think would be helpful for us to look further for our project?

If we have any follow-up questions, would you be okay if we can ask you further down the line of our project?

## Appendix A.3 - Expert Interview Guides

# Gary Hsieh

### Goals

1. To learn about his expertise on human behaviors searching for information online
2. Gather insights on about computer-mediated communication between people
3. To gather insights on past communicative experiences with design practitioners

### Section 1 | Human Behavior and Online Search | 10 minutes

We understand you've explored ways in which people search for information and questions online, but you mention the results don't take into account people's individual needs.

- What would drive current designers or practitioners to look for academic research for a project they're interested in learning more about?

### Section 2 | Communication with Practitioners | 10 minutes

We are curious to know about your relationships with design practitioners in the industry.

- Have you seen examples of your research being interpreted and or applied in practice?
- If so, have designers tried to contact you in the past? How often?
  - What channel did they reach you at?
  - Was it convenient? Why? How would you prefer to be contacted?

We know you have extensive experience at ACM conferences like CHI or DIS. We know that in the past, practitioners might not have felt motivated to go, but we here there are some recent developments to make it more inclusive.

- Do you think that there's more collaboration between both now?
- Have you given talks at companies or practitioner conferences like SXSW?
  - Why? What incentivizes you to go?
  - Why not? What keeps you from Participating?

### Section 3 | Wrap-up | 3 minutes

Is there anything else you'd like to share to us that you think would be helpful for us to look further for our project?

If we have any follow-up questions, would you be okay if we can ask you further down the line?



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## Appendix B.1 - Participant Survey Results

Participant	What is your level of Education?	Was your degree in Human-Computer Interaction (HCI) or related fields?	Official Title	Years of Experience	What is the approximate number of employees at your company/affiliation?	Please briefly describe your current responsibilities
1	Master's degree (e.g. MA, MS, MEd)	Yes	Customer experience design strategist	4	1,000	UX research, creating strategy documents from research, service de
2	BS in Business Administration and Marketing	Yes	User Experience Designer	1	10	In the process of redesigning site/ usability testing
3	Master's degree (e.g. MA, MS, MEd)	Yes	Designer	7	10,000+	UI, motion, visual
4	Bachelor's degree (e.g. BA, BS)	No	Graphic Designer	3	50	create virtual mockups of products for customers, design marketing
5	Bachelor's degree (e.g. BA, BS)	Yes	Ux designer	1	200	Design features for health apps
6	Bachelor's degree (e.g. BA, BS)	Yes	Graphic Design	5	200	Graphics in the Student Union building
7	Doctorate (e.g. PhD, EdD)	No	Senior Researcher for Ethnographic Research	13	200	qualitative research; community engagement; voice of customer / jo
8	Doctorate (e.g. PhD, EdD)	No	Senior Research Scientist	18	10,000+	Conduct long lead user and developer experience research.
9	Master's degree (e.g. MA, MS, MEd)	Yes	Pathfinding Researcher (UX)	18	10,000+	UX research, Needfinding, design research
10	Master's degree (e.g. MA, MS, MEd)	No	Project Manager Support Staff	2	10,000	Facilitate logistics of design and construction projects
11	Master's degree (e.g. MA, MS, MEd)	No	Design research associate	1	10,000+	Research
12	Bachelor's degree (e.g. BA, BS)	No	Senior Product Designer	4	500	Deliver design solutions for Fuze's end user apps (MacOS, iOS and
13	Master's degree (e.g. MA, MS, MEd)	Yes	Senior UX Designer	3	200	Research, UX design, UI design
14	Bachelor's degree (e.g. BA, BS)	Yes	Product Designer	3	50	Conducting user research to investigate problem spaces and valida
15	Bachelor's degree (e.g. BA, BS)	No	UX/UI Designer	8	500	Designer, Front End Developer, Game Designer
16	Bachelor's degree (e.g. BA, BS)	Yes	UX Designer	3	200	UX Design
17	Master's degree (e.g. MA, MS, MEd)	Yes	UX Designer	3	10,000+	UX, Interaction, Visual, Some coding
18	Bachelor's degree (e.g. BA, BS)	Yes	UX Designer	3	10,000+	UX Design, visual design, research, strategy
19	Bachelor's degree (e.g. BA, BS)	No	UX Designer	5	10,000+	UX Design
20	Bachelor's degree (e.g. BA, BS)	Yes	Product Designer	5	200	Responsible for feature team designs from UX research phase all th
21	Bachelor's degree (e.g. BA, BS)	Yes	Senior UX Designer	5	200	Understand the user's jobs to be done and design and design an ap
22	Bachelor's degree (e.g. BA, BS)	No	Sr Product Designer	8	50	Product Design
23	Associate degree (e.g. AA, AS)	Yes	Senior UX Designer	10	1	Primary UX designer for 2 companies
24	Bachelor's degree (e.g. BA, BS)	Yes	UX Designer	6	1	Contract for UX/UI Design including user personas, user scenarios/
25	Bachelor's degree (e.g. BA, BS)	No	Senior Industrial and User Experience Designer	7	10	Developing design strategies and liaising with clients at our consulta
26	Doctorate (e.g. PhD, EdD)	No	UX Researcher	1	5,000	Run research studies (primarily qualitative, some quant) for a portfo
27	Master's degree (e.g. MA, MS, MEd)	Yes	UX Researcher	2	1,000	Generative and evaluative research across all product lines.
28	Bachelor's degree (e.g. BA, BS)	Yes	Senior UX Designer	2.5	10,000+	UX Lead of core feature development for Commercial Banking porta
29	Master's degree (e.g. MA, MS, MEd)	No	Director, UX Research	3	1,000	UX research, product design, strategy
30	Bachelor's degree (e.g. BA, BS)	No	UX Researcher	2	1	Sell and provide UX Research services
31	Bachelor's degree (e.g. BA, BS)	No	UX Research Associate	0.5	50	UX Research - (Generative Research, Usability Testing)
32	Completing PhD	Yes	PhD candidate	2	10,000+	Research
33	Bachelor's degree (e.g. BA, BS)	No	Associate UX Researcher	1	1,000	Recruiting and scheduling participants for research, leading a resea
34	Master's degree (e.g. MA, MS, MEd)	Yes	Senior Consultant - Product & Experience	5	200	Design Research specialist for product and UX engagements
35	Master's degree (e.g. MA, MS, MEd)	Yes	UX Researcher	2	5,000	Scope, plan, execute, analyze and present research on a weekly ba
36	High school degree or equivalent (e.g. GED)	No	Senior UX Architect, Technology	30	500	Innovation for end users. Accessibility. Research. Design. Testing.
37	Master's degree (e.g. MA, MS, MEd)	No	User researcher	0	200	Supporting, designing, conducting user research
38	Bachelor's degree (e.g. BA, BS)	No	Customer Researcher	2	500	I do research on the usability, messaging onboarding, churn etc. in
39	Bachelor's degree (e.g. BA, BS)	Yes	Product Manager	1	10	Finance, user research, product iteration, funding
40	Master's degree (e.g. MA, MS, MEd)	Yes	Experience Researcher	3	10,000+	I'm a User Experience researcher for web optimization project
41	Master's degree (e.g. MA, MS, MEd)	No	Design Researcgger	25	1	soup to nuts
42	Master's degree (e.g. MA, MS, MEd)	Yes	UX Researcher	2	10,000+	Early user discovery research, concept testing, usability testing, inte
43	Master's degree (e.g. MA, MS, MEd)	Yes	Product/UX Researcher	3	500	Plan, lead, and deliver UX research findings as part of a cross-funct
44	Master's degree (e.g. MA, MS, MEd)	No	Senior UX Designer	8	500	UX Lead for a workstream for HR software, wireframing and prototy
45	Bachelor's degree (e.g. BA, BS)	No	UX Designer	1	1	Consulting + Design
46	Bachelor's degree (e.g. BA, BS)	Yes	Product Design Engineer	2	5,000	Reverse engineering of different products, CAD modeling, 3d printin
47	Bachelor's degree (e.g. BA, BS)	Yes	Customer Support Agent	5	500	Answered phones and respond to customer requests regarding billin
48	Bachelor's degree (e.g. BA, BS)	No	Designer	7	50	Marketing, graphic design, industrial design.

Team size (no. of people)	How often do you use these sources ? [Visual (Dribbble, Behance, etc.)]	How often do you use these sources ? [Design blogs (Medium, Tech Company, etc.)]	How often do you use these sources ? [Toolkits (IDEO, Google Sprint, UX Collective, etc.)]	How often do you use these sources ? [Video Tutorials (YouTube, Vimeo, etc.)]	How often do you use these sources ? [Academic Resources (Peer Reviewed Papers)]	Have you heard of the following academic conferences?
	4 Never	Sometimes	Sometimes	Sometimes	Always	ACM, CHI, SIGCHI
	1 Always	Often	Sometimes	Often	Rarely	None of the above
	5 Often	Often	Sometimes	Sometimes	Often	SIGCHI
	5 Often	Rarely	Never	Sometimes	Never	None of the above
	25 Rarely	Sometimes	Rarely	Sometimes	Sometimes	ACM, CHI, SIGCHI
	7 Always	Never	Never	Always	Never	None of the above
	10 Never	Never	Never	Never	Often	CHI
	12 Never	Sometimes	Never	Sometimes	Often	ACM, CHI, UIST, EPIC, CSCW, HRI, FSE, 4S
	100 Sometimes	Often	Often	Sometimes	Often	ACM, CHI, SIGCHI
	5 Often	Often	Never	Never	Never	None of the above
	6 Never	Sometimes	Always	Sometimes	Always	CHI, SIGCHI
	6 Sometimes	Rarely	Rarely	Never	Never	None of the above
	3 Often	Often	Often	Sometimes	Rarely	ACM, CHI, SIGCHI, UIST
	3 Sometimes	Often	Always	Sometimes	Often	ACM, CHI, SIGCHI
	30 Always	Rarely	Never	Sometimes	Never	None of the above
	7 Often	Often	Rarely	Sometimes	Rarely	CHI, SIGCHI
	30 Sometimes	Often	Never	Rarely	Sometimes	CHI, SIGCHI
	15 Always	Always	Often	Always	Never	None of the above
	11 Often	Rarely	Never	Sometimes	Sometimes	SIGCHI
	9 Always	Often	Sometimes	Never	Rarely	SIGCHI
	5 Never	Sometimes	Rarely	Rarely	Often	None of the above
	5 Sometimes	Sometimes	Sometimes	Never	Sometimes	CHI
	10 Sometimes	Often	Often	Sometimes	Rarely	SIGCHI
	3 Sometimes	Sometimes	Sometimes	Sometimes	Rarely	ACM, SIGCHI
	3 Rarely	Sometimes	Rarely	Rarely	Often	ACM, CHI, SIGCHI, DIS, EPIC
	12 Never	Sometimes	Rarely	Often	Rarely	None of the above
	1 Never	Sometimes	Sometimes	Rarely	Sometimes	None of the above
	20 Often	Often	Often	Rarely	Sometimes	CHI
	12 Never	Sometimes	Never	Sometimes	Often	CHI, SIGCHI
	1 Rarely	Always	Sometimes	Often	Sometimes	ACM, CHI, SIGCHI
	10 Sometimes	Often	Rarely	Sometimes	Rarely	None of the above
	15 Rarely	Sometimes	Sometimes	Sometimes	Always	ACM, CHI, SIGCHI, DIS
	16 Never	Often	Never	Often	Rarely	CHI, SIGCHI
	6 Rarely	Often	Rarely	Rarely	Always	CHI
	6 Never	Sometimes	Often	Often	Often	CHI, SIGCHI
	21 Never	Often	Rarely	Rarely	Rarely	None of the above
	5 Never	Always	Never	Often	Sometimes	None of the above
	6 Often	Often	Often	Sometimes	Rarely	None of the above
	5 Rarely	Often	Sometimes	Always	Often	None of the above
	3 Never	Sometimes	Rarely	Never	Sometimes	ACM, CHI, SIGCHI
	1 Never	Sometimes	Sometimes	Rarely	Sometimes	ACM, CHI, SIGCHI
	5 Sometimes	Often	Often	Never	Always	CHI
	9 Never	Often	Often	Never	Rarely	CHI
	8 Rarely	Often	Sometimes	Never	Never	ACM, CHI
	3 Always	Always	Sometimes	Always	Often	CHI, UXPA
	5 Sometimes	Always	Rarely	Often	Rarely	ACM
	120 Rarely	Sometimes	Never	Always	Sometimes	None of the above
	3 Sometimes	Often	Sometimes	Sometimes	Rarely	None of the above

## Appendix B.2 - Participant Interview Notes

### Participant 1

Provide quick outline of the study  
Frame the study so that it's focus on secondary  
Need to figure out how to send file over Skype?!

#### Personal:

- UX design for physical stores
- 3 years of exp
- Tasks: decks, new apps, storyboarding
- What current state is - what we want it to look like in the future

Research from internal customers, brand guidelines  
Deviation: color is strict but other things are free

Look across multiple teams but currently in-store exp: check-in app

#### Main inspo

MEDIUM: accessibility

Dribbble:

Facebook Groups:

Google Design Sprint

Books: Made to Stick

Scholarly: only social ones Medium, Wordpress, TC

#### Conferences

Adobe Max:

IxD:

Local conf

#### Projects

Shuttle App for MS:

- Talk to Designers, PMs, SWEs, shuttle drivers
- A hackathon project
- These are types of things we want to attack; major pain points; someone needs to do data/research/visual design etc.  
sign up for whichever one u want to go to - people chose what they wanted to get into

Got into design by seeing the disconnect in patient experience

Johnson Johnson: sources - sketch, adobe

Engineering focused, started to get style guides ready, just creating space

Projects similar but intricate

More resources use are people that create for healthcare

Not about flashy things but core UX and that it works, intuitive, core usability

Compare to now

Past experience: design research -

Only this OR this OR this. Research and design don't think from same people. But programs like HCI come out with similar skillsets.

In big companies, more specialized, user space is huge, everything has to be dedicated.

Why is there separation?

## Appendix B.2 - Participant Interview Notes

- Product is so big, scale
- Focus is split
- You want someone to be specialized and good on it because of its scale
- Designer Guild
- Use: Medium, popular media sites, people who work there were part of different groups. HH design - they have collection of people that talk about design stuff, new links, design stuff, if people have questions, an online community - big small design agencies share insights on what they need.

Less academic, more social

Deep dive articles - do they reference academic paper?

- That i've seen
- More bibliography
- Not sure if academic papers but they do cite resources

### Walkthrough

What are the first things you look at

Don't feel like u need to extend

What sticks out/what doesn't interest you

It's talking about focus on a certain area for a drop down menu / linear menu

Very visual

I skipped down to other image and the header item of fisheye design

I jump to the image and read a little bit here and there

Good at showing what it would look like

They acknowledge its problems - figure 3

Mainly look at the figures!!! Jump to 5 figures in a row lol

Facial expression: normal

At the results section

Read out figure captions.

### Takeaways

They're looking at fisheye menu and if it would be usable and how people react to it, what satisfaction ratio is with fisheye vs regular menu

They outline their study w diff participants and demographic

Outline charts to show data etc.

How does this differ?

More academic, more evidence based

Articles

## Appendix B.2 - Participant Interview Notes

The articles that she reads does have oh i tested with this many people, they do reference studies like in articles "as cited in study" but its less in depth

More of a deep dive for UI than I typically do read

Maybe more at Johnson & Johnson - bc of a lot of clinical trials, how people interact w tech in healthcare, there were more academic but more evidence based and deeper dive

Could u see this paper fit in with context of workflow - when looking for accessibility in scenarios in physical store, do u have evidence or form of things they could use, oh u should look into theoretical or handson paper, but i haven't looked into it

But in accessibility might help  
More hardcore research done for these kinds of these specific

A lot of mentors, when i left research team they became mentor. I reach out for monthly meetings, casual thing.

Some have left company

Were both of these mentors that referred u - which group of people recommend u to look - mentor at microsoft - she has masters in psych so she's empirical and looks at these kinds of things - done a lot of research

Maybe i can point u to some references, i did psych labs, did studies like this. I personally owuld but not sure everyone would do

If u want, meidum article is good.

On a scale of 1-10 how hard was it to understand gist of insights probably a 2. Is there a way u could think of that would make it easier? I like the amount of images.

More headlines - second page didnt have header - make it easier to skim if it were clearer - breakdown bc if just a page people skim of whole page

## Appendix B.2 - Participant Interview Notes

### Participant 2

Two different jobs, finishing up M of Anth at SJSU. worked as a Industrial Designer. Part-time UX Strategist since 2010, mostly ID up til 4 years ago

A mixture of user research validation protocols

Constantly mentions wearable tech he recently worked on  
Communication wearable device for loved ones

I can take my phone away for a sec

What is his body language  
relaxed , standing seems like,

Team dynamic: flat except for owner , recent grad,

Mission critical UI

Sources:

- No access to stakeholders, validated with engineers
- HMI best practices handbook
- Seeing what other orgs have done, look at the completed design, trying to understand the terminology. Slow process.
- Reach out to people in the organization, since they are more specialized

Due to Anth background, look at Anth academic papers, Japanese economics.

Google Scholar, University Library. Ethnography something Conf, free papers, source.

Ethnography Hangout Slack community.

Thesis on UX design community researching probono for non profits

Mentions that he was not exposed to design research in industrial design, and only familiarized himself through the AntroDesign group in grad school >

Compare to Facebook community, not really professional

Researching on UX group in SV and London, 1/3 thesis process based on this

Rarely ethnography research, shooting from the hips design.

Grocery shopping: following the company thru the process.

Go to the places to interact with the consumers

Biggest thing: TIME!

Getting to talk to the people that who will use the product most

Mention Facebook, social gratification?

Biggest difference: speed and depth

Industry: problem -> make a solution desirable. Narrow scope

Academic side: go deep but narrowly deep

Picked his own advisor, "rise of the user in the hall of people". Influenced by people thinking broadly.

## Appendix B.2 - Participant Interview Notes

Exercise: starts at 5:37

Look thru abstract first. OK

General idea -> have seen the UI before

Read a little bit into the introduction, skimming, only looking at the beginning of every paragraph

Examples of what they are talking about

History skimmed, look for what they are adding to the convo

Got the core idea of the menu, the sizing and what you can see in one menu

Implementation section

Trying to figure out a bit more what they are adding to the convo

Got passed the results questions.

Ends: 5:43

Abstract -> Introduction -> Figure1 (most helpful) -> Figure 5 (hypothesis) -> Likert scale from [...] -> Results skimmed -> Analysis, quote is very important -> Conclusion.

Difference: not that much different, more figures, more narrowly focused. Still basic structure, intro->pro

EPIC PAPER? Wider audience, more political, **EMOTIONAL**

Ignore business it is not as **rigorous**

Expected insights carry excitement that the team has had, or powerful quotes.

## Appendix B.2 - Participant Interview Notes

### Participant 3

Timestamp : 6:05PM

Senior UX designer at sun trust

Work primarily on the Whole Sale and small business side - enterprise and corporate applications

Designing, strategizing, the whole sale and small business banking application

Day-to-day:

As of late: Daily Stand Up and then a 2 ½ hour workshop

Lots of future casting work with stakeholders about the future

Updating Wireframes based on the workshop insights

She calls it DESK RESEARCH

Meet with researchers to help them and give them some ideas for research that might need to be conducted. Workshops 2-3 days per week

On off days, does design work. Sketch a lot, desk research

#### High Level Notes

- She indicates that she operates in a isolated fashion
- She is clearly aware of the industry buzz words and standards
- Is wary of field research
- Very excited to be in the space she is in
- She is constantly trying to inform stakeholders to create a positive look for the UX community
- relies heavily on future casting
- Uses analogies to explain interpretation of research

#### Inspiration for workshop? How to organize?

- On UX side, working with 2 strategies, 1-2 other designers, strategists - engage with stakeholders to do more strategic projects (longer and larger scope). Accelerator.
- Workshops help everybody in project achieve alignment
- Way to get people in same room, thinking and collaborating
- workshops are helpful in getting in at the meat of the problem and getting everyone to collaborate and work together

#### Team dynamic

- UX team itself consists of 20 people
- Few managers, 3 directors, a line of business directors, wholesale and consumer director
- Executive creative director who is liaison between marketing and UX
- Accelerator is a second arm of UX department - where the strategists sit
- UX designers are staffed on these projects
- Because project she's working on, that's why she's working with two strategists
- 6-7-8 months ago working on agile sprint release schedule. Worked with front end dev , no strategists. Depends on types of projects strategist.

#### Research Director? How do you communicate to each other

- Weekly planning meetings with researchers that managers go to (I don't go because I'm project lead so there's a researcher assigned to support the project she's on)
- Meet and go over together
- Go over wireframes that needs to be share
- The managers will have longer-term decision making meeting
- The senior UX designers also have subsequent meetings to talk more specifically about kinds of research that needs to be conducted

Do you conduct that research or are you responsible?

## Appendix B.2 - Participant Interview Notes

- Depends on what we're researching
- Stakeholder interviews
- Does alongside researcher
- For field research, the researcher is the one that conducts that work
- Did client interview yesterday
- He led research question but she took note
- Loose format
- He had the questions and screens to go through, agenda etc. she would chime in with any questions she had
- If it's internal work or desk research, stuff that she would do, but if face to face, she might listen in and take notes, but she's not leading that effort

Secondary research, what do they look at?

- I do that all the time
- We haven't had opportunity to do as much or as many client interviews
- The consulting work is done behind the scenes when they interview people
- Difficult to convince stakeholders to talk to clients
- Rely on secondary research and techniques to get a partial picture of who our user might be and what their day might be like
- Do secondary research
- What kinds of sources do you go to
  - It depends
  - I'll read industry white papers\*\* specifically about banking
  - If i'm reading about a specific user and i have a general idea about their job title does LinkedIn research
  - Paint a picture about what a financial analyst might look like
  - Read job description of other companies
  - Read industry survey and papers
  - Subscribed to google alerts
  - Gets notifications about FinTech industry or what other banks are doing
  - Competitive analysis, research, read through forums where financial or client base people gather
  - Reads subreddits about finance or treasury or banking
  - Forums about the same thing
  - Slack groups about fintech
  - Consuming a lot of information even if it's secondary information

Industry white paper

- Through Google
- Google pdf - treasury management predictions
- Find paper from different consultancies
- Deloitte puts stuff out internally
- Consulting groups interview thousands of clients and users and put together decks and banks pay to get access to get it
- If you have to pay - not available quickly

Are you currently interested in academic conferences?

- Always interested in conference - haven't been to any in a while because it's so expensive
- My company doesn't sponsor because it's not part of his offer
- I hear about them all the time
- I Read CFP and think about them
- But i haven't been in a while
- Fintech industry
  - Convince someone in bank to pay for it
  - Closely relevant
  - Harder sell to go to a design conference or a n interaction design conference
- Would love to go to fintech or innovation design or interaction design conference

Went to Georgia Tech

- Graduated two years ago. Studied industrial design and minored in computer science
- In industrial design program they have three tracks
  - I focused on product development and interactive products

## Appendix B.2 - Participant Interview Notes

- I had minor in computer science
- I email some of my advisors
  - Were there any memorable professors
  - I don't actively keep in touch with any of them
  - We all know each other
  - They were all mentors and great professors but there aren't any she actively communicates with
- I've never heard of ACM
- They expose you to so many different types of product design
  - Have to get crafty and resourceful
  - I can't remember any specific website or resource

Technical difficulties ~

6:29pm Cognitive Walkthrough Paper

- Looks like "...."
- Reminds me of a rolodex - items far away smaller, closer to them larger
- I look through the first paragraph of abstract
- Saw image to the right
- I was able to piece together what the rest of the paper was probably covering
- My dad still talked about having a rolodex yesterday
- Reminds me of iPhone when scrolling through dates, number you land on is clearest and largest
- Illusion of things being in perspective
- I scrolled down and saw additional screenshots but I didn't really study it
- I'm scrolling through it now
- I didn't really read that much beyond the first page
- The kind of work that I do, we design applications for enterprise or corporate clients
- One issue that's persistent is how do we display lots of data and how do we allow people to access it and scroll through it quickly
- The image I saw on the right - think of possible applications within product I'm currently working on
- I'm trying to envision how it might work for what I'm doing
- Rate on a 2
- every day I try to introduce different interaction patterns or modify existing ones or appropriate others ones I've seen apply elsewhere so something like this would be really helpful
- I have a good understanding of how the fisheye menu is meant to work
- How did you come to that rating of 2
  - If I can get from abstract and key word, that's why I gave it a two
- Say you have some part of paper you want to know more about it and I couldn't find out from the paper?
  - I would go to authors and try to contact them and see if he'd be willing to explain things further
  - How would you go about contacting the author?
  - I would send him an email
  - If he tells me anything that's lengthy or a response that requires a lot of writing
  - Email is better because you can read and respond to it later
  - I don't pick up numbers I don't recognize - I want to send him an email to introduce himself to give him opportunity to frame an answer before he gets back to me
- How is this different
  - I don't typically read it
  - This convo is making me remember the benefits of it
  - Pull more nuanced applications, interaction patterns versus going to dribbble or reading an article on medium

## Appendix B.2 - Participant Interview Notes

### Participant 4

Im a UX designer at survey gizmo

Small team (5 peeps), talk to users

- Varied backgrounds
- Do the same stuff
- 2 people work behind app; 1 on research; 1 on visual.
- "Im heavier on research side but maybe a mix of both"

Calls on Skype to customers or non-customers: trying to understand their need

Flat organization; generally work really collaboratively

Whatever comes down pipeline we're doing

Pushing pixels to whiteboarding to research

How does process start

- Depends on what job is, what we try to do
- "Here is something we need"
- Talk to internal/external stakeholder, what's broken, what needs to get fixed
- Go to whiteboard, high level wireframe

What resources you use

- Sketch, photoshop, other things

How do you do research (not user research)?

- Generally, avoid asking people what they want. More about what they want to accomplish? What their goals are? Where are the failures?

Tell us about specific project you're working on now

- Right now auditing our application
- Componentizing everything

Background in Service Design

What other resources do you turn to?

- John Kolko - read a lot of his **papers**, listened to presentations and thoughts on what productive data synthesis looks like
- Pdf free to download online
- What did he do in school?
- "Searching for paper"
- Business model generation
- Value Proposition Design - one he's referring to.

Hey what if we did it this way - show and tell not a "oh i read this here"

Everyone is a team player, open to trying new things

Doesnt feel like reaching out to people like Jon Kolko - Why not?

Move to google and figure out

Go to some design and strategy blog

Crawl through Google

How to solve XYZ

Business blogs - Harvard business review

Medium

## Appendix B.2 - Participant Interview Notes

Daily email: Sidebar

Papers are in the back of your mind but not referred to consistently

If the process isn't buried in head, not going to refer back to paper or article

There may be a couple times when you look things up or reference to understand process but beyond that it's not necessarily going back to that in a consistent basis

I like the idea of creating a service blueprint but process of service is not deep or long enough so there aren't enough details to give clarity on the process

Majored in Industrial Design and switched to Service Design

- Took a class and said it made sense to him
- Slack communities in design world
- Talk to one guy once every 2-3 months
  - If Gmail is account, sometimes have a little chat
  - "Hey man how's it going"
- Who is this person? **Friend?** Mentor?
  - Friendship
- Have you ever encountered XYZ, how did you approach it, how would you approach it but a lot of times it doesn't get that far
  - Coworkers are smart, so he asks what coworkers think
  - If nothing else there are slack communities that have answers or that he can ask questions from
- No mentors in undergrad (might have helped a little)
- First job out of college, as a junior designer he went to and looked up to other designers on the team and they were gracious and kind and helped out a bit / taught
  - What did they teach
    - Technical stuff - Photoshop
  - Go on Youtube, watch tutorials
    - Every once in a while uses it again
  - Expand from tutorials to **talks - who are these folks?**
    - Watch people give talks on certain strategy processes and how you think about a problem
    - The **jobs to be done approach**
  - Watch TEDTalk every once in a while

Do you go to any conferences?

- Not a constant, we have in the past
- Coworkers - time and life doesn't allow much time for post-work extra curriculars
- 

\*Man!\*

Starting Service Design groups in Seattle

- Gauge what kind of interest there is in Seattle Community for things Service Design related
- Not a lot in Seattle

Ok I have to go pee

Service Design:

- Holistic view, taking into account all stakeholders
- People Process Profit - take into account business view and design
- UX relegated to digital

What kind of resources do you want to provide in your Service Design meetup?

## Appendix B.2 - Participant Interview Notes

Practical Service Design

<http://www.practicalservicedesign.com/>

And slack channel

What kind of resources are you providing in these slack channels

I'm sitting in the background, consuming

In these channels I feel intimidated because there are very smart channel people in there

Speak less often, observe more often

Fisheye

Generally looks at visuals to gain context

If im just scanning going to read first sentence of each paragraph

Figure 1 - Establishing orientation for the user to see information in a more practical way

I can see it being a difficult interaction piece depending on how you're scrolling - touchpad. Can be worked out.

I'm not thinking of context but if there's a drop down with that many potenital options then "laughs" there might be a bigger issue at hand

\*p 219\*

High resolution focus mode depiction verifies his thought from earlier,

He has a AHA moment, and describes that the focus mode was not immediately obvious

What kind of visual treatment will help you

~that's the question isn't it ~ laughs ~ idk

I think the issue is i dont think people will immediately understand it just by seeing it

If they had no explanation it owuld take a while for them to understand it

Yeah that's a lot of writing~ my hats off to you

Hes giving feedback to the paper, so he is inferring that we are asking for design recommendations

Is looking for solutions,

Likert scale

Should we mention it?

We will do it at the end

Its interesting nonetheless

Hierarch is what triggered the narrowing of the scroll bar example

Read the second p of analysis, and is thinking about the confusion that the participants had while doing the study

How does this differ from usual sources

- Attention span not good
- I would want to glean high level stuff and if i felt that there was something deepr to be gleaned i would dive in deeper and read through the whole thing
- How i approach is the very first two sections - abstract and introduction - if those stood out i would go in deeper
- For me it's about being efficient with how i'm taking in data
- It seems as though you can only take in so much before your eyes start to get crossed
- 
- Figure 1, introduction, probably most important because that determines whether i'm interested in reading the rest of it. If it doesn't have anything obvious to help me get the job done at hand im not going to want to spend any more time on it

## Appendix B.2 - Participant Interview Notes

- To learn more about it beyond paper i'd go to Google, find keywords, be searching the \_\_\_\_\_
  - Look up HCI lab at UMD to see what other areas they've been focused on
  - Then general searches for fisheye menu
  - I want to be very selective with what i'm taking ins
  - See who else is writing on it
  - If interested me, i would look up for other documents lefss scientific that are more focused and high level
  - I'm trying to consume in a smart way
- What medium does best
  - How much time iwill it take to read this article
  - It's clever because so much of what i read depends on that
  - Do i care about this enoguh to give time to it
- How would you rate this paper
  - 6-7
  - 8 pages isn't that long but as far as my desire to read it and link isn't worth it
  - Unless i want to dig into it
- What else would help you grab main point of paper better
  - Wording

## Appendix B.2 - Participant Interview Notes

### Participant 5

Technical difficulties. Apologizes for being late.

Are there any questions you want to ask?

- What is this about?

Tell me about yourself and background

- UX Designer at Centrifly
- Designing for 3 years
- Before this was a Courier Engineer - Courier Engineer
- Studied Informatics at the U so pretty technical background
- Been in Seattle for a while

Tell me about your engineering background

- Having been Courier engineering know software engineering life cycle from working with engineer PM, to understand not just coding but how things are built under the hood helps him design and communicate better
- Even simple things like buttons or forms makes it easier to know eh things are built a certain way
- Helps him be more of a logical designer and problem solver than designing beautiful interfaces
- Narrow things down to essential components instead of just randomly describing a scenario - lets me communicate better and be a better thinker

How would you describe day-to-day operations?

- Figuring out the requirements for a new feature in the initial face to wireframing then visualizing those ideas
- Communicate to stakeholder to final mockup
- Goes to developer then built out
- For existing feature need to be improved
  - Meeting, brainstorming process, improve feature and update that screen
  - Make higher fidelity mockups and interactions and prototypes to test idea, decisions based on the process

Readings?

- Do a lot of research, do some usability testing if I have the power and resources to recruit people even internally i can recruit some other engineer or customer service folks to play with current page
- Doing research on my own and online, looking at articles, competitors, see how they solve a problem
- Everything feeds into my design
- They become my ingredients and inspiration for a certain problem

What kind of articles do you read?

- Chrome extension that feeds me daily new articles in tech and design industry
- Subscribe to a few publications on Medium to look for trends
- Actual UX goodness inside article so I try to bookmark and share within design team, slack
- I read books too, I have books on my desk right now and at work
  - Book on interaction design
  - Design Systems, Articulating Design Systems, About Face
  - Some general Visual Design principle books - dont have background - books that talk about symmetry and layout
- Work on dashboard and user portal - someone recommended book on information design so I brought that over for work
- Why is About Face a bible?
  - My teacher told me that.
    - I went to General Assembly - had a pretty amazing teacher there. Who had a human factors engineering background.
- Tell me more about the curriculum they teach in general assembly?
  - 12 week course
  - First couple of weeks is about UX, lectures on Don Norman's book, usability, how to do user research
  - Nielsen Norman Group - article on different areas of UX, so I read a bunch of articles on facebook and interaction design

## Appendix B.2 - Participant Interview Notes

- Then build a lot of wireframes and prototypes, kind of like a capstone project with real client
- Build portfolio, land a job

So you mentioned articles from Nielsen-Norman Group? How do these help?

- You are designing something that you need, one thing that comes to my mind, when you're doing usability studies and you need criteria for measuring whether something is useful or has poor usability, you can google or read a blog someone wrote
- NNG are academic based but also they have articles that are outlined - can go there and look up key word and they'll have article that talks about 10 heuristics etc. can reference it with confidence
  - Trusted source of information
  - Not just a random blog article

Besides the NNG - do you go to any other sources to find academic articles?

- That's hard. Information overload
- Lots of stuff on Google, hard to sift through
- Don't have much time to do a lot of research anyways - if you've been studying up on your own, might have resources or sites

Let's go back to a particular project you're working on or just wrapping up? Tell us when you incorporated research and what your responsibility is on that

- Can you be more specific - I don't understand the question
- ~Hy explains~
- There's one client project I did at GA, we were trying to build and redesign onboarding experience and debating whether tool tips or videos or tutorials even relevant
- Users really don't like them, they just skip a lot of them, try to close them, figure a lot out on their own. We need to build an argument for stakeholders. Found an article that talked about what makes users purchasing decisions.
- This is where research comes in
  - I forget name of theory or principle
  - Peak-End Rule
    - Peak in experience and at the end what did they feel about it
    - There is peak moment in trial period is negative but if you come out of trial with positive experience you're more likely to sign up
  - We identified what peak moment in user journey was, did usability studies, drew user journey map, used that to convince board members to buy into our project
- How many articles did you go through for that project?
  - Purely luck
  - Go online, go through medium article and google things and hopefully you find something that's relevant or of substance
  - I don't have research background so don't know how to do proper "research"
  - How do you google things and know something that's worth going into versus

You don't have background in research, how would you define research?

- More about what we are trying to do
- My own terms, research is anything that you do to gather data and insights and information
- Maybe that is the gap between reality and more formal research
- Google Scholar - use it in school but never outside of class
- I don't know how to use that to find info
- I don't know how to properly cite sources assuming you find something worth citing in the process
- I guess there's a gap between how designers do research in the workplace environment versus what's actually out there

Why is there a gap?

- I know a lot of academics they are doing a lot of research and publishing papers but I don't see them in my line of work
- So they are there but I can't speak for all designers but from my experience
- It's either books or Medium articles and medium articles don't really do much referencing or citing
- Medium is a great platform but because it's good, it needs to go through Medium or otherwise it's not visible
  - How do you solve that problem now that you have a lot of people on board?
  - You're limiting variety of sources of information

## Appendix B.2 - Participant Interview Notes

- If you're a writer or researcher and you're not on it, you're not reaching the masses
- If you could change one thing about Medium what would you change to make it better?
  - I know it's a good writing platform
  - They made some pivots as far as compensating writing better - i don't know if it's working
  - Created a pay wall
  - If you're not in it
  - Pay writer - forces them to put themselves inside pay wall if they want to be self sufficient they're locking themselves down into one platform
  - Two days after you write it, it's already outdated
  - Medium - lots of eye catching headlines but no substance
    - Same topic over and over again
    - I don't go into Medium.com anymore because there's just too much stuff
    - I don't go to my feed on FB or Medium
    - I use newsly or subscribe to newsletters - they've done things to make things worse for me as far as finding quality content in the design industry
- If you found an article you like or found interesting how would you contact?
  - Comment in article
  - I wouldn't know if they replied back
  - Unless i find their email and send them an email
    - Which i've done a couple of times
    - They have their own newsletters - there are some people i subscribe to but i never unsubscribe. They all read every reply. I make contacts through emails.
    - **Who are these people**
  - What kinds of questions do you ask?
    - Pretty random
- Any conferences you go to or you're interested in?
  - Dribbble has a Seattle meetup, something coming up soon
  - Popular design conferences all over - too expensive
- What about these conferences that you find interesting?
  - People who go there have good feedback
  - You have to go there, feel vibe, meet a lot of people
  - Out of budget
  - There are some local events that are one-time or free or low price tag that I can attend
  - I thought about that yesterday but I haven't put it into action

10:37

Sent over paper - cognitive walkthrough

Ok - Fisheye pdf?

First I scroll down to see how long the whole pdf is

-it's not too long, 9 pages

Then i look at the title and fisheye menu

Who wrote it

UMD

Sounds pretty solid credentials

Then i keep reading

Abstract, read summary then decide if i'm going to read on or not

- Reading abstract and it says it's a graphical technique and then i look at image on right
- That phrase caught me off guard
  - Which are becoming more common as menus are selecting data in
  - It doesn't feel right because if someone wrote a blog article about it, blog is time sensitive and written in context of time then if it says it's becoming more common and popular it makes sense.
  - If it was written 2 years ago, tells me trend at that time
  - For an academic article that's not the write approach
  - *Makes recommendation*

## Appendix B.2 - Participant Interview Notes

- I think academic articles should be time sensitive
  - Doesn't tell me when this article was written
  - Caught me off guard
  - Try to argue something of popularity for fisheye menus which I don't even know what it is
- Caught me off guard~ says this a lot
- When I read an article, pdf and medium
  - I care about validity of sources of information, if it's something I can trust
  - If errors, personal opinions, anything that catches me off guard, that's a red flag
  - That's how I was trained to validate any kind of information that's online
  - Don't even trust 98% of the things written online, read a book
  - But this is a paper so should be trust worthy

### Keep reading

- Tells me what fisheye menu is, what benefit is
- Overview of study is to look at effectiveness and preferences of people on fisheye menus
- They'll spend a lot of time on how they design to study and try to validate that process which I don't need to know about that

### Going down to fisheye menu design issues

- Something I'm interested in
- I'm trying to look for what this paper is trying to say
- I look at intro, then next explains what study is explain
- Maybe it's explaining problems of fisheye menus so what they're trying to propose
- I'm assuming it's a central part of paper but the more I read further down the column is that what fisheye menu are but they're not getting to the point so I'm frustrated and I don't have a lot of time to read every single word so I just look for key words and key phrases
- "Get to the point"
- Maybe Results and Analysis is more relevant for me
  - I'll spend time looking at chart
  - I don't care how they evaluated, I just want to know what the results are
  - If they can make it easier for me to find that
- Brings me back to abstract
  - Doesn't tell me much to study
  - Title of paper is short
  - Usually when I read a paper it has an argument or if something's good or bad or if they're trying to solve a problem
  - If it's just an analysis, then that's pretty useless for me because as a designer you have to tell me why something's better not just why people preferred it over another because it's not enough for me to go to my boss to tell me
  - Not worth my time anymore

### What would be enough? How would he define enough?

- If you say it's better than the other and in certain context or task then it needs to be more specific then I can take that and use it as an argument
- Eg. LED lightbulbs better than traditional but in specific setting - mood or lighting, not cost or efficiency, maybe you want that?

### On a scale of 1-10 how would you rate this paper

- 7 because it didn't come off as too difficult, not the wording or jargon or terms but on the other hand I'm not familiar with fisheye menus to begin with
- Short, not too long, standard English

## Appendix B.2 - Participant Interview Notes

### Participant 6

Product Designer, discuss.io

3 years, majored in HCDE

First engineering, developer, made a case for design

Started from development, now focus 100% on design

More time designing, less time ingesting the requirements

Rick: what resources, tools do you use?

InVision, go back to documentation

"Want to get users to the room as soon as possible"

Clients don't want to look at lo-fi mockups for long, doesn't make sense

Iterate as quickly as possible

Rarely use the tools from school, stats significant

Uses Wiki, Confluence - where all the internal docs are stored

Search "vendor" -> found it right away

Before, have to talk to different heads of dept that are in different timezone. Everything is already in documentation, no need to meet with the people

Specific person playing research role? No, he does it himself

There is a PM that helps scheduling with users

Daniel is the Wiki Evangelist: pushed the effort to use this Wiki thingy. Documentation on process, clients.

Hipchat is the chat client but hope to switch

Clients want the Jobs-to-be-done framework, learned from external blogs, thought leaders, company trying to be a thought leader

"My whole life if a series of artifacts"

Publishing as a way to remember. I don't trust myself to remember stuff.

Go to talk:

Title -> Pic -> Capture -> 5 bulletpoints

One post that caught attention of people: How to Make a Button.

300/400 views on the blog post every week.

Rarely use the Medium feed, don't subscribe to anybody, because the the feed sucks

Hyperfocus on frontend dev, design

Dani uses a lot of tech terminologies: Bootstrap, SysAdmin, whut

UXPA conference last year in Toronto, get to go to one every year. Blink UX this year.

Small startup, gotta fight for every small thing.

Write an email to manager explaining what'd do at conf to convince to pay for conf

Dynamic of the workspace: honest and frank. not having enough resources to get shit done, customers asking for a lot of things.

Convincing internal to focus on just one feature instead of trying to solve everything. It's hard to get external validation

Scholarly resources: don't use them to communicate but to inform myself. UXPA is really cool, "service blueprint" - used 15 times, blown the person away. Read the slidedeck, went to the talk, understood everything.

Capstone was a research project. Research-oriented person but do products. A lot of stuff I know I can do but I don't have time.

## Appendix B.2 - Participant Interview Notes

Get really bored when reading academic papers. The language.

Talk to the author a lot at the conference, but not afterwards, currently can't even remember his name.

Product is virtual meeting room, clients want a notetaking feature. User Experience, Market Research papers, dug in, got a list of resources, pulled quotes, saved in personal confluence space.

Uses Google Scholar, my network (LinkedIn group, Twitter) - try to follow thought leaders, and read on what they are sharing, and dig in the references. Coming from academia,

Can usually find a way to find articles, rarely have hit a wall.

Capstone: mentor wasn't helpful. Trying to figure out the econ and mental models of textbook industry. Self-directed study. Going thru the hoops, has learned a lot from qual research and ATLAS TI?

"Think a loud type of thing" - he knows

Skimming thru the entire thing, looking at the figures, then dig deep in the conclusion.

"A book is more narrative"

Talk a lot about touchpoints. Make them to navigate through memories, papers, etc.

Skimmed thru the references if there's any familiar name, also look at the dates to see if already read them.

"Recommendation is a complete bullshit. I'd like to make that rec myself"

Open up a new tab for a reference point before continuing to jump back to the abstract to learn what the paper is talking about

Highlighted the goal.

Wanna find 40 examples of the fisheye menu

2-3/10 in terms of comprehension, easy

"We don't get paid to convince people that we are smart, we are there to synthesize and make a product"

## Appendix B.2 - Participant Interview Notes

### Participant 7

Anthro background. Master in Design Anth at Swinburne

Technical experience, but a little loose role depending on the client.  
She is a UX Human centered Design Research Specialist

She currently works on organizational design for the organizational culture within the current work culture.

She separates design and research, she user user research methods for the projects and does literature review for existing data.  
She does contextual inquiries and diary studies.

She calls mapping stuff, and informational gathering and sense making. She drives the fact that she is a "specialist"

Internal search for research that has been done already about the customers and everything that has come before. She also uses quarterly reports, and other data.

She does a substantial amount of data, and dislikes repeating data.

Mainly does primary research, user research. Don't like personas that much!

She mentions JSTOR, interesting. EPIC PEOPLE is the business plus anthropology conference for them to do readouts.

Used to have a login for academic journals, last til 4 months ago. Very expensive to buy journals

Strong professional network, and reach out to them a lot. 4 different slack groups:

- Ethno hangout:

- Mixed method:

- UX something "looking up"

If a B2B project, look for templates

Conference:

- UX Australia

- EPIC

- Anything HCI-related

3-4 service line, delivery, agile something something. She's in the product service line.

In total 6 of them spread across AUS. They have weekly check ins.

Remote team

She is excited to go and write about HCI because she is not having time to do this

Goog search for everything. Find as many unbiased resources as possible. Look at the comments to judge whether people are being critical enough. Will comment if in expertise.

Somebody put together a collection of digital tools, Skeptical about high level definitions of certain practices.

She did not know what UX was post grad, and her former boss reached out to her on linkedin and that is how she fell into UX

She keeps in touch with her ex boss every couple of months. She texts her other colleague every week

How do you communicate your research to your team?

Same client = together, not remote.

## Appendix B.2 - Participant Interview Notes

A lot of comm, daily standups - update on status/all hands. Moving away from decks, packs.  
Sharing videos instead, livestream, sharing verbatim comments. Do it live, people get really interested. Can't communicate empathy with just decks, video has better impact. And uses a lot of quotes.  
Did some user testing, and live streamed. Told managers and producers to come to room to view, dev team who has no contact with the users at all.

Paper time: 5:34pm

She reads the abstract first, she is also thinking out loud while reading.  
She finds the reason why users prefer the fisheye as interesting  
At first she needed more explanation, she is comfortable after the abstract  
She skims to find out the actual study, and is scrolling through the intro.

She finds the language of the menu typed familiar  
She is curious how it works, and refers to applet that is being familiar. Because never use one and test one before. Clicked on the link to test it out  
She wants to be able to test out the feature from the research, she wants to be able to demonstrate the context.  
She is familiar with information architecture and reorg on websites

Always looking for context! Like to understand the structure.  
Reading about the alphabet index.  
Interesting reading about the distance something something to the smallest font  
People has short attention span on website.  
Seems to be jumping to images/figures??? Not sure,  
High resolution selection  
Photos give an overview, but it's hard to wrap my head around interaction model

Definitely some sort of demo! Videos! She all about them video

Goes to implementation of the study, and lack of understanding of code diverts her to continue through the rest of the paper

Attempts to understand the degree of function

Reading recruitment sampling, and is very critical about this section Wondering if we write the paper. Maybe should include this at the beginning of the cogwalk. Clarify that we didn't write the paper

Wrapping her head around how valid the results are, because there a lot of bad sampling.

The sample has to be representative towards the demographic. You want a variety of experience to be looking at what is being tested.

The sample is really bothering her

Likert scale that she is currently focused on and how they are defining the 1-10

Table is hard to read! Because something something  
Divisive kind of design, because of something that's so unfamiliar? Or it's just

Wanna play with it since it's non-standard. A non-standard pattern. Want to learn about how poeple learn how to use it.

I want to test it! I want to try it! See a video!2-3/10

Stuff moves so fast, by the time something. It's obsolete!

"The Conundrum"

## Appendix B.2 - Participant Interview Notes

### Participant 8

- Anthropologist by training, PhD
- Been at Intel for 14-15 years
- Worked in a number of different orgs: internal startups to Intel Labs
  - 14 years ago, up until 2011, focused on growing new business for intel (emerging markets) - not getting anything good out of this startup lol
  - In each office, have product developer team paired with anthropologist, using former form of IDEO design thinking
  - Different history of anthropology in China
  - In need to get her to talk about her anthro to get her loose
- Range of research partners from design researchers (who are these folks? How do you comm.?) to engineers, business development, marketing, strategic planning
- The chunk of collaboration happens with design researchers who are integrally part of research planning
- High volume manufacturer
- Design as a process is a very complex act and expertise
- The traditional definition of a designer as its related to social scientists, human factors, that kind of designer is less common than the nuts and bolts manufacturing designers than we have in droves at Intel

Day to day operations - what has stayed consistent

- The thing that has not changed is Intel is an engineering centric company
  - High volume manufacturer of expensive but tiny silicon processors
  - That has not changed.
- Relevance of a social scientist to make sure manufacturing plans are generating silicon in volume remains tenuous to a degree but also hasn't changed
- What is the role of a social scientist to our core work?
- The question about that value remains, it's just not so clear always
- Why is it tenuous?
  - Design at Intel is a long way to go from arguments about who might be populations of people who need and want access to computing to new design processes to rapidly stamp out silicone. That's a fairly long road. If the company requires very high volume to even consider new design, silicone design, then it's a pretty long road to get all the way there
  - Looked at world Urban migration in China and across North Africa and South America and make argument
    - Long road to walk
    - So much easier if you are a designer and saying if we build our silicone using this process for that process I can get you 10,000 units more per hour
      - This goes over easily
      - Longer path to make it clear to Intel that there's a clear return on investment by looking at anthro research (conveying research value in business context)

Team dynamic over years and current team dynamic

- Tight design + engineer + social scientist
- "Hand in glove, we didn't always agree, but we were hand in glove"
- **Hand off, ask about the handoff process then link to research communication**
- Nuts and bolts engineer that do research on form factor of that product
- She moved onto long lead development process, ok if we had the product, what is the future business of that product and who needs to be a partner
- My collaborators began to span all of Intel
  - I was about what is the bigger set of business, who is involved
  - Work more closely with strategic planners inside of Intel across all units
- Research with academic world wide: who are to be considered when we deal with educational technology
- Intel Labs: a step back
  - 80 or so people~
  - 1/3 technologists, design researchers, social scientists

## Appendix B.2 - Participant Interview Notes

- I went back to early days of who might be your user, what kinds of experiences do they want to have, what kinds of partners do we need to roll that out
- Team: **design researcher (how communicate?)**, herself, business unit
  - Work closely with research scientists
  - Help them think about future usages for that technology that didn't fully exist in the market
  - Fanned out across all of Intel, she stayed because she wanted to focus
  - A mix between design thinking and strategic planning
  - Pre product research or long-term researcher

Hand off process - research to design researchers- what does it look like?

- It's pretty basic stuff
- My work typically gets the hand off
- Research report- that describes the population of people and their experiences.
- Then I identify types of developers or new people coming into a domain to do known development type of work or type of activities, then I talk about pain points, challenges, value propositions, what do these people value to getting their job done
- Nuts and bolts, here's tools they use
- Not focus on Intel prod, tries to point people to new types of products to build.
- Current partner: use a lot of usability studies on current product, she changes personas and argue
  - Close partner - designer researcher
- Long path of engineers
- Nuts and bolts
  - Meetings, arguments about what's more important - building community, tackling pain point, or driving efficiency - always a good questions

Where do you gather information do research? What sources of information do you use?

- "I'm an ethnographer, I go out in the world and do kind of development work we want to learn about."
- 2 years ago, spent 8 months trying to find whole teams of people building out computer vision and deep learning systems in particular industries in East Asia and North America (20 companies around the world) -> when asked about providing a source, all of our participants so far jumped to primary research/users/ethnography.
- Do you pair it up with informational databases?
  - It varies, really.
  - Sometimes those databases don't exist
  - The category of this type of developer isn't relevant, so her and her colleagues go to industry analysts(internal or external?), why aren't you studying these people?
    - Industry analysts then follow population of people
- If people have done study on it - she will try to find it, and get hands on it, but early, people she studies aren't yet a category
  - Does she reach out to experts like in the niche or whatever / how

Academic reports

- "I wish I had more time to read the academic work"
- We partnered with someone and reviewed over 100 articles to try to understand not only what is new that's coming out of that research but how is that body of research looking at pain points we see in data science/
- Critical alg studies - the CASTAC blog?
  - <http://blog.castac.org/> - it's Anth focused
  - A pretty awesome blog
  - It's curated by a professor
  - Ian Lowrey
  - A blog post and aggregator of science and technology studies in particular academics and industry practitioners who are thinking about socio technical work, big data, AI, analytics
  - Social scientists looking at high tech
- CSCW, Flores?
- Number of people in software engineering looking at sociotechnology work
  - How teams work together,
- Other blogs?

## Appendix B.2 - Participant Interview Notes

"There are so many places where academic and research blur"

Non academic, much more focused on how I look at those blogs

Google search and find it

Not until I'm on a project that I'd regularly follow

Very job-focused

Anthro-design

Slack - is it a community

- I'm not a big slack user
- Talking about it because it's a channel many people she interview uses

Ask about Medium?

"I should be using Medium more, but I don't."

"I'm behind the times on that one"

That was a strong reaction lmao

Colleagues, professional, people like her, collaborators and partners use it, also post there

How often do you reach out to experts or other academics in the field?

- At any given point, probably in conversation with people in academic community
- "so normal i don't even know how to say how many"
- Collab with Taiwan profs, Canada profs
  - Arranging talks for them to come visit
  - Asked colleague to reach out b/c she wants them to come

Mentorship? Do you provide/receive?

- Always a little bit informal
- As long as she's at iNtel
- Sometimes she's in more of a formal mentor relationship now
- Oftentimes worked with someone just coming out of academia or early as a UX researcher and keep talking
- Very back and forth, largely about how to be a social scientist in high tech industry
- What resources do you recommend?
  - Sometimes it's nuts and bolts
  - Here's a roadmap and a way of conceptualizing something that's useful (job stuff - what worked well for her)
  - Methodology
  - How to present yourself, how you can be valuable (more personal)
  - Recommend books, articles, only things specific to project.
    - They tend to be things that are influential on how she developed her social science methods or her colleagues have developed their methods
      - Charles Goodwin, Edward Hutchins
      - How to do social science research in industry context

Do you use google scholar/ general databases / is that regular or depending on project

- Anytime she wants to read a particular topic
- "One problem about using whatever online collections of articles is you can find a million but do you have time to read them". Varies with the ebb and flow of my work. I have 12 hours of transcripts to read but i'm not going thru google scholar or sho
- Or at least I shouldn't be reading

Cognitive walkthrough timestamp: 11:49

- First to the abstract
  - Will help me figure out if i want to read it any closer
  - Anytime i'm going to read, is it relevant, willi t help me
- I'm going to conclusion, since not doing that much design work

## Appendix B.2 - Participant Interview Notes

- I'm looking at complexities because curious, want to know how it rolled out
- Scrolling through results
- For me the main interest - what is relevance of portraying information to someone in a software program or database or way to access a program
- Now looking at analysis
- Figures? (YeAAAH - kind of just agreeing but not sure if actually)
  - Figure 6.
  - Specific and not specific to work she's doing
- Ahh ok interesting but because not on work she's doing just informational - doesn't really care about it
  - "Quite interesting but not relevant to work I'm doing right now"
- I'm not going to go back to look at those figures unless I have a question or an area I don't understand
- We asked about figure, and figure 6 just happened to be right there. Can be inferred that she doesn't look at the figures
- "I'd probably read the abstract and stop there since it's not relevant to me"
- How is this different to usual sources?
  - Topic.
- Rating 1-10 then wrap up?
  - "I can't make judgment unless REALLY looked at it"
  - I understood what article was about in reading the abstract and reading analysis and results but it WASN'T useful
  - "But clear enough for me to discern really quickly"

## Appendix B.2 - Participant Interview Notes

### Participant 9

Use to teach interaction design, and was tired of bad research  
She currently works for the govt and other ventures

She really drives the idea of bad research, and people only wants screens and no research involved

There doesnt seem to be nothing constructive, in the interaction world for t

She taught graphic informations, at the university of something westminster  
She was a teacher at a technical school, re....school of design

No she spends her time wacthing people, and she is looking at the whole picture From when you get out of bed, to when you go to work, to when you go to bed.

There is a benefit to observing the world, and is a criticize to academic discourse  
She begins research at the desk, and doing your homework before you get into the real world

She usually works, in corporate language, and she goes to harvard business review to start her work.

It gives you pride to know what others will use from you knowleds  
She uses google

She uses google sprint as an example to talk about how

She uses her network, and talks to the organization. She follows her networks resources to teach herself about new methods and research.

She does not hesitate, to contact the authors. She does it all the time. Sometimes she get responses and grab coffee.

Her first interaction design job, she got the job by slipping a note under someone's door. She mentions that she used her photography facilitate her practice.

She mentions that she got a rejection from someone today. She goes to events that are more brain food as opposed to conferences. She is a big idea person.

She does not get medium, she's been around for a while so she sees it as a walled garder.  
She sees curatorial platforms

SeeUSee Me - video

She uses MIT tech review daily, and other newspaper sources.

She skims the headlines of different countries to see what other cultures are talking about.

These sources play a key role in her design process.

She can now dictate the type of project that she works on, and as interaction designer you couldn't do any insightful work. Lipstick on a pig

She hires herself out, she takes her colleagues along with her. Whats amazing is that you can convince people after drinks about what research is and the value ?

There is always going to be a bully trying to take you down, she was describing that office politics had someone handed her something that there was no research done.

## Appendix B.2 - Participant Interview Notes

The person thought that she would fail, and the person was not happy.

She is always open to mentoring, and currently a mentor at gold smith.

She offers advice to seeing the world as a designer to be better. She mentions classics about information visualization to designers and anything on the grid. She mentions 960 about design and how you can learn it. Albert dreyfus designing for humans. If you want you learn about ai design.....

She gives them powerpoints about analysis and synthesis methods to better them. She also gives these sources to non designers and non researchers.

Cog Walk

She does not seem enthused, and does not want to read this. She begins thinking about usability issues and stops at abstract.

She has stopped.

## Appendix B.2 - Participant Interview Notes

### Participant 10

She is a UX researcher at facebook

She has been researching for 20 years

She is in charge of pathfinding, things that impact facebook about strategic thinking

Right she is currently working with the sharing team and works with visual tools and works with designers,

She works across teams, but she works with 4 core designers, but exposed to 20

The best thing to do with designers is take them into the research

The would involve the designers with interviews and diary studies

Currently she does readouts in powerpoints

She sees impact when people begin to talk about their end users and goals

And people being more human centered

The stickiest moment is taking them into the field, and recently they did co creation session and users in another room

A typical process of research before in field, come from pet projects, and leadership questions, and other things that researchers want to devote to

Some of the topics, there is not a body of work to be looked at and they only share methods publically and not research

They have and internal platform that they use to put research, and they sell this platform to other companies. She shares research and methodologies with other FB researchers.

She meets face to face to have discussions about research over lunch and talk about the different approuce and workshop content within the team and she will teach a class.

Couple of hours to a week but hers is 3 hours

She refers to lit review, and initially its to get their heads around a space and ther are hundreds of PHDS at facebook.

There is a tenson of moving really fast and the exhaustion of a lit review. Sometimes the domain is complicated and hard to look for.

They have access to JSTOR, and all the other databases

She reframes the knowledge to convey to her team. All the academic research is usually not used for the team. Its a 0 interest to the understand the academic research to a designer and PM

She mentions that medium is more of the designers reading skill and language and they know what they are getting to.

She looks at medium and wired, but interviews experts to condense the most important views, They are more willing to share their learnings.

She reaches out to them by phone, and mentions that it is better to reach out to them than to pay for their research.

She use to be at FIAT and she would convey research by telling a story from both an expert and public opinion.

She emails and talks over the phone and ask if she can interview them.

Early in her career, she had exposure to very experience researcher and stays in touch with them. Her graduate advisors were influential. She teaches two classes at CAL ARTS and STANFORD and over the course of 3-4 years mentored hundreds of people including team. Her mentee advice is about framing their work, and how they should frame their work.

Team dynamic | the differences over the year compared to now

She spent years in agency work, and the team dynamic depends on the distributed team and how the research work is dispersed.

There is more trust on the horizontal and distributed model. In agency work you might be as specialized and would be ridiculous to think that the researcher knows everything. She likes the variety in agency work

Her favorite part about the work is about impact, and projects. He talks about the research methods and over time gets more excited about helping people grow.

Early in you career it about what you know, and it gets more interesting as the years about spreading the knowledge.

What's a memorable moment when you taught a designers?

After hearing a year after a project was done the director of FIAT reached out to her because he now understand it. Having your stakeholders have an AHA moment. They are the best when they are unwarranted.

What do you avoid? Her design priciples, be visual, use a picture, use a model, and designers are visual thinkers. Researchers are text heavy.

No one wants to know everything about your researcher, she builds for her audience and then adds an appendix for researchers.

## Appendix B.2 - Participant Interview Notes

She belongs to a google group call design in research, and she gave up on slack after switching two companies. And someone owns these are the products she cant use these tech. She calls us from her phone.

She belongs at epic,

The design conferences are more interesting because the others are about papers. Epic is a blend.

She is part of ethno breakfast and have a discussion and the last one was at the d school. The last ethno topic was interesting and is more of what she likes. She reads out about the early stage insights.

## Appendix B.2 - Participant Interview Notes

### Participant 11

Their background is in Fine Arts, concentration in Painting, took some CS classes to know more about the tech industry. Currently working as a senior UX designer at Fuse in Boston.

Day-to-day depends, start with meetings, SCRUM. Meet with mgmt.

Team dynamic:

UX director

3 Sr. Designers on separate platforms

Jr. Designer does everything

UX Researcher

Consult the researcher when dealing with decision making

"Inspiration? I don't start with inspiration, I ask questions about constraints"

Handoff to engineers to learn about the eng. constraints

The corporate already answered the question of should design this product?

Judging the rigor of an article by:

- Author's company
- Company's rep
- Success of product in case study
- Alignment with ideas on the internet

NNG is the most "academic" source they used

Uses Medium as well:

- Follow Facebook, Google, big companies but depend case-by-case

Don't participate in any online communities, more interested in real-life connections

CEO of the company he worked before was a good mentor

Currently have had people reached out on LinkedIn to ask for advice

Thinks the best resources in mentorship is the connection between people, not much on skills or whitepaper, or etc.

### Participant 12

They work at youtube TV

Feedback from customers, he passes along the feedback to the product team.

He gets instant feedback from the call interaction

- Prefers to do calls, talks to people
- Helps people better

There are tiers, agents who talk to customers, supervisor who was all the answers.

X contracted, was generating scenarios for driving and how a car would act at a intersection. Helping create a software for self driving

He used slack, then created their own version of that. They have an internal database and supervisor to refer to.

- Yeah, so maybe like, for a quick little example of like, when we were troubleshooting with people after we're finished troubleshooting them if we've solved the issue or not, will usually put in like this thing we call like, a category chat, where you kind of have to categorize the issue based off of what the customer needed.

The would use the rules from the DMV to look up ethics for the scenarios in the 3d visualizer tool.

Internal documents include

- Powerpoints
- PDF

Communication was a huge part of the role, and would ask a supervisor.

He looks at the length of the book, and visual nature of it. He does not look at the analytical books.

- Recommended books by peers
- Includes, Don't Make Me Think
- Also follows book recommendations from YouTubers he's subscribed to

Online articles, looks at multiple things at once

Easier to look at way they format, clear, more precise

Blogs are more quick and to the point

Wants to go to conferences for more soft skills and business development stuff

## Appendix B.3 - Expert Interview Transcripts

### Andy Ko

**Interviewer**

You're really active on Medium and Twitter, how has your experience been with reaching out to the greater community?

**Andy Ko**

I've been doing it pretty actively for about a year and a half now. And so the direct consequences of that are that I've spent a lot of time writing and replying to things people post, comments, write to me on Twitter. So there's a lot more engagement with random people kind of just leads to this broader engagement. It's kind of transient. You know I reply to somebody. So they follow me. And then other people start following them because of that. So that's just the kind of growing sense of that, but I wanted to position myself as somebody that has expertise and opinions about certain topics. I was also inspired by or former Dean of Information School who really wanted us to all think of ourselves as public intellectuals, not just intellectuals, not just people doing research. But really, people with public responsibility to be visible, be the representation of academia, and shape discourse in the world, not just in the scholarship.

**Interviewer**

Has anyone reached out via another format, maybe podcasts?

**Andy Ko**

There are lots of podcasts that have reached out often in response to some provocative thing I said in a blog post. And so there's a local podcaster who does a podcast called Software Engineering Daily but he actually has a couple hundred thousand listeners. So it's a pretty international audience! It's just about all topics in software engineering and building software. I think I'd written a blog post about the black holes in software engineering research: research gets done, nobody learns about it, why that's a problem. And so he wanted to have me on to talk about whether research was valuable in general and to make the case whether academia was valuable in general because he was a bootcamp grad. He just didn't think to college was worth anything. So it was an interesting and tense interview around advocating for academia, pushing back against some assumptions about it because he hadn't actually participated any of it.

**Interviewer**

What were some of the arguments that he made?

**Andy Ko**

One of the arguments he made was that the only knowledge that's valuable is practical knowledge that helps you build systems, and academia doesn't teach any of that and all the practical knowledge changes every year. So even if they did, what's the point of getting a degree that's always going to change? So I had to push back and say: "well, actually, there are other ideas that are valuable too and they kind of last a lifetime and that is the value of academia." Not to discount the importance of practical knowledge too, but given that it's always going to change, you know, should we really spend our time covering all that practical knowledge and when it's just gonna be discarded and not valuable. Is that really worth the investment of time. So he saw a little bit of that he says, just a little uncertain about whether or not theoretical things are valuable. In some cases, I don't think they are, in other cases, they are really powerful.

**Interviewer**

Since we're on that topic, since we're here to talk about reducing the gap and we read a bunch of papers in the last two weeks, three weeks. We have had two expert interviews so far. And since you also discuss about this in class and it is partly why we are here. Is there any recent publication that you've come across that might have excited you that might have given you insights into reducing the gaps or anything that's maybe not even involved in the HCI field or software side?

**Andy Ko**

Not so much. I mean, I think my experience as an academic at a very full service university is that this notion that academia should be an active participant in public dialogue has always been there and in very small way and it's always been a very discretionary activity where individual faculty might just decide that they want that to be part of their role in society. I feel a shift on certain campuses certainly here at the University of Washington and other certain campuses to be much more visible and engaged. To the point now where I see our university President setting expectations that we do this. I could imagine our faculty code which defines things like how faculty are promoted, someday maybe in the near future saying: it's not enough to do research, teaching and service, you should demonstrate that you're engaged in the public.

## Appendix B.3 - Expert Interview Transcripts

So that's not true for most universities and it's certainly not the kind of a dominant expectation in most academic context. So there's always been a little bit of activity there, I see some places kind of shifting to that. And the result of all of that to answer your question is that not a lot of people write about the it because it's a very new idea right. Way back in the 18th century, when people started granting PhDs in Germany, these were monks, cloistered, disconnected from society. And that was the foundation of all of academia was people who are separate. And so the idea that encourages deeply engaged public enterprise that's shaping discourse proactively instead of an ad-hoc words is really a new idea.

### Interviewer

How would you measure the success of your blog posts and your postings on Twitter and things like that?

### Andy Ko

The metric that I use internally, that I can't really track and any sort of quantitative way but I do try to check in a qualitative way is when I or my ideas have caused people to take action. So one example of that is recently I've been spending a lot of time trying to build community in the state of Washington around K through 12 computer science education. There's a large national effort to do this but we have a very decentralized education system in the United States. And so if you want to change anything, you have to do it at the local level. And I saw nobody expressing in leadership on that problem in the state of Washington even though lots of people are motivated. They weren't motivated to be a leader in that. So I started over the past couple of years building community around it, figuring out who was motivated, who wanted to put time into doing. And then starting to use my research expertise and some of the research that we've done as a way to motivate people to view me as a leader in that space so I can affect some change. The signal that I've had that effect is that, last week I convinced the College of Education to consider doing an endorsement to train teachers to teach computer science in high schools in the state of Washington, if we can find money to fund a program on that. Which we might be able to because I have a community too. Had I not had all of research expertise, nobody would have viewed me as the right leader with the right expertise to do those things. So that's an example of something which is a large accumulation of expertise. No one discovery, but a whole sort of body of discoveries that come from my lab that's allowed me to position myself as a leader in in that sort of policies phase and administrative skills.

And then another examples right there's lower level things like I will invent something and I'd like to see that product in the world. A good measure of that is: do those ideas make it into the world one way or another whether that's through a startup that I've co founded myself or I worked really hard with industry partners to help them see the merits of an idea, to help them see an opportunity to invest in something. If they go build it out right that's a big win for me. Sometimes I don't even hear about these things because people just read work and I don't know that they have. So last year at CHI, for example, a senior engineer at Apple who had just left Apple to move to Seattle and look for entrepreneurial activities. We randomly met each other at the one of the receptions and he was like: "Oh, I know your work! We based all of Apple's Swift Playgrounds on your gadget work." I was like: "What? I had no idea it came from this research project!" They invested a whole team of 20 people building this whole thing that's now deploying at thousands of schools to help people learn Swift. I didn't even know that my work has that impact. So that's another example.

### Interviewer

Are there examples where people do reach out to you that they might be industry people that are basing some of their work on your research?

### Andy Ko

It's already rare! And I have a lot of theories for why that's rare. One, I think that at least in the United States, the dominant culture doesn't place a lot of weight on the value of ideas. Somebody has one and just kind of enters their head, they kind of view them as these free things and they just act upon them. And it's really hard to remember where the idea came from too, once you start moving forward on on some project. Can you really identify the provenance of all of the ideas that shaped what you're doing, unless you kept a pretty detailed record. Probably not. Sometimes people get ideas from some talk and then go off. Five years later and start working on them and they think that they were their own ideas right and then if you go and trace it back: "Oh yeah, we were going to talk, that's where I heard the idea. So it's really hard to just remember where ideas come from. So I find that a lot of people in industry just kind of view them as all free, use them, forget, and then sometimes academics notice and pointed out. [About the Apple guy], I didn't plan on meeting him. He didn't plan on meeting me. I just happened to describe that research instead of other research that I've done so he might not even recognize that that was the source of that knowledge. And he said: "I'm not at Apple anymore, if I were probably couldn't tell you this, but I'm not there anymore. We read all your big person made a lot of choices based on all those discoveries. So he didn't have to be not at Apple anymore. Had he been at Apple, he probably would have said nothing and I never would have found out.

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Think about it from Apple's perspective right. Ideas coming into Apple. No value. Don't need to pay for them. They're not something that they consider or track. But ideas coming out of Apple, it very much protect those and this is true for most companies. There's black holes in both directions because once ideas go into companies they want to do everything they can to claim that those ideas were their so they can monetize them, get value from them, protect them even if they came from some other place. And they'll spend, have spent, hundreds of millions of dollars probably billions of dollars at this point, protecting ideas that probably [for now]?. We talked about the lawsuits around graphical user interfaces, for example. History is very clear Apple did not invent anything of this was mostly Xerox PARC and even Xerox PARC borrowed this from a lot of other researchers in the HCI community. So this is very collective effort to come up with all these things but Apple once they started producing products about this, they said: "Nope it's all ours and we need to protect those IPs"

### Interviewer

We took your class, we became like part of that gap or we are going to go into industry, we're going to try to synthesize them these papers. Hopefully it would be part of our process. Have you had some discussions with practitioners, you might meet at conferences that engage this discourse about reducing the gap in person?

### Andy Ko

I do have a lot of casual conversations with people who come to academic conferences, but a lot of them are often

From their perspective. They're about the failure of academia to bridge the gap, they'll make critiques like: "Why aren't you doing research that I can actually apply?" Which on from one perspective is a completely reasonable critique. Eventually research should sort of mature to a point where it can be applied. And then on the other hand, it's completely unreasonable critique because 90% of the work that happens isn't mature enough yet and so you have to expect that none of these things we'd write. Some of it is still curating, incubating, being refined. So in some ways there's sort of a disconnect in expectations: academics should think about where the work is going and how it might be applied. Not arguing that all academics should and they shouldn't do it all the time but there shouldn't be some amount of activity happening across the community at all times. And industry should expect that every once in a while, something will mature enough to be ready for use. Take natural language processing, for example. People have been working on that since 1970 and it took about 50 years before it was ready to put into products and now it's kind of ready enough that people will kind of use it for something. But that was 50 years of maturation and I'm sure that industry went to the occasional academic conference in 1980 and 1990, 2000 and said: "Why aren't you thinking about how to put this into products. Why doesn't this work yet? Why isn't it good enough?" So there was temporal disconnection too. Somethings take 50 years to get to work. So what should our expectations be?

### Interviewer

How did you go about coming up with a design, picking the white paper for your course?

### Andy Ko

When I design classes, I think very iteratively about them. I know that until I teach something I won't know what it needs to be. And so every version of a class is a prototype that is going to help reveal some deeper insights about what it should have been right. When I went in design this class for the first time last year before I taught it, the core idea was twofold. One, I was trying to develop some theoretical foundations around user interface software technology because they don't exist. Not a lot of the people who do research in that space are that motivated to build those theories, but but I do think that they're important to help organize and understand what it is we make when we make interfaces. So I wanted to deepen that and now that I've taught the course once I know all of the flaws in the parts of the theories that I wrote about. And I know which parts I need to deepen, which parts to broaden, based on all of your feedback right. And then the other other goal was that bridge that you're talking about needing to be built between industry and academia. I wanted to explore what role academic classes and programs happen in that bridge. I would never imagine that a course or a class would be enough to do, but I think it probably do play some role in a broader set of things. And I didn't know what role it might play so I threw a bunch of stuff in there and pose the question and now your team is helping me figure out what role it might play and I will take all that knowledge and next year I'll be even better at it because I'll have a better sense of what it should be.

### Interviewer

Have designers, or design technologist come to you and have you had some successful engagements with them?

### Andy Ko

Sometimes. It's most often by people with some deep exposure to literature. They either had a PhD themselves where they have people with PhDs on our team and there's something about presence of that credential that just kind of leads to internal

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advocates, bringing that people's attention. So one example was Microsoft back in the mid 2000s was working on lots of user interface frameworks. The result of it was XAML, and a bunch of tools built on top of it to build interfaces with/for XAML. This was before they kind of said: We're going to do the web instead. The two lead architects on that, one of them had a PhD and so he said well what if we go to CHI and find out who the right people are that can inform the design of this toolkit, since they were going to make this big push to design it. So CHI was three days then and on day one. They found out that a key person to talk to was my advisor Brad Myers since he has done most of the seminal work on user interface toolkits. On day two, they found him and me and said: can we meet? Then on day three, we spent like four hours if this was in Fort Lauderdale just kind of sitting on the beach talking about the history of UI toolkits and like gathering a USB key of the key 30 papers to read and we gave them that stick and then they disappeared and then three years later XAML came out and it had a bunch of the ideas in the research. They were proactive in like seeking out that expertise and Microsoft was apparently okay spending three years coming up with the future platform for building interfaces, which they then quickly abandoned. But, you know, that was that was an example of them pulling on the expertise. We could have said we will talk to you, but let's set up a consulting arrangement and then there would have been like a small amount of money exchange, but they're never quite willing to put a big price on those ideas. For one, they were all published and available in digital libraries. All Microsoft tend to do is subscribe to them, which they do, they can get access to all of those things. The expertise to help point out which things they should read, we probably could have set up some consulting contract and they would have paid us for that too. My advisor and I valued the impact more than like \$5,000 of consultant fee.

### Interviewer

What generally incentivizes you was like motivating and creating change?

### Andy Ko

Well, the ideas themselves are the powerful things in academia and getting those ideas into the world is what universities, colleges do. It's what classes are. Take all those ideas that people have worked on in scholarly settings and we try to help people understand. That's our purpose.

### Interviewer

Do you find yourself being the advocate inside of industry too?

### Andy Ko

Often I'm the one pushing. We're writing a proposal right now, for example. That's on the idea of formally verifying the accessibility of websites. The difference between that and like some tool that does implementing that checks for accessibility problems is that we can prove that websites are accessible, which allows us to kind of take any possible state and website is in and say in this state this won't be accessible to this audience. So we have some research ideas around that. So one of the strategies that I use is to go and find companies that have some shared goal who cares about that and who's motivated to do something about that, where we have a lot of impact. So we found the lead program manager at [Instructure] where they created Canvas and it turns out that lead Program Manager of accessibility has a whole team of several engineers and designers and they both find accessibility problems and fix them. And I have a whole big backlog accessibility problems in Canvas and they are very motivated because 10% of their users have vision or mobility impairments. And so that's 2 million people and students that can't access their materials since Canvas isn't accessible. So we have a letter from them expressing their partnership and doing that research over the next three or four years and adopting those research ideas. So that's a very upfront thing. "Come with us on this journey and help us make these discoveries and we will use them in practice"

### Interviewer

Have you had an alum or something you mentored who went into industry which set to contain masking do you come you come in and advocate for this this gap?

### Andy Ko

That happens too! Sometimes it's a human resource that becomes the agent of change. So one of my former PhD students, Brian Burke. He came to UW in computer science and said, "I want to come and work on compelling innovative ways of developing stuff for the web and I want to take all those ideas in the industry and build them. So I'd like to go work for a browser vendor in five years and build all of that" So it's kind of exactly what he did. He spent those five years inventing all kinds of new developer tools for the web and then got interviews after lots of networking at Apple Mozilla Google and Microsoft all the major browser vendors and then kind of made the pitch to "Make a job for me, and they all said OK so then he ended up at Apple and now he's upstreaming a lot of his dissertation to web kit which will eventually make it into Safari developer tools. So he was very purposeful and saying, like, I want to go and spend this time innovating and then take those innovations to the industry. Other times students graduate they end up in some place entirely different from what they were doing research in but they view academia, sort of a resource to pull on because they have exposure to it. Another example of that is Microsoft. I know a lot of people that Microsoft

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Research one of the researchers there was on product team that was working on some tools to help engage kids in building physical computing things and the product team wanted some values. So they set up like a four hour, kind of like a half day deep dive into what everything we know about building systems like that before they started to architect to design things. So I went there and kind of frame the whole four hour day brought a whole bunch of knowledge curated for their purposes kind of answered questions and then I didn't hear from them for a year and they release the product. And I gave it to them for free right and didn't charge them for it. I could have. Do I really need like \$500 and slow down that process and they kind of know that if they asked a public intellectual will probably be more desperate to share ideas then like \$400.

### Interviewer

Have you had more design oriented parties reached out to you to come in for this?

Probably because of my expertise, not as much. Sometimes engineers and architects and kind of lead product managers at design oriented company so like Adobe for example are very interested in a lot of my dissertation work back when I graduated 10 years ago. So I went and spent a lot of time at Adobe explaining the discoveries, helping them understand how they might adapt some of those ideas to their platform technology stack for Flash at the time. And so we made a lot of progress there and kind of envisioning what Flash would look like with my dissertation work in that thing started spinning up some teams to explore that. And then they decided to not support Flash anymore. So that died off but they were thinking about designers, even though they were dealing with product and engineering.

You have a compelling problem that doesn't have a lot of solutions out there, but you're also in a capstone so you have this sort of scoping and focusing challenge to tackle right I'm guessing that's a big part of what this quarter is really trying to scope. What are you sense are really interesting opportunities?

### Interviewer

[Communication]

### Andy Ko

I like that idea because part of it is actually just promoting some sort of visibility to it right like I having been in industry. It's very, very easy to forget that when you're working on a problem that there's probably at least 50 experts in the world that might make it easier to make progress on and you don't. You just don't know that they exist, who they are, how to reach them how to get their time whether or not they give their time right there's something about even that one moment that's a challenge. And I saw this happened like in my startup to like I saw people struggling with a problem and I'd say, well we know how to solve that why don't I just connect you with this person at this university and you know they'll tell us what a good approaches and they're like I didn't even know there was a person, but I was there. Right. I was sort of this I took this role as a matchmaker.

It'd be really cool, imagine a setting where somebody grappling with a problem could just kind of vaguely describe what they were doing. Know the set of people who might have something to say about that, solicit their opinions about what knowledge might be valuable to it, if any, some of those opinions might be "Well we're not ready yet. Give us 20 more years right which is useful to know because then maybe you shouldn't tackle that problem" and then like incentivizing experts to contribute to it. If there was some model where I could write a little synthesis of some body of knowledge to help somebody in industry make progress on something and you know like make a little bit of money. Synthesize something that would be valuable for other parties and help advance something industry, that'd be a really interesting kind of service that doesn't really exist.

One discussion about their topic is more useful to the practitioner than having a deep dive on all the papers which we were running into too.

Well, and here's why this what a discussion here is one way to think about it is dynamically generated curriculum. It's like exactly what you need to know driven by questions that you have confusions that you can express. And all of this is just me kind of expressing precisely the things that you're concerned with. The papers are never going to beat that. Carefully crafted curation of knowledge and its origin not intended to help a specific use case. It's an archive of knowledge

### Interviewer

Do you think that like a small snippet or synthesis will be as valuable as like doing deep dive into one of your papers?

### Andy Ko

I think it's necessary. I don't think that we generally write research papers for the consumption of the public. That's really not why we create them. We create them primarily for archive and sometimes secondarily to engage students in that knowledge. But

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designer and engineer architect and product manager reading a PDF sometime there's way too much information in it, it is not the right level of detail. Which is why the blog, right, take a paper that was published, and I'll try to condense it down to the thing I think is relevant to practice share it that way. In a medium that people are familiar reading.

Have you ever watched any Richard Feynman selections, who is a professor of physics at CalTech. The thing that was most notable about him aside from all of his discoveries in physics was that he was particularly skilled at reducing complex ideas into simple concepts and simple explanations and he would often say that if he couldn't do that or if anybody couldn't find a simple explanation for something that somebody without much knowledge to understand then we really didn't understand it and there was more research necessary and it's a test case for the maturity of idea. so you're in a business and you're like writing a memo and nobody understands what you're proposing to do you probably don't understand what you're proposing.

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### Daniella Kim

**Interviewer**

Can you tell us a little bit about yourself?

**Daniella Kim**

Yeah so I got my PhD at UW

I did a whole bunch of research with babies and how they hear music, but we used quantitative methods. And so what we did was we tested babies and a particular behavior and then we quantified it. then we ran major stats on it so many participants to get to a certain level of power and then I went out after I graduated went to Microsoft and I did like a whole bunch of just like very blue sky prototype work which can't really do quantitative research on.

So that's where I learned how to qual research and was super fun

I think i'm maybe burned out from academic research,

I'm sure you'll hear about it. But not only that, like, there's lots of questions coming up in academics about what really constitutes good research.

Have you heard about this whole like push back against peers?

There are some camps out there that think that peer review should not be peer reviewed.

There is a pay to published program now like where people are paying to publish in different journals, how does this influence the rigor of the literature out there, but then it's better. I don't know if it's better or worse than the medium article. It could be a blogger or some Facebook posts totally right. So anyway.

**Interviewer**

Maybe that is where the future of publication?

**Daniella**

No, I don't think so, I think there is going to be a blend. We definitely will have more online publishing. You know how in academic journal publications, they went from hard copies to almost only digital copy. That's like that was the first push and I was finishing my PhD you've had to go library so that you had to actually copy the journal to read the papers and then in the 10 years since I've graduated almost everything has gone digital. Reading is digital, everything is digital.

But then that challenges the whole notion about like how can you turn around it and flip authority? That is very interesting as well.

What we do in our class, we're actually taking dimensions of journals and academic paper and we're what we're calling operationalizing them like how legitimate are they? how rigorous?, are they based on this this author this they're only paper and if this is their only paper that they paid to have published, how impactful is paper actually going to be? But then there's people like what if there's somebody at Google? Who has the same idea? Are they being vetted? are they just as legitimate or not legitimate? That's what we evaluate in class. We are taking these different factors looking at them very deeply. Oh, well, this is probably pretty good because they have lots of complications people cite them they influence the entire field of study and they're ethically correct.

**Interviewer**

Can you talk about more structure of the class and what inspired you teach the class this way?

**Daniella Kim**

I inherited this class from somebody, and the person who started this class was the person who does reflections. So she's been in the department, HCDE, for a long time.

So then they needed someone to take this over at the Masters level and so she gave me this tool called UBASE. Its based on a paper that you can operationalize basically these criteria of understandability. Like literally I'll understandable. You could put it in a

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document in a like a readability scale like, this is a 21 grade level paper, right, and no one can understand. Versus like your mom can read it right. How many big graphs are there, how many sections are there, how many pages are there.

Then there's the second criteria is believability, how much do you believe this, the findings and the person. For example, if this is your second application. There are lots of factors that impact believable it is. Doesn't come from a good lab? Do you have a good mentor? Who come did it come from? Are you a one off? Are you someone in Russia making a fake paper?

Seriously, how do you know that. You never know.

It could be that academics could be complete crap. Believability also is the whole idea there is credibility behind the research.

So did they actually do a good literature review? Are they are they qualifying and quantifying with epistomal stances like science qual/quant or mixed method, stuff like that. Like if they used today's right method, that's a big one.

A is for applicability. How applicable is this to the field. So we just read this paper about Instagram hashtags in the eating disorder community and how people have used the service actually to hide their hashtags. So Instagram banned a whole bunch of hashtags like like thygahpp, thinspiration, stuff like that so they didn't perpetuate that. And the people in these communities, alter the hashtags so that Instagram and if you can find those hashtags you're part of like smaller, more elite community, it is scary. These are people that you know, they are called thin angels. Thigh gap is thygahpp it's so interesting. How applicable is that? Right, now this is applicable.

Significance is greater impact on science. So is the thigh gap paper going to change the way we perceive Instagram hashtags. How does it contribute to research in 10 years. How does it 20 years, will be cited in 20 years? Maybe this will be the first paper that people cite the discovery Instagram hidden hashtags

But who knows what's gonna happen in 10 years.

E is for ethics. Did they consider the ethics of the human subjects. Do they protect the participants, is there anonymity, confidentiality, IRB. Do they do they pay to publish? Did their mom pay for them to publish?

This is really nice because it gives a concrete structure about if papers are good or bad

Because. oh yeah I also understandability. Some researchers are garbage writers they just write terribly. Just because you are published does not meant that they are well written.

Some of the questions I get in class or like, how do I learn how to read a paper faster.

How do I learn to do stats? Do I need to know about applicability? Do I need my future directions?

The problem in our field, MHCID, HCDE, HCI in general is that we always have our research trying to have a future impact. Like we can't do research unless it impacts something in the future.

Can you do research for research sake? Can you? Do you have to have a future directions?

### Interviewer

Do you think there is a lack applicability in current research? Do you think that is why it prevents applicability in research?

### Daniella Kim

So for example, Kate Starbird is getting a lot of press right now because she's really applicable. She's really relevant and she does quant and qual research. So that's a good example of really good applicability.

well there's one wheelchair study that's so ethically wrong. It's so bad, but she's the only person who actually publishes in this wheelchair technology.

Technology is so pervasive right, it could be anything, it could be in our phone, to the way we use our credit cars.

I guess if you're not a really applicable paper you're not cited very much.

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And that's the problem with academics, is that pushed us to death papers, is that valid still? Are you a good researcher even if you don't have first authored papers and don't have tenure?

I don't know, maybe the way research, maybe the way academic skills is antiquated  
These are questions we should really push back against. We shouldn't just accept that to become an academic you have to have all these published papers, but then yet as an academic who has published those papers or wants to have more. I'm like, I need to publish those papers. Where is this feeling coming from? Is this coming from the institution? Industry?

I do lots of industry research, and I have private consulting firm and I do tons of enterprise research nonprofit.

### **Interviewer**

Are there any specific fields that your clients are coming from?

### **Daniella Kim**

I just finished up a study for a nonprofit, that's in education.

So I get all fired up because education research and this particular city was about diversity inclusiveness and lack of it in schools, especially in poverty schools with poverty.

So the academics of that is like crazy like what is the impact of this particular site in improving in inequality or bias or cultural competencies in these schools with poverty that's paper when you read or written

I have another huge client  
enterprise client like huge enterprise client and they're changing the way people train on this particular platform.

I do the research on the particular training tool.

You know I do bring in the academic research into that because I do a lot of literature reviews and they do literally competitive analysis is a literature. Right. So even industry competitive analysis it doesn't have to be published.

Should there be a required toolkit of industry and academic papers people should get up to speed. Everyone reads Nielsen Norman right, everyone knows about the Nielsen Norman group.

Everyone knows about IDEO methods. So do people know about these foundational readings, we talked about like science in the spiritual sense like positivism versus Denzel Lincoln who are qualitative we talked about like talk about like ethnography and the crystallization about triangulation versus the mixed methods which everyone's gonna expect the best everyone's always gonna save right but i don't know i mean should there be required reading list?

Anything in human centered anything depends.

I know, but I think this is my own personal bias that there should be readings. If you're going into human centered anything. You should have reading some psychology like basic fundamental psychological principles that will influence the way you go into behavior decision behavior memory cognition perception vision processing personality creativity even social dynamics. I think those are really important and those who get into like textbooks, but should not there a practitioners version of that?

### **Interviewer**

Medium....

### **Daniella Kim**

Maybe we should have like a medium for academics, but academics are publishing on medium too!

I know oh gosh the Twitter conversation is so interesting. So have you guys seen that research about how people are questioning if Twitter tweets are public use and should they be harvested for data.

It's really interesting, we're talking about today class like the ethics of using data because it represents someone's personal opinion right but yet it's out on the internet so it's public domain.

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Good question, but maybe depending on the field you go into like are you going into social media are you going into education. Are you going into technology for enterprise. Are you going into Microsoft Office.

But yeah, the divide in academics and industry has been very wide.

But the ones who are true academics, who consider themselves pure ivory tower, I don't think will ever cross over.

They think that we don't do anything good, and that everything we do is so like loosey goosey, the people who are like truly industry that you know don't ever look at the academics, they may think that they are too stuffy right but there's beauty that can happen in both, to be like in the middle ground.

Like for example research gate users and other research like Facebook for research institution Facebook social media thing, like I get these things on my email that say "I read your paper". Like who is this, who read my paper? That is interesting because it's using analytics.

I am really lucky, to have a foot in academics and industry and they're like foot firmly in both sides are really firmly on both sides. I'm not saying that I'm the bridge at all, but I read a lot of papers and a lot of medium articles I read a lot of bad papers and articles.

### Interviewer

What makes a good paper?

### Daniella Kim

I think that if somebody backup their claims

The thing I like about medium is it's right. So people write in their everyday voice they use case studies the use examples, but do you ever see people, citing anything in medium. Do you ever see like, you know,? You never see citations?

Could that actually have the believability or applicability component in medium

Could there be different strata maybe he's called medium, medium scholar.

The applicability but doesn't necessarily mean it has the ability that its practical. Is it ethical?

Medium is so broad. Have you thought reaching out to them to see about how they stratify or coalescing different crowd like that.

Where is medium located I'm sure we know somebody. Austin or San Francisco maybe?. But imagine, are there any other who are the competitors? That's a good question.

Springer journals with academics not neither is ACM right yeah

You guys ACM is popping but he is changing up their ethics. The rewriting has changes in technology are forcing them to address new issues and methods. Like do we do actually screen for ethic for medium. Do they ever get censored due to ethic issues?

Do we monetize? I'm never gonna be rich in the academic world.

I don't know if this is true or not, but I feel like that academics true are truly motivated by their papers influencing science whether waterfall makes whatever. Also like because the paper review process is so businessy , it's like dentistry still drilling holes and patching it so if for changing up the review process or for changing publishing process could be interesting.

For example, if you could, if you could put yourself under the designer and find useful things in academic? So I did. So when I was at Microsoft. I did a study on memory, like we literally wanted to this is before when drive or cloud. and they want to know what were people's behaviors. So scrapbooking photo journaling books, things like that. And I did go deep into the research in terms of like

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how people consume pictures. There's actually research out there and so that helped form what we wanted to do another good person that you may want to talk to someone Microsoft Research because Microsoft Research is but but also industry and a academic blend.

I have, as a practitioner, used research to provide a foundation for my conversations. So memory keeping is about the memories, it's about it's about the history of time and all these kind of psychological principles.

Right. So I did that, I did a deep, deep literature review on oh I did a literature review on wifi use in Eastern Africa and about like general like computer adoption in East Africa and I applied that to an emerging markets study that I did. But you know what, honestly, whenever I do any research. It's really what the psychological principles that I learned.

So I would I would suggest reaching out to somebody MSR I would suggest reaching out to medium because then you have like, Medium is totally industry, MSR is a blend.

So that's what I think you should do definitely reach out to all like the three and see where they say we need more than that?

Thank you for your time

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### Erik Stolterman

**Interviewer**

Well thank you again Dr. Stolterman again for agreeing to talk to us today.

We're really excited to kind of talk about the bridging the research and academic gap with you today since we are currently exploring this sort of problem from our end here in the program.

So we're trying to develop a better understanding for our capstone project, trying to look at how we can better like understand and improve communication between design practitioners and research scholars in HCI, and we're reaching out to you because we know you've done a lot of research in the space and you've also been a lot of conferences and worked on like the editorial board at different journals and even interactions magazine on how to better communicate research.

So with that, and kind of pick your brain for the next 30 minutes or so.

Would you be okay with us using the insights that we received from your interview for our capstone projects and will be sharing the information with other people in our team.

**Erik Stolterman**

You can do whatever you want with this

**Interviewer**

Okay. Wow, thank you. Thank you for being so giving. And are you okay with us using an audio recording of this.

**Erik Stolterman**

Yes, of course

**Interviewer**

Thank you.

So again, if you've any point in the interview feel like you don't want to answer any questions you do not have to. I am sure you already know that.

**Erik Stolterman**

Yeah that's fine. Yeah. Do what you want to.

**Interviewer**

So we know you've conducted like a lot of research in this space. Are there any current like recent developments or other research in this area that excites you, in trying to bridge the research gap.

I'm sure you're dealing the saturation. So that's probably a big question.

**Erik Stolterman**

Yeah. That is a big question if there are any recent developments. That's a good. Well, it's so obvious that the question that you're struggling with is has been around for many, many years. But I think. It's being in our field. It's been growing pretty much just the last few years. And you can see that in many different ways.

**Erik Stolterman**

For instance, academic conferences now are experimenting with different formats, not just having the traditional paper presentations, but other types of formats that with the idea that it would better suit practitioners. So I think that is one I think it's also interesting to see the something that we see today that was not common just 10 years ago is all these well that's called them conferences. So workshop that is organized by practitioners put practitioners first, like IxDA, and others. There's a lot of them and also to see that in many cases they invite researchers. So all of these points to one simple fact, to me at least, and that is there is an interest on both sides of the other side so, I think, is not even a question there is an interest and of course because this field is a practice oriented field and it's almost everything almost all research done in this field is aimed at practice it saying that its improving practice in some way.

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By helping designers by coming up with new tools or methods or whatever can be developed to help practice to become more efficient, better, more respectful of other aspects of design, whatever it can be. I mean, there's a huge interest in that. That is basically the development that's not just this little development that's big.

### Interviewer

So we've read some of the papers in the reference section of your published papers. Are there any maybe earlier papers that aren't on your reference sheet that we could have you can point us in direction to that we haven't probably stumbled upon. Because we're going to it and we have stocks and we just aren't finding maybe older papers that are kind of talking about the early points about this too.

### Erik Stolterman

It's not that much. Or they start much to find one thing that is very interesting though to notice, of course, now this field is trying to reinvent everything that has been done in other fields, many, many times.

There is for instance of field of research that is about practice. It's not about the particular field practice just about what is practice?. What is it that professionals do, how can you understand that how can you make it better that that's been around for a long, long time.

### Interviewer

Okay, so when you're talking about the different design practices and different scientific practices, what do you mean?

### Erik Stolterman

So there's this whole research area about practice and in one area that is very closely related to our area that most people don't think about it. It's actually pedagogy for School of Education. If you look at because what is cool all the schools of education, what do they do?

They teach practitioners to become better teachers, and there is a long history of research practice conflict in that area. Where researchers are seen as only doing theoretical work about, you know, cognitive development of kids and things like that. And not caring about the actual practice of being a teacher in a classroom.

### Erik Stolterman

So researchers are focused on these very big questions about humans development but teacher are focused with, and they're struggling with how you get kids to listen. How do you do this? How do you do that? Should I use a whiteboard? Should I not, you know, very concrete questions and we have a very similar situation in our view, so I don't think you can find a lot in our field, but you can find a lot in other fields.

### Interviewer

I see, thank you.

Given your past experiences as a co-editors in chief of the Interactions magazine and other journals. We are also interested in learning more about how to communicate these research methods you've come to synthesize in a more digestible format to read so we want to hear a little more about that.

### Erik Stolterman

First of all, that traditionally among researchers is of course the write things up so that in a way that fits research.

Which means that you focus a lot on the method you focus a lot on how you did things if you can trust the results. So that's why they're all these chapters and sections on method and validation and all that stuff.

Of course, if you are a practitioner, you don't necessarily care about that at all. What you're interested is really new ideas. You want to get some ideas that can help you just think differently about things. In the end of course for practitioner and this should be true for researchers to it may not be, but if an idea is proven, that these types of ideas cannot be proven correct or not correct.

I mean, there is no way that you can verify that if designers use this tool they become better designers. No, I mean, every time I read that I say no no that's wrong. It's not because it's wrong about that particular tool is just because it's impossible to prove. What you can argue maybe is that it seems like maybe people who use this tool in certain situations with the certain training with a certain problems bla bla bla certain this and that. Maybe it seems like they can do better design. But then, of course, the

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question is what do you mean by better design. It is time. How do you know they previous better. Maybe they produce worse design.

So this idea that you can prove what's right and wrong, which is the fundamental way of thinking and research. when it comes to practice it basically has no meaning it it's not even interesting. It doesn't really have a meaning. It's not that if you came up with scientifically proved that you had come up with the best possible tool for wireframing that everybody in the world should accept that and use it right away that's that's not how the world works.

So, but that is how the academic world and the research world works on that premise that you should be able to prove that your results or correct.

If I we're practitioner, I'm only interested if it works for me. I don't care if it's true or not, you know, it's very pragmatic.

**Erik Stolterman**

And when you combine those two worlds, of the of the truth and the pragmatic world that's where you have that clash. And that's where this language used in this world is very different from the language here what is good arguments here is not good is not arguments there. What is a good purpose is here is not a good purpose here. So you have the constant and that is just the way it is.

So you cannot just magically remove that gap. You can do things that bring them closer together and you can but you cannot remove it. Because if you were in this world or that world you live in different portals

**Interviewer**

Right and that's why I'm sure you're claiming to reduce the gap. As opposed to completely omitted.

**Erik Stolterman**

Yeah, you can't. You cannot do that. And the thing is, and you know this you you're you know a little bit about design you know that even if let's say we one day came up with the best possible design process best possible tool and you everybody in your class design the best possible something.

And it just it's perfect after a few weeks if that was what everybody in that after a few weeks, people will be bored.

They will say, I don't care. Maybe that's the best design in the world. I don't care I want something different.

**Interviewer**

True.

**Erik Stolterman**

So, but in the world, the research that doesn't work. You know, it doesn't work.

So that's why my experience from practitioners that, and I said this again. That they are much more interested in ideas in ways of thinking. They are not interested in details studies and results and data and things like that. They want the ideas they want help to come up with different ways of thinking about things.

So that's in a way why, this may sound strange, in a way practitioners are more interested in philosophical aspects than researchers are.

**Interviewer**

Can you elaborate more on your experience? You said you talked to some practitioners before. Do they like often reach out to you to ask about your research.

**Erik Stolterman**

Yes, I've done that a lot and I have my own favorite concept that I use. I think I mentioned it in. I don't know if it's mentioned in what you read.

**Erik Stolterman**

I call it rationality resonance. So the way I've done it over the years is what I do, if I'm going to work with the company I go in. I talked to them. I just spent time there try to see what they do, how they think and really try to understand, just the way they think.

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And then I work on that little bit then I go back and present to them and say, You know what, this is what I saw. This is how I see you thinking this is what I see you doing, and this leads to this and I see it leads to that and you can do that they kind of learn about it.

And then after I'd done that they are always very curious to hear what I have to say because what I proven to them and Is I understand what they are doing. I understand the world they live in, I understand their very concrete practical everyday reality. When I do that now I can present things they kind of can understand, where it comes from, and how they can bring that into their own world. And this is what I mean. But I cannot but I can still not propose anything to them that doesn't resonate with the way they work is. This is the idea of rationality resonance. This is where most researchers fail completely because they don't have enough understanding of the specific practice they want to change.

So if you produce a method or tool as a researcher and you think about practice as something that goes on out there in the in the world and but you don't really care about it. You think well I've come up with the smartest way of doing this.

No one is ever going to care about it, no one. Because you don't show them that they don't feel the resonance with their own way of thinking, and when they don't, they don't even pay attention.

So you have to create this rationality resonance as I call it, so the method or, the tool that you propose the rationality built into that tool needs to resonate with the rationality that they live with.

### **Interviewer**

So based on your rationality resonance have you seen examples of what you're describing in practice like in industry. Maybe you've talked to researchers and also practitioners.

### **Erik Stolterman**

It's easy, it's easy you can take some examples and you know that, for instance, you heard about the concept of affordance. Right. Yeah.

Do you use affinity diagram?

### **Interviewer**

Yes. Yeah.

### **Erik Stolterman**

They have good examples of simple tools where the rationality of the concept or the of technique fits nicely with the experience reality rationality of practice. A very general and broad spectrum of different practices. That's why they are used everywhere because it just fits it doesn't people even don't think they need to learn how to do it, you know, because it's so obvious. It just fits.

So that there are a lot of these examples but we also know difficult examples. I mean, you can take almost any complicated software and now you have examples of the opposite where very difficult to make a powerful tool. For practitioners that has that kind of immediate acceptance.

That's why we have the legacy when it comes to software, it means that software lives not because they are the best or the easiest is because the everybody else uses them and I have to use them. I have to fit into the system.

So that's a very different approach. So that's why it's almost impossible almost every researcher who are developing new design tools, new design methods fail completely. Because they tried to sell something to practice that doesn't make sense and there is no nothing there before them. I mean, they are not following the footsteps of someone else. Its extremely difficult. And that's where the practitioner says that research is not interesting to us.

You just discuss something that doesn't mean anything to us and the researchers to say, but I have the best possible tool ever why don't why don't everybody use this.

### **Interviewer**

Right, so going off of that, you're speaking about the frustrations that are practitioners thing you know it's not really involving their everyday problems right and how often do you get practitioners reach out to you through email? What kind of mode of communication you used conferences?

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### **Erik Stolterman**

First of all, I don't. A lot of my research, it's not about practitioners, so I don't really try to sell my research to practitioners, I sell it to researchers right - that's most of my research I do. I do more of the working with practitioners, but when I do, I never have this problem. I never have their lot of good people in academia will never have this problem personal when they actually work with a practitioner. I think because they do understand practice. They know people they know how to talk to them. They know the both sides. They have no problem whatsoever. The people who complain - usually the people who do not set their foot in practice, they just sit somewhere and they come up with these ideas that they believe practitioners should follow, and of course they will not.

And I think that's okay. That's good. That's the way it should be. So I didn't really say that in the beginning, but I don't think that the gap between practice and research is a serious problem if it means that research actually doesn't have anything to provide that is of interest, then it shouldn't be again.

If the tools and methods and whatever the research you come up with are not useful, why should practitioners care?

### **Interviewer**

Going back to when you talked about the recent developments on how the conferences are becoming more inclusive to practitioners. I know previously there was some apathy for practitioners or lack of interest for them to go. Can you elaborate more on what they are doing?

### **Erik Stolterman**

But one thing that we know that is much appreciated by practitioners at conferences. When you have breakout groups, maybe workshops, you have the small settings where people talk and discuss things instead of just standing and presenting the research.

We also know that different forms of panels is usually appreciate it by practitioners, because what you do in a panel you discuss ideas you don't get into the nitty gritty research aspects. It's just about the big ideas and they like that.

So there are A lot of initiatives for people are trying to find ways that would at least make it more easier for practitioners to make a judgment if the research is of interest to them or not. And it's not just the consequences of the format of the form but it's actually focused on the content.

### **Interviewer**

So based on that. Have you at any point in your practice given talks at companies?

### **Erik Stolterman**

Yes, I do that a lot.

### **Interviewer**

Do you speak at conferences like South by Southwest or more general conferences like that have some sort of design oriented audience

### **Erik Stolterman**

I haven't been to so many of those more professional conferences, just some but not really. Not really.

### **Interviewer**

And so what usually incentivizes you to go to like let's say these companies that you're going to go and talk to researchers?

### **Erik Stolterman**

Well, first of all, it's usually they asked me to come so that's nice, but to me it's I truly live the what I talked about. So when I say that if you do any research in this field then and you want to have an impact on practice, you have to understand practice. So I just love to go to visit companies just walk around and talk to people see what they do. How long how it's there's space set up? How do their rooms look like, how do they work during the day, talk to everyone there from the lowest to the highest about their everyday experience of working in this business. I love doing that and think that it's wonderful. And of course, they always are pretty open because I'm not a threat to them or I mean the researcher is not a competitor or anything so they open up quite a lot and you learn a lot from that.

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**Interviewer**

Would you say that these conversations are productive when you go into companies?

**Erik Stolterman**

They are the best.

**Interviewer**

Well, it's good at that they are receptive towards it.

**Erik Stolterman**

Actually without doing that, another way I do this is of course I keep in touch with the a lot of the alumni from here.

I mean we have alumni in our HCI program going 15 years back, so they are now in all kinds of position. I mean, the first entry level position to some of them will now run companies and are pretty high up.

And by talking to them quite a lot is another way of staying in touch with the practice that they live in.

This is unfortunately not very common. I mean, if you would go to practitioners, a lot of practitioners with no researchers, a lot of research we say they do this, but you should not believe them because what they do is, yes they do go to companies, but they go there and give a talk on how they should do things.

That's not the same thing.

That's where practitioner are polite and say, yeah, that was interesting thank you very much, and then it doesn't change anything.

So yeah, that's a good insight. It's great.

**Interviewer**

Do you usually keep in contact them through email or do they maybe you publish something and they reach out to you how does that unfold?

**Erik Stolterman**

Usually when you've been to a company and you worked with them a little bit. They usually stay in touch through email or with time sometimes maybe talk over Skype and it's not uncommon that it almost end up being some kind of mentoring also relationship.

**Interviewer**

Have you seen examples of where your alum or people are mentoring in companies where they come to you and they are referring to a paper you published 10 years ago and implementing and action. How does that conversation go?

**Erik Stolterman**

It's usually I get an email from somebody and they say, you know, now I'm in this situation, I really would like to talk to you. I remember we talked about this in class and and I need to because I'm thinking about it and it doesn't make sense right now. Or I am in a difficult position and I need your advice that happens now and then, and then we Skype.

**Interviewer**

Do you find that they're productive and then come back later and tell you?

**Erik Stolterman**

I take the fact that they actually reached out to come back to me now. I take that as a sign that it works in some way.

Otherwise they wouldn't come back.

**Interviewer**

Let's say you're at a conference right where you let's say they have practitioners and let's say you want to convey one of your papers in a brief minute that they might find actionable, how would you attempt to to describe your papers to actually something like, who's more design oriented so that we could walk away with some of the insights I we could later.

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**Erik Stolterman**

Well, that that's a good question. But that depends on what it's about. Depends on what the paper is about. I've done a lot of different research and had some kind of paper and topic. It is so it's difficult to say in general away. I don't think you can say in any general way.

**Interviewer**

Let's back up a little bit. How could this apply to your paper on our human life of social robot be and we're working on a safe home security system for one of our projects. How would you convey that paper to us so that we walk away with something that we can implement into our system.

**Erik Stolterman**

What paper?

**Interviewer**

How human like a social robot should be or the paper.

**Erik Stolterman**

So I would again question why I'm hesitating. And this is very interesting. I have to think, why am I hesitating?

The reason is it's a construct and situation it's not so again if I do this, I basically only to do it to someone I kind of know who they are, what they are doing. So I know because otherwise I will just preach, you know.

When it comes to these things you don't preach because preaching doesn't work. I mean it can't. Of course, it works over time in a class. For instance, when you have students, you can preach it works, but otherwise preaching this and work what you have to do is you have to start a dialogue and you have to first understand what is it that you're working on, and how are you thinking about so I wouldn't say anything to you without knowing what it is really you said that we working on this.

So how are you doing, what are you doing, and how do you think about it this. No, I wouldn't do anything before that it wouldn't be it wouldn't it be meaningful. Yeah, there needs to be some sort of rational empathy resonating.

**Interviewer**

Great, thank you. So I think that wraps up for most of our questions actually. I mean, this has been a really great discussion. I mean, we've gotten a lot from what we've said throughout the conversation that we didn't really uncover and know where to focus some of our exploration and we should be doing.

If it's not too much to ask you would like to keep in contact with you throughout our journey?

**Erik Stolterman**

Yes of course.

In front of the Skype conversation in the near future. It would be fun. I would be happy to do that and you can write to me and you can send if you anything you want to me and I'm happy to get feedback and whatever. And we can I have another Skype whenever you want.

**Interviewer**

Awesome. Thank you so much.

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### Gary Hsieh

#### Interviewer

So first of all, how did you come about researching the area of bridging the gap between researchers and designers?

#### Gary Hsieh

Sure, sure. I think it kind of stemmed from both personal research and personal observations. Right. So I've have a pretty interdisciplinary background. My background is in computer science. I went to HCI at Carnegie Mellon with Andy Ko and where a lot of my research started focusing more on the social science side so in my own work I do a lot of this bridging right. where I actually a lot of my research started focusing more on the social side side. So in my own work I do a lot of this bridging right saying where I look at social science theory and I think about ways to apply it in technology contexts in all of my work then empirically test them to see what works, why it doesn't work, and then come with new ideas and you know help contribute a theory, or at least I hope

But same time, the more I kind of do this work. I also notice hey you know who's reading these papers right like I think I have a lot of interesting insightful my papers and then they get awards right but it's like, well, if I when I talk to designers. Yeah, the things that they tell me they read about our like Freakonomics or Nudge right it's like okay I've read any of my papers, right. No, right? So why is that right? I'd like to think obviously I'm biased because I'm doing this that our work has some value to designers for a very applied field such as HCI you think that the stuff that we do you helps and so why is there this gap, so that's sort of where I got started in interested in.

#### Interviewer

So in your experiences I know you've been a lot of the conferences like CHI and DIS. Do you think there's an increased interest between practitioners and researchers to talk and communicate with which other?

#### Gary Hsieh

I don't. I think the historical view is that there used to be more practitioners at CHI. And they've moved away as more practice-oriented conferences become more popular - like for example, a lot of people go to SXSW right. Then there's also sort of UX related conferences where people don't necessarily go to CHI. And part of it is offering that value to the practitioners and yeah I don't know I mean I don't, I don't think I've been in the field. I mean, I've been in the field for quite a while now, but I don't what it was like before the 2000's. I imagine maybe at a certain point where HCI / UX is still relatively new, you kind of need a place where everyone to gather and mix. But as its grown a lot, you have critical mass for practitioners and critical mass for researchers, there become less of a need for them to intermix. I do think that's it's sort of lost opportunity.

#### Interviewer

Interesting. So is there any particular current research that has been published that might create some excitement from your end and that has provided some interesting insights that you maybe didn't come across before. On this particular problem space, like bridging the gap. Maybe more work other than your own that you particularly excited about, that's also having discourse on this

#### Gary Hsieh

I don't know from the research perspective. I think obviously some people are better than others in figuring out how to do this. I like Andy Ko's blog posts. I think he's doing some of that I don't know I think it's sort of I don't know how effective that is but he's doing some of that. My colleague, Kate Starbird, she also, you know, fairly recently wrote a blog post about sort of misinformation, and that got her all kinds of publicity and she's you know being asked to speak on you know congressional committees because of her expertise that area - it's certainly a very top hot topic right now a fake news and all that stuff.

I don't know there's that many people looking at it from a research perspective, but I think certainly a lot of people are thinking about these issues, in relations to what they should be doing to better communicate the research findings.

*Since we're on the topic of blog posts, are there any particular blog posts, other than your current colleagues' that excite you that are doing that type of work? Andy Ko is doing Bits and Behavior. Is there a specific blog that you follow that might be doing this unintentionally?*

I don't necessarily follow but I know like folks at GroupLens in Minnesota, there's also been some work there, and they've also

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done a few nice blog posts about their research, and I'd say one to check out if you haven't already.

### Interviewer

Since critical mass might prevent a lot of collaboration in-person, do you think there are better ways to communicate online between researchers and practitioners? Is normal mode email or just if they find a paper, do they just reach out to the researcher? What are your past experiences?

### Gary Hsieh

Yeah, I mean, that's something that Lucas is looking at. I think it's a multi faceted issue. There are many different stakeholders and ways in which this can happen. I mean, one of the things obviously is through education. Our hope is that we're also reaching out to you guys, and when you go as a professional somewhere, you're acting as the bridge. So there's also more and more UX researchers who actually have PhDs right who are serving that role. And so in some ways they're also kind of you know "Here are a bunch of theories that I've learned" and try to incorporate into their communicating with their designers or whatever your teams. So that's that's one way.

In terms of short of yet maintaining or staying abreast of papers, obviously, that would be another way. One common way which people find related work, even for researchers, is through their social network, right. And so I'd send a message: "Hey, I know you guys are the experts for this kind of relevant work". And same, I can imagine with practitioners who are doing similar things: "Hey, I know you do some behavior change right so what are some relevant or interesting readings that I should be looking to?"

There are other models as well where I think, you know, I was just recently talking to a friend who is working at Facebook. They're also more and more are trying to bring academics in house to sort of foster this type of interaction as well.

### Interviewer

Is there alum or students that you had that come back to you. Like, "I use this piece of research that you published, and it's something that dates back look 5-10 years, maybe when you were starting?"

### Gary Hsieh

I haven't heard that. I don't know. I like to hope that it's not because not being used, but no one has sent any message. I mean, I've gotten notes from others who are saying "Oh this piece of research is really interesting and very applicable to my work," but no one has said, "Oh, you know, here's the one place where it's been applied"

For a while I was doing work on so online petitions and I've talked to Change.org and to what extent they've taken what I've done and incorporated my findings into their design production.

### Interviewer

Could you maybe elaborate on it one way they might potentially use insights?

### Gary Hsieh

So one of my findings is looking at how this whole issue of slacktivism. Right. And so this idea of how well if you sign a petition, you're actually less likely to do other things because somehow you feel like you've already done your good deed for the day.

So my finding is actually there's another force that's acting at the same time, which is people's desire for consistency. So if I told you to sort of support a cause, kind of, if you guys have heard of like the *foot in the door technique* so you get people to commit to something small and you can get them to do something bigger afterwards. So there's sort of like an underlying consistency force. If I get you to sign a petition, my studies actually show that you're more likely to contribute, and make a donation afterwards to support the same cause. So that seems at odds with concerns on slacktivism. But the point is that if you match on the causes then you can get sort of like this effect where you can get them to do a bunch of things that are connected. Whereas if they're not well matched then potentially this more likely for a slacktivism effect where they feel like they've done the good deeds.

### Interviewer

This is where you're getting to line up their values?

### Gary Hsieh

Right. The way that I would employ this in their design would be after they signed a petition, to not only recommend you based the other things that are related, but really to also recommend the causes that's that's directly sort of related, or get you to do something more costly like make a donation.

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**Interviewer**

To touch on one of your papers, you guys made some mimics of Twitter's like bubbles and headlines. So could you elaborate more on deeper on the results of that many things that you couldn't really elaborate on paper.

**Gary Hsieh**

This was the *You Reap What You Value* paper? The idea is just basically that people are drawn to different things and so they're they're attracted by different types of content. We found people holding different types of values are more likely to appreciate and sort of enjoy different types of content. One way which we've been looking at and actually current work is also thinking about how that affects donation contributions on Wikipedia. So the idea is that certain people may be drawn to certain pages on Wikipedia right because of their underlying value and interest. And so if you think about Wikipedia is donation campaigns. It's all very page based right so which would mean that certain pages like the Kim Kardashian page might be attracting a certain type of people. They might be less likely to donate than let's say a page about nuclear engineering, because they're attracting different set of people for different purpose in their wallet and so then thinking about how then we can better design donation campaigns or sort of messages that attract different types of individuals will be something that would be kind of the implications.

**Interviewer**

Hypothetically speaking, do you think those types of insights, could also play a role in bridging that communication right aligning values with practitioners and researchers maybe that is one way of talking about it.

**Gary Hsieh**

For sure. If I'm understanding your question correctly, I think to reach practitioners, we need to offer the right sort of value proposition to get the the right message ready. But that's also not the only way - I think it's a two sided issue. So I think there's stuff that researchers can do and they're stuff that practitioners can do.

**Interviewer**

*Have you had successful experiences talking to a practitioner? Are you asked to go to a tech company to talk to their practitioners and in what way do you give those talks? Is it informal or do you give presentations?*

**Gary Hsieh**

I've done both. Most often is at research places. Last year, for example, Lucas and I visited Artifact, a local design agency. They have a set of behavior change cards and we're kind of working on that too. So we are showing talking to them about what we're doing, and getting some feedback that way. We tried to do that. Or at least have a given interested in this. We're trying to do more of that.

**Interviewer**

What usually incentivizes you to do that? Do they reach out to you, or do you?

**Gary Hsieh**

It could work both both ways. Obviously the primary motivation is to help us improve our understanding and the research quality. There are many ways in which can happen. Directly getting feedback, indirectly getting interest you know getting sort of long term interests and getting people excited about the research area.

**Interviewer**

Do you have any questions for us?

**Gary Hsieh**

What are you guys doing what are your plans.

**Interviewer**

*It's a very meta problem because I mean work in the process of translating all this information at the same time of trying to synthesize your papers and other experts papers on the topic.* We're exploring both sides of reducing that gap. We understand that it's a complicated wicked problem, but I think there are some specific areas that we can focus on that might people to facilitate better communication on both points. And that's why we're reaching out to experts who are the experts on the research side and we're all searching practitioners to see, you know, the communication there.