Balancing the Practical and the Possible when teaching Interaction Design

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In Paola Antonelli's article, "States of Design 04: Critical Design," she discusses where the term 'Critical Design' originated. Giving credit to Anthony Dunne (of Dunne and Raby), Antonelli explains that 'critical design' is not concerned with creating immediately useful objects, but rather sparking ideas and potential for future artifacts and experiences. "To do this," explains Dunne and Raby, "we need to move beyond designing for the way things are now and begin to design for how things could be, imagining alternative possibilities and different ways of being, and giving tangible form to new values and priorities."

As interaction design educators, who chose to prioritize creating the conditions for meaningful — and new — user experiences, 'critical design' helps to further free us from the confines of what students know how to develop. When students focus on what they know how to make, the results are often stagnant, expected and dull. Students get hung up with the increasingly complex development and ignore the most important issue — the people. To prepare students for a design profession that is rapidly changing, it is most imperative to encourage students to speculate wildly and comprehensively research when designing interactive experiences. They should design for 5 to 10 years out, not now. But, when designing in such speculative ways, how can students be prepared to enter the workforce and hit the ground running?

During our presentation, we will explore this dichotomy, and share examples of student work; ranging from beginning process to final artifacts. How do we prepare students to think wildly, conceive of new modes of user interaction, and focus on meaningful user experiences while also preparing them for entry level positions?

Keywords: Design Education, Critical Design, Interaction Design

What Exactly is Critical Design?
A*nd what does it have to do with interaction design pedagogy?*

> We need to move beyond designing for the way things are now and begin to design for how things could be, imagining alternative possibilities and different ways of being, and giving tangible form to new values and priorities.[1]

As interaction design educators, who chose to prioritize creating the conditions for meaningful — and new — user experiences, 'Critical Design' helps to further free us from the confines of what students know how to develop. When students focus on what they know how to make, the results are often stagnant, expected and dull. Students get hung up with the increasingly complex development and ignore the most important issue — the people. To prepare students for a design profession that is rapidly changing, it is most imperative to encourage students to speculate wildly and comprehensively research when designing interactive experiences. They should design for five to ten years out, not now. But, when designing in such speculative ways, how can students be prepared to enter the workforce and hit the ground running? How do we prepare students to think wildly, conceive of new modes of user interaction, and focus on meaningful user experiences while also preparing them for entry-level positions?

[1] Paola Antonelli, "States of Design 04: Critical Design," domus, July/August 2011, accessed January 30, 2014, https://www.domusweb.it/en/design/2011/08/31/states-of-design-04-critical-design.html.

Fig. 1: Flirt Project, Dunne and Raby

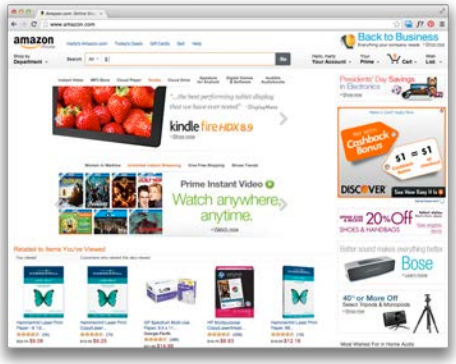

Fig. 2: Amazon.com

Fig. 3: Fontwalk.de

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Many people question whether Critical Design is in fact design, or if it should be more appropriately placed firmly in the arts. (Fig.1) Dunne and Raby contest this, but one could argue that Critical Design is even further from what many view as web or interaction design, a field often thought to be practical and pragmatic. (Fig.2) However, when focusing on the big ideas of Critical Design — imagining alternative possibilities, pushing back against the status quo, etc — direct ties to innovative interaction design pedagogy begin to surface.

Teaching design in the 21st century is a constantly changing task, factor in teaching courses that are focused on technology and there is little to hold on to from year to year. To say that the technology has become complex would be an understatement. These advances offer designers and audiences experiences that were unimaginable mere years ago (Fig.3) but create challenges in knowing how to properly prepare design students. Movements and ways of thinking like Critical Design inspire alternate ways to approach the task of preparing students to be critical thinkers. It allows educators to place value on the speculative, the 'what if', and frees us from the confines of what is currently possible. This approach allows educators to prepare students to be thought leaders, who have the skills to continue pushing back against the status quo.

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[2] Paola Antonelli, "States of Design 04: Critical Design," domus, July/August 2011, accessed January 30, 2014, https://www.domusweb.it/en/design/2011/08/31/states-of-design-04-critical-design.html.

[3] Anthony Dunne and Fiona Raby, "Critical Design FAQ," Dunne & Raby Co., nd, accessed January 30, 2014, http://www.dunneandraby.co.uk/content/bydandr/13/0.

> Interaction design is a perspective that approaches the design of products by looking to the future-seeing things as they might be, not necessarily as they currently are.[4]

Why Prioritize Speculative Approaches?

With the technology industry on the rise and the need for all companies, services, and products to have an impactful online branding presence, the demand for designers continues to prosper. This brings about an expanded range of skill sets required to work in the areas of interaction design, information architecture, user experience design, experience architecture, etc. which further complicates our approach to teaching students for these roles. There are many approaches and perspectives on how to best prepare design students for a possible career in this emerging field.

One common approach to teaching design students skills for interaction design is to dive head first into coding language. While this provides a set of hard skills for the student to tack onto their resume, it limits them to being technical thinkers first rather than critical thinkers. It also creates a situation where students quickly get hung up on what they know how to do versus speculating about what could be possible.

> To practice interaction design is to live on a fault line: the landscape shifts and swells below you in a way that is constant (occasionally seismic). The purview of the discipline is in persistent flux. Beyond any particular programming fluency, the single greatest aptitude of future interaction designers may be the ability to embrace and shape the flux — to work within existing constraints and ask, "what might be?"[5]

Prioritizing a speculative approach to teaching interaction design opens up the opportunities for students to develop their soft skills such as empathy, problem-solving, and critical thinking. According to Robert Reimann of Cooper, a design and strategy firm in San Francisco, interaction designers must be able to:

- Learn new domains quickly
- Solve problems both analytically and creatively
- Be able to visualize and simplify complex systems
- Empathize with users, their needs, and their aspirations
- Understand the strengths and limitations of both humans and technology
- Share a passion for making the world a better place through ethical, purposeful, pragmatic, and elegant design solutions[6]

Finding the opportunities to approach interaction design from both perspectives remains to be an obstacle in an already tight graphic design curriculum. With so many topics integral to the education of a graphic designer, it becomes difficult to cover all the aspects of interaction design. Educators would better serve their students by focusing on the soft skills during that allotted time rather than the hard skills. With a plethora of online resources available, one can quickly learn

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[4] Robert Reimann, "So You Want to be an Interaction Designer," Cooper, May 15, 2008, accessed February 14, 2014, http://www.cooper.com/journal/2008/05/so_you_want_to_be_an_interacti.

[5] Cady Bean-Smith, Senior Art Director, VML and Principal, MIGHT

[6] Robert Reimann, "So You Want to be an Interaction Designer," Cooper, May 15, 2008, accessed February 14, 2014, http://www.cooper.com/journal/2008/05/so_you_want_to_be_an_interacti.

coding on their own, while it is far more difficult to independently learn skills that are more subjective, complex and fuzzy.

This isn't a discussion unfamiliar to design educators; we grapple with the obstacles and opportunities every year and debate about it at every conference. It is what makes our jobs exciting and challenging. In our current contexts, we — Marty Maxwell Lane of The Kansas City Art Institute and Rebecca Tegtmeyer of Michigan State University — have implemented a speculative approach to teaching interaction design at our respective institutions. Marty will share her approach and project examples that have proven successful at The Kansas City Art Institute. Rebecca will share a new interdisciplinary degree program being developed at Michigan State University.

Interaction Design At The Kansas City Art Institute

The long-standing pedagogical approach in the Graphic Design department at The Kansas City Art Institute has been to avoid media silos. Faculty attempt to integrate all media into all courses, allowing the artifact to respond appropriately to each design problem. One exception to this anti-siloed approach is our scaffolded junior and senior interaction design courses; Information Architecture and MultiMedia Experience. So, while students may touch interactive projects in small ways in other courses, ex: iPad editorial in Typography Two, the focused study of interaction design takes place in two courses.

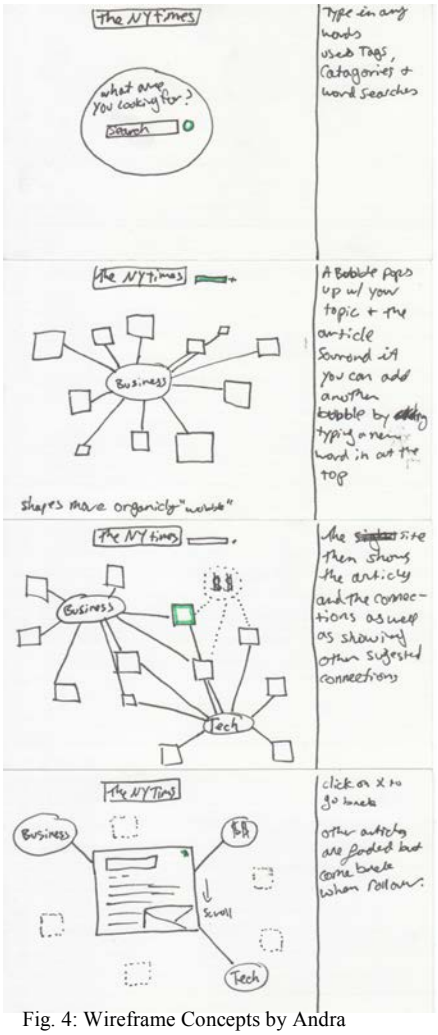

Fig. 4: Wireframe Concepts by Andra Khoder, KCAI

Information Architecture

Information Architecture takes place in the Spring semester of the junior year — along with User Experience and Professional Practice — and begins to slowly introduce best practices, methods and theories.
The Course Objectives:
1. Account for affordances of the online environment as a news source,
considering: social networking, online credibility issues and user control
2. Organize information for a time based environment, considering sequencing and users
3. Demonstrate an understanding of typography, aesthetics and current visual trends for the web
4. Present content in a manner that is useful and meaningful, accessible and engaging
5. Plan & develop an interactive website
6. Visually render a site's content in a clear, engaging & cohesive manner
7. Develop strategies for content comparison and data visualization
8. Research an audience and identify a task scenario for a mobile application
9. Organize and present information in a way that is appropriate to a mobile device

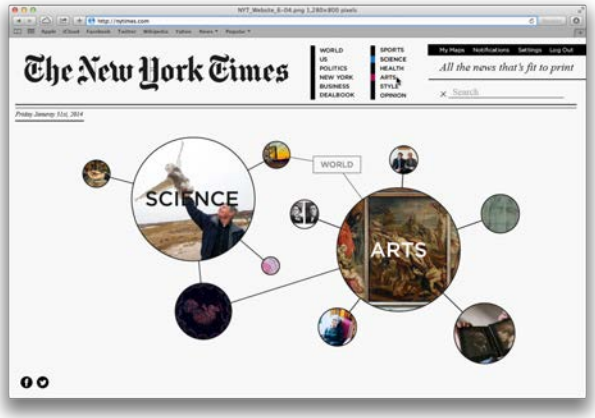

Fig. 5: Visual Design by Andra Khoder, KCAI

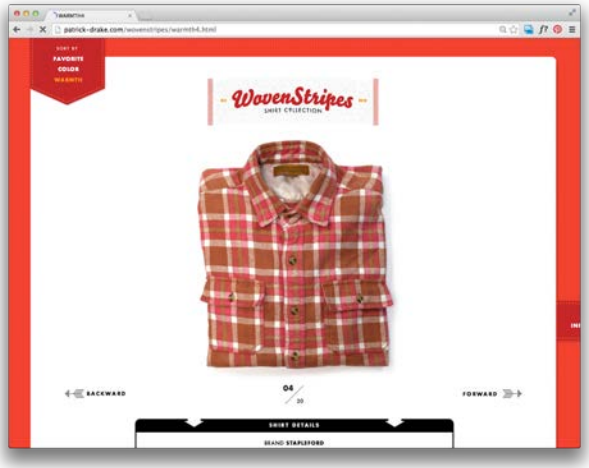

Fig. 6: Wovenstripes Website by Patrick Drake, KCAI

The course addresses the above objectives in the web and mobile contexts via three projects, student and professor lectures, assigned readings, critiques and collaborative exercises. The first project, Online News Redesign, asks students to explore the affordances of the online space as a source for news and focuses on the top three objectives listed above. This project dedicates much focus to the development of analog and digital wireframes, sitemaps, and user scenarios. (Fig.4). Students create the visual design in Photoshop and use typefaces available through Google Fonts. This means of production allows us to discuss best practices regarding workflow as well as technical limitations of using type on the web. Despite these practical limitations, students are asked to speculate and reimagine online news considering contemporary issues like online credibility and user control, while also pushing past what they know to be possible. (Fig. 5) The second project, Collection Exhibit[7], focuses on objectives four through seven, and asks students to curate an online exhibit that introduces the user to a collection in an engaging and informative way. This project is unique from the others in that students work in Adobe Muse to develop a functioning website. Prior to development, students create wireframes, sitemaps (in Muse) and visual design concepts. Adobe Muse allows students to gain the skills in developing a basic website in a designer friendly way. Muse helps students develops an understanding of how typography works on the web, minimal css, image preparation, hosting — skills that they might use in the future for boutique sites, portfolio sites, template modifications, working with developers, etc. This experience gives them a basic understanding of how the web works and prepares them to communicate with developers, the people who would more likely be the ones to produce websites. (Fig. 6) The final project in the semester, Tailorable App, asks students to create a tailorable (customizable) iPhone application that will assist a specific user group with a task. The project is brief and the students execute only two user scenarios. This is the first time that students in the Graphic Design curriculum are exposed to designing for the iPhone, so much of the discussion is around the mobile context — what type of content do

[7] Project Developed by Jamie Gray, formerly of KCAI.

Fig. 7: Flock Application, by Eli Brumbaugh

people need from mobile devices, what behaviors are best for touch screen, how do we signify feedback without rollovers, etc. Students again create analog wireframes, then digital, then move into visual design modifying the existing iPhone GUI to fit their visual style. (Fig. 7) This course ultimately serves to provide students with a basic foundation in interaction design — a foundation in which they are encouraged to explore the balance between speculation and practicality.

MultiMedia Experience

MultiMedia Experience takes place in the Fall semester of the senior year — along with Typography Four and Spatial Experience — and serves as a capstone interaction design course in which students are asked to build on previous knowledge, deeply research an audience and speculate wildly about the future of interaction design.

The Course Objectives:

1. Apply user research to inform both your concept and design
2. Demonstrate an understanding of online communities, in relation to education
3. Speculate, aka, futurecast the possibilities of interaction design
4. Plan screen-based systems that rely on and respond to user input
5. Create the conditions for a holistic experience that occurs at both the component and system level

The Course learning Expectations:

1. Apply previous knowledge of interface design and information architecture concepts to projects at an advanced level
2. Apply previous knowledge of linear narrative skills (editing, motion graphics/ typography, sound, and animation) to projects at an advanced level
3. Further develop critical thinking and articulation skills in informal class discussions and formal critiques

The course addresses the above objectives through one semester long collaborative project, in addition to assigned readings, critiques and collaborative exercises. The semester long project, Online Community, asks students to design a multimedia system[8] for a community of individuals

[8] Design a multimedia system for a community of individuals involved in a common learning activity. This system should move content fluidly across platforms/mediums to display, map and share information. Define ways to facilitate interaction and sharing, finding ways to collect information from the real world to send, analyze, and visualize in the electronic world. You will work collaboratively with a partner for the entire project.
You will be required to address 3 of the 4 following: (#1 is mandatory)
1) An online hub will respond to the needs of the whole community.
2) An iPhone application designed with the individual user (on-the-go) in mind.
3) An iPad application designed with the individual user in mind. (context matters. where are iPads used within your community?)
4) A large scale touch screen device designed with multiple users or individuals in mind. *
* You may propose another speculative concept for consideration.
Typically, the workload breaks down as one student in the group being responsible for the online hub, while another is responsible for the other two platforms. This breakdown can shift if all parties agree it is appropriate (approval is required).

involved in a common learning activity. This system should move content fluidly across platforms/mediums to display, map and share information.[9] Students must define ways to facilitate interaction and sharing, finding ways to collect information from the real world to send, analyze, and visualize in the electronic world. A learning community can simply be thought of as a group of people engaged in learning something together. Students spend time researching learners, educational systems, learning challenges, learning objectives and goals, etc. Students look at the ways in which technology, participatory culture and collaboration are creating paradigm shifts within our educational systems and work to speculate and design an intervention to improve some aspect our current educational landscape.

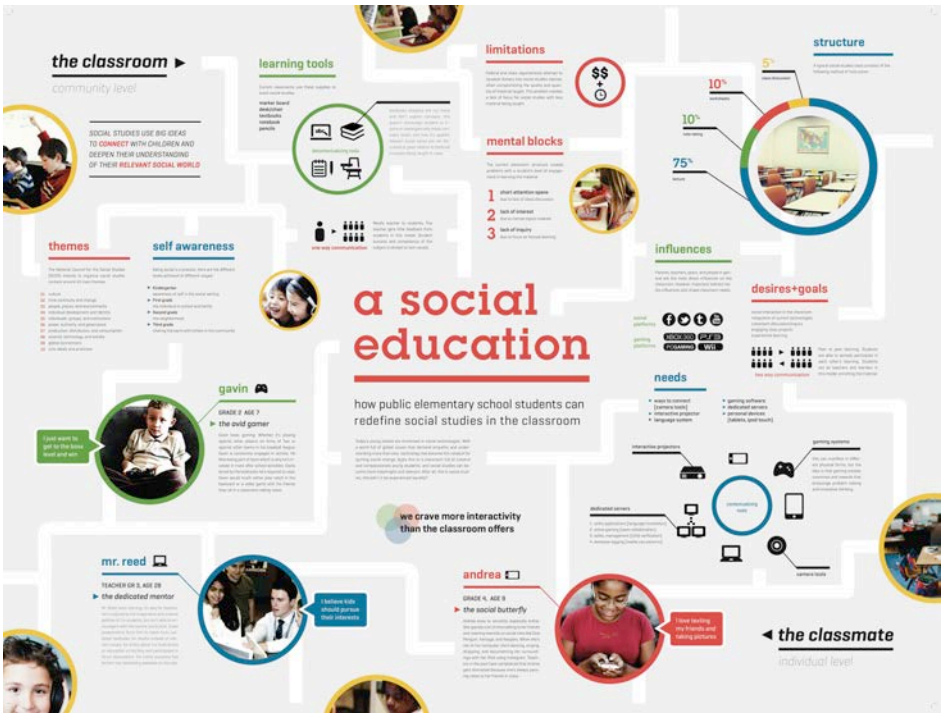

Fig. 8: Research Posters by Jessie Ren and Ashley Einshpahr, KCAI

Students are asked to consider both available and hypothetical technologies when concepting, focus on the ideas and visual design and not to worry about what they don't know how to program. Those students inclined and interested in deeper technologies are encouraged to develop those skills and use them for prototyping. Regardless, all students are required to create concept videos that show the interfaces in motion — which requires them to consider user feedback in the interface — and in context.

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[9] MultiMedia Experience has been a course at KCAI even prior to my arrival. It was originally developed by Jamie Grey, Michael Eppelheimer and Tyler Galloway. I have modified the course, updating objectives, project goals, subject matter, structure, etc.

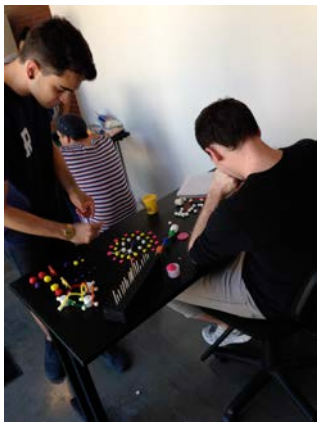

Fig. 9: 3D Sketching

Students spend much of the semester researching an identified learning community, executing both primary and secondary types of research such as field interviews and visual audits. (Fig 8) The workflow functions much like their experience in Information Architecture: personas and scenarios, low-content wireframes, high-content wireframes, sitemaps, visual design exploration, photoshop comps and animation. An exercise that is unique to this class is the three-dimensional interface sketching. Students work in groups to identify two or three task scenarios to create with basic analog supplies. These models allow students to work abstractly and think dimensionally to get outside of the "box land" that is so common when sketching interface concepts. (Fig. 9) Students are asked to translate these analog sketches into the digital realm with the design of the interface.

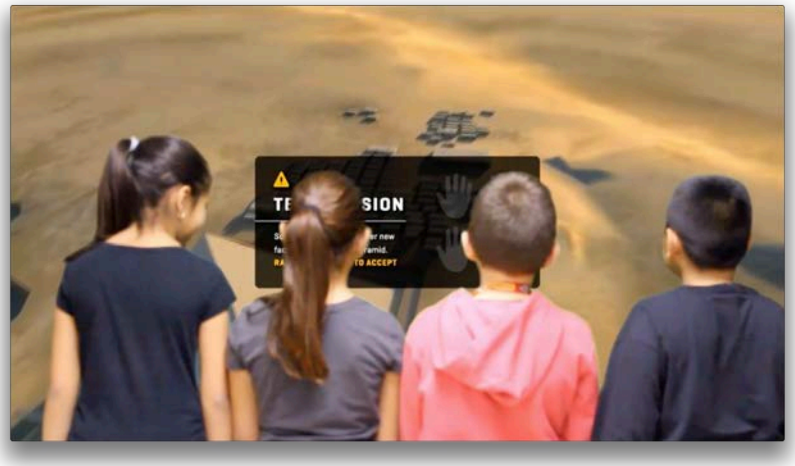

Fig.10: Loop by Jessie Ren and Ashley Einsphar, KCAI

This lack of development may seem odd for an interactive capstone course, but over the past few years, we've seen this model work time and time again. It shapes students into wild conceivers of ideas who push us (the industry) past the status quo. (Fig 10) These students have gone on to work in the technology world, in digital advertising agencies, and are able to hit the ground running with appropriate workflow skills and vision.

Now turning to a larger university setting that offers opportunities in fields outside of the arts, we demonstrate how to balance the possible and the practical in a new interdisciplinary curriculum at Michigan State University.

Interaction Design at Michigan State University

Initiation/Justification of Degree Development

A few years ago, in the College of Art & Letters several discussions were in circulation about the possibility of beginning an interdisciplinary degree within the college. Various structures of the

degree were in consideration at the undergraduate, graduate, and even PhD levels. The main goal driving these discussions was to give students an educational experience that would cross the boundaries of multiple disciplinary areas in the college and even the university. Often at a university that is the size of MSU, it is difficult to break past the silo-ed approach common in institutions of higher education. Curriculums are developed to give students a dive deep into one area of study, while this is appropriate for some professional degrees, for others it is an obstacle. It was revealed that students were cherry-picking courses from various disciplines and creating their own multi-faceted educational experience, however, their transcripts and degree titles did not reflect their multiple areas of study.

These students were consistently floating between the areas of technology and humanities. A student wanting a more humanistic approach to talking and learning about technology would find themselves in the College of Arts and Letters but continuing to take a few classes in the College of Computer Science and Engineering. Upon graduation, these students easily landed jobs in the user experience industry. We wanted to create a degree program that would provide a similar path to students in a more structured way.

A look to how the current user experience (UX) industry operates informs us that the nature of UX projects are speculative and most successful when approached from a collaborative context. It is next to impossible to approach these kind of people-centered projects in isolation, therefore making it necessary to offer this type of working and learning environment to students prior to their advancement into professional practice. Our new degree offers students a much more collaborative, and interdisciplinary, learning environment.

Curriculum Development

This context initiated the need for a new degree at MSU, one that offered students the opportunity to learn across disciplines. A small group of faculty was charged with developing this new degree. Myself, a professor of graphic design in the Department of Art, Art History, and Design and Liza Potts, a professor of digital rhetoric in the Department of Writing, Rhetoric, and American Cultures wrote the core curriculum with support from Janet Swenson, the Associate Dean and Bill Hart-Davidson, Associate Professor in Rhetoric and Composition.

We completed this daunting task by keeping a singular goal in mind; “Create a curriculum that gives students enough knowledge about graphic design, content management, and programming to be dangerous,” as stated by Liza Potts.[10]

This goal kept us on track in the development of a BA in Experience Architecture (XA). A degree offered by the College of Arts and Letters that sits between our respective departments. This degree will prepare students for a future career as an active participant or even leaders of speculative and collaborative interactive projects. Students enrolled in this major will develop theoretical knowledge and advanced skills in experience architecture with an emphasis on experiences in digital environments. Although they will not be experts in graphic design, content management, or programming, they will be able to work *with* designers, information architects, and programmers within a collaborative team. Graduates will be prepared for a variety of careers and typical entry-level positions for graduates include:

- User Experience Architect
- User Experience Researcher
- Usability & Accessibility Specialist
- Web Designer
- Web & Mobile Front-End Developer

[10] Liza Potts, Ph.D., Assistant Professor of Digital Humanities , Michigan State University

- Content Strategist
- Information Designer
- Project & Team Management
- Social Media Producer

We went about crafting the curriculum by strategically selecting current courses offered in both departments (Department of Art, Art History, and Design and Department of Writing Rhetoric and American Cultures). In doing this we consistently looked to collaborative teams in industry to inform the skill sets needed by graduates entering the UX job market. This process identified gaps in the existing courses and from there we created new courses to fill those gaps. A collection of core courses were created and will remain at the college level rather than within a department:

Experience Architecture Core Courses

- Introduction to Experience Architecture
- Researching Experience Architecture
- Managing Experience Architecture Projects
- Prototyping Experience Architecture
- Experience Architecture Capstone
- Experience Architecture Internship

These new courses are paired with graphic design courses from the Department of Art, Art History, and Design, professional writing courses from the Department of Writing Rhetoric and American Cultures, and a philosophy course from the Department of Philosophy:

Graphic Design

- Design Thinking
- Concepts in Graphic Design
- Interactive Web Design

Professional Writing

- Information & Interaction Design
- Content Management
- Advanced Web Design
- Digital Rhetoric

Philosophy

- Practical Logic

A few course offerings from the College of Computer Science and Engineering were added to fulfill an overview of the programing languages commonly used in industry. With those CS courses, a lab discussion course will be paired with it for students to take in tandem so that they can continue to relate what they are learning in those classes back to their other courses which are rooted in the humanities.

- Fundamentals of IT
- Programming I & II

Together, all the courses balance theory with practice combining hands-on learning of the research, theory, and practice of creating compelling experiences.

Graphic Design within the New Degree

When assessing the courses we currently offer in our graphic design area, we had to determine which ones would be most appropriate for students of this new degree to take. Remember, we were focused on giving these students knowledge about "design" not educating them be "designers." Our graphic design curriculum is built on a traditional fine arts foundation, making each class a requirement for entry into the next. This made it difficult to find entry points into the

courses for students not concentrating on graphic design. We also had to consider if these students would be able to keep up with their peers in the course given that other students had the prerequisite courses upon entry. When approaching the graphic design courses from this perspective it was evident that we had even more gaps to fill for the new degree. Our existing Graphic Design curriculum prepares students to be practicing designers. However, our new interdisciplinary curricular vision is focused on exposing students to critical design thinking — vs being practicing designers — so we had to ask ourselves, is it possible to prepare someone to think like a designer without becoming one? If so, what are those hard and soft skill sets they need to acquire through the design courses?

The answer to this question remains to be answered as we are still in the initial phases of implementing the degree curriculum, but in order to create new graphic design courses for the degree we had to attempt to answer the question. Here are three possible answers:

- They (students) need to be taught how to think critically and speculatively.
- They need to know processes and methods to enable them to think critically and speculatively.
- They need to know the basics of design principles and concepts.
- They need to come at all of the above by always putting the audience first.

We developed two new courses within the graphic design curriculum to meet these objectives; a course in Design Thinking and another in the concepts of Graphic Design. These became a part of the core courses for the new degree along with an existing course, Interactive Web Design. The courses in Typography and Time & Motion are offered as electives.

The course in **Design Thinking** will dive deep into the core concepts and methods practiced by the best creative problem-solvers and seekers in the industry today. Through collaborative projects, the course will challenge students to rethink their place in the intersection of the environment and technology. Students will complete the course with the skills necessary to create new ideas and carry them forward, either as an independent or collaborative contributor to human-centered problems.

> Design is about delivering a satisfying experience. Design thinking is about creating a multipolar experience in which everyone has the opportunity to participate in the conversation."[11]

The **Concepts of Graphic Design** course will give students an overview of form and communication analysis and manipulation. Students will investigate theory, concept, and visual tools central to developing visual communication systems.

In the existing **Interactive Web Design** course students become acquainted with the concepts and processes of interaction design and visual interface design. They explore a variety of process methods and account for the differences in audience goals, behaviors, and motivators when designing for an online experience.

The Bachelor of Arts degree in Experience Architecture (XA) will officially launch this fall. Currently we are conducting a cluster-hire for tenure-stream faculty within both of the departments to support the new college courses and those within the departments. A freshman experience is in the works as well with the goal to offer incoming majors the chance to connect with peers prior to beginning their course sequence in their third semester. As a future outlook, we see degree tracks forming within the major as supported by the respective departments. This

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[11] Tim Brown, Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation (New York: HarperBusiness, 2009), NEED PAGE #.

cutting-edge, interdisciplinary field of study and practice will offer an exciting opportunity for students and faculty.

Conclusion

While our approaches have proved successful for our specific contexts, all educators should adjust accordingly to their institution and specific constraints within the overall curriculum. We believe that privileging the soft skills, exploring the speculative, and allowing for the "what ifs" in the approach to teaching interaction design can happen in many ways and in many contexts. We believe that it is possible to balance the practical and the possible and the results are students who are prepared to be thought leaders and life-long learners — students who can work to move our industry forward into exciting new territory.

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