

Confabulation in the Time of Transdisciplinarity: Reflection on HCI Education and a Call for Conversation

Nicholas True, Jeroen Peeters, and Daniel Fallman

Interactive Institute, Department of Informatics, Umeå University,
Östra Strandgatan 26A, 90333, Umeå, Sweden
{nic, jeroen, daniel.fallman}@tii.se

Abstract. As HCI becomes ever-increasingly more transdisciplinary it encounters increasingly complex problems practical, methodological, and pedagogical in nature. This paper is an introductory exploration of the influence HCI education has in bridging academia and industry as students become practitioners. We examined how design pedagogy materializes and takes shape in both work and student process/attitudes as they become professionals, suggesting there is an area of importance to the community that is overlooked. Education shapes designers, designers shape the world, which prompts the need for a dialogue on how education pedagogy shapes practitioners that embody methods, values, skills, goals, and practices. As practitioners embody their knowledge into designs there arises a discussion that ought to be had.

Keywords: Design, HCI, Education, Pedagogy, Practice.

1 Introduction

Recently HCI scholars have explored the inter/multi/transdisciplinary nature of the discourse. [e.g. 1, 2, 6] HCI is steadily incorporating elements from fields previously outside its scope. This is generally considered a move toward a more complete and holistic scholarly discourse. It brings up the question of how this impacts the students who study at HCI, Interaction Design, or User Experience Design programs and move on to professional practice. The inner workings of such educational programs are rarely discussed in venues outside of the institutions themselves.

It is logical that the education of professionals in the academy has significant and lasting impact on the design process they practice when they move into the industry.

These design practitioners carry with them the knowledge they acquired in school and it impacts how they practice design. In this paper we examine the educational process at two programs aimed at preparing people to practice design professionally. These programs are the Human Computer Interaction Design program at Indiana University in Bloomington, Indiana (Indiana) in the United States and the Industrial Design program at Eindhoven University of Technology in Eindhoven, the Netherlands (TU/e).

Nelson and Stolterman in “The Design Way” state: “In the struggle to understand and interact in an ever more complex and dynamic reality...the current traditions of

inquiry and action prevalent in our society do not give us the support we need... to meet the emergent challenges that now confront us and will continue to confront us in the future.” [14] Our contribution is to explore and discuss two programs aiming to prepare people to use design for tackling the increasingly complex world. Furthermore, we call for an expansion of this discussion from institutions educating designers.

2 Background

Although the programs at Indiana and TU/e come from different roots, both educate designers. Nelson and Stolterman state: “Different epistemologies lead to radically different environments that may be more or less suitable for supporting design learning. Unfortunately there are very few educational... environments today built on a design epistemology that reflects design in an adequate way.” [14] We aim to respond to this claim through a comparative analysis of two programs cultivating an education centered around design epistemologies. What follows is a brief description of both programs to frame the later comparative analysis.

2.1 Indiana University

The Human Computer Interaction Design program at Indiana University is a two-year professional Master’s of Science program within the Department of Informatics. The primary goal of the program is to teach students to think like designers. The program combines theory, practice, literature, and methods into a highly structured curriculum to prepare students for a professional career. [12]

The program employs significant group-based project work much of which is created in collaboration with people from industry. High value is placed on diversity students come from a wide range of backgrounds and countries. During the process students develop and refine a design philosophy with particular focus on social responsibility and build life-long connections with their cohort. The culmination of the degree work is a semester-long capstone project to showcase the knowledge and skills they have acquired. [12]

2.2 TU/e

The Industrial Design program at the Eindhoven University of Technology distinguishes itself from other industrial design programs with both its focus and its approach. The aim of the program is to “educate designers of intelligent systems, related products and services, for social/societal information”. [7] The program builds on the phenomenology of perception and ecological psychology. [9, 13]

The educational system follows a unique competency-centered learning model: students themselves are responsible for their own development and the formation of their own identity, skills and vision as designers. A large emphasis is placed on making, students learn through experience by reflection-on-action loops. [10, 11]

3 Objective

It is our aim to respond to Nelson and Stolterman, and contribute to the knowledge base of design culture. In this paper we will show how design culture and epistemology are being cultivated in practice, and other ways through design pedagogy. We believe that a core value to design is the desire to transform the world for the better. The students educated in design programs more-often-than-not become designers that engage in transformative practices. The way designers learn how to design undoubtedly impacts how they practice, we assert that through examination and discussion of these practices it may be possible to encourage discussion amongst those that teach design. We believe that open discussion among educators will help enable the cultivation of richer and more meaningful design culture within design education.

4 Methodology

To examine the design driven and reflective educational pedagogies of the respective institutions we employed the following methodological approaches. We began with a literature review to situate this paper within the discourse. Examining scholarship integral to the pedagogical, epistemological, and philosophical mission of the schools, lastly sample writings of faculty for grounding. [professors] Appropriating the ethnographic gaze, we conducted interviews and diary studies with current students, as well as guided reflections with past and present students. Close reading of student projects were used for grounded comparison of respective design processes. Heavily qualitative approaches are often met with consternation from the HCI community for lacking rigor. Our intent here is not to prove, rather to explain the rich context of both schools and show the actualization of theory in the form of practice.

5 Diary Studies

As a method of discerning how the pedagogical and educational missions of the respective programs correlate with student experience we conducted diary studies with current students. The goal of the diary studies was to encourage students to reflect about their education while it was happening. Students of both years, of both programs participated. The only prompt the students were given was that they should write about their academic experience for one week. We believe that by leaving the prompt open ended would result with a better overall “snapshot” than a more focused study. As both institutions employ reflection as a tool for learning we were also interested as to how reflective the diary studies would be. Once collected we performed a close reading of the studies noting how they aligned with the official stated goals of the programs. As two authors of this paper are graduates of Indiana and TU/e respectively their experience was used as a lens for evaluation.

5.1 Indiana

The diary studies from Indiana were conducted during early January 2013 with students from both the first and second year of the program. This is of note because the second year students were in the initial stages of developing their capstone projects. Also of note is that some participants traveled to attend the IxDA Interaction 13 conference in Toronto Canada. While students are encouraged to attend academic and professional conferences at Indiana, this is voluntary and accounts for some deviation from normal in the diary writings.

When evaluating the diary studies we compared them to the stated goals of the program, the educational methods employed, and looked for emotional responses within. The main question is best summarized as “is the impact of the program noticeable in the students thoughts?”

At Indiana the overarching goal, as stated above, is to teach students to think like designers. Simply stated; close reading of the students diary entries affirms that the educational process does in fact train students in the ways of design thinking and practice. There are a number of design methods explicitly mentioned, including but not limited to: affinity diagrams, contextual inquiry, ethnographic observations, case studies, workshops, critique, wireframing, sketching, design process, field notes, etc. Every student mentioned design literature, both required and elective. The PRIn-CiPleS framework [20] was mentioned with high frequency and students discuss how they use it to articulate what they accomplish through their process.

Outside of methods and literature there were some other interesting commonalities. Social consciousness was pervasive in the diary entries. One student recounts a discussion with peers about “design activism”. Others mention the social value aspect of their designs and how this is a vital part of the process. One student discusses an ethical dilemma that they encountered while working on a design.

Of further note is the mention of involvement in research groups. A handful of students articulated working with professors of the program on academic research. While this is strictly on a volunteer basis, the students mention how they appreciate the experience and how it might help prepare them for their post-graduation endeavors. One student mentioned how this opportunity might increase their chances of being accepted to a Ph.D. program. Another common theme was the focus on applying for internships for first year students, or jobs for second year students. Core to both types of applications is the development of an online portfolio which is mandatory, reinforcing the status as a professional program intending to enable students to procure gainful employment after graduation. This is not to say that the program is exclusionary of academic pursuits, although they seem to be the exception rather than the rule.

5.2 TU/e

Due to the highly self-directed and varied nature of learning activities undertaken at TU/e at any one time, the diary studies of Master students are not representative of

their whole educational experience. However, the salient aspects of what we observed upon close reading of the diary studies, clearly reflect the core-values of the program.

All of the students report on their graduation project, either by reflecting on their progress and experience of the project (as part of an internship or purely self-directed), or by reflecting upon preparations they are making before starting the project (e.g. contacting potential industry partners). These reflections are of a highly personal nature, in which students approach their projects from their own interests and value structures, implementing their vision and identity as a designer. This reflects the highly individualized and self-aware nature of the curriculum.

Each student also reflects to some extent on the act of making as an integral part of their design process. These reflections range from reflections on a process level (e.g. prototyping and modeling as a tool in materializing thoughts and gain insights into possible directions for an upcoming project), to more specific reflections on the process of building and testing a complex electronically based prototype of a new system. There is a clear focus on the physicalization and materialization of thinking, through a variety of media, as a generator of knowledge and method of gaining insights, clearly reflecting the Reflective Transformative Design Process [10] that is taught at the department.

Students also reflected on their future as professionals. Two students reflected on presently working at the design department of a global electronics company, and their process of positioning themselves within the company for possible future employment. One other student reflects on her perception of skills and attitudes required for a career as an independent designer and entrepreneur.

While this is a very high-level analysis of the diary study, the focus of our intervention is to see if aspects of the educational and pedagogical goals of the programs are evident in the student reflections. The answer is resoundingly affirmative.

6 Graduation Projects

Both degree programs culminate in a final project where students are tasked with actualizing the skills they have learned during their education. At Indiana the project is one semester, at TU/e it spans the entire second year. The projects selected received the highest marks at their respective institutions and as such, serve as exemplars. They were examined closely to see if traces of the educational goals and design pedagogy are observable.

6.1 Indiana

From Indiana we selected the Capstone of Jeremy White from 2012 titled: “From Food Allergies to Foodies: A 30 Year User Experience Vision” completed under the supervision of advisors Jeffrey Bardzell and Eli Blevis. [19] The project deliverable is in the form of a 151 page .PDF document created using the standard template created by Eli Blevis. [21]

The project is exemplary of the Indiana program in many ways. The most noticeable aspect is the utilization of the PRInCiPleS framework which is a staple of the program. [20] This is the framework students use to articulate design explanations. This framework consists of six parts to any design explanation which are: predispositions, research, insights, concepts, prototypes, and strategies. (For a more detailed explanation see [20]) Social value is also prominently featured as people with food allergies must pay close attention to what they consume for fear of allergic reaction causing physical consequences. Furthermore, considering the role food plays in sociality they may also experience emotional distress.

When comparing the mission, vision, and goal of the Indiana HCI/d program this project aligns itself quite well. He utilized many of the methods he learned such as: interviews, surveys, literature review, sketching, information visualization, concepting, concept systems, ideation, and iteration among others. He also clearly outlines, discussed, and articulates how he completed the personal design process he developed during his studies.

6.2 TU/e

From TU/e, we selected the Master graduation project of Jelle Stienstra, entitled “Augmented Speed-Skate Experience – Applied Movement Sonification”. The project was completed in 2009 under the supervision of Kees Overbeeke, Stephan Wensveen and René Ahn. A 48 page thesis, one of the project deliverables, and one academic paper that resulted from the project, were examined. [16, 17, 18]

In this research-through-design project, Jelle aimed to empower professional speed-skating athletes to improve their technique by sonification of their movements. The project builds on existing theories on sonification as a method to add a new sense modality and support muscle learning. It is a personal project, in which the interests and vision of the designer are embodied, aiming to empower athletes to improve their performance. The project concluded with experiments in which hypotheses concerning the effects of sonification were tested using a working prototype.

When comparing the project to the vision and educational system of TU/e, we clearly see how this design project embodies the program’s values. Making was an integral part of the design process, involving the design and building of a working prototype, embedded with a set of speed-skates, that wirelessly communicated with a server and provided the athlete with real-time sonification of her technique.

7 Discussion

The exploratory research above was centered around a single goal, to discover if and preliminarily how students actuate the knowledge and teaching they acquire at Indiana and TU/e in their personal design process. Through the studies we found that while the students develop their design process in a deeply personal way, the implications of their education are clearly visible both in their words and in their work.

Much of the educational process is resultant from academic scholarship, however that scholarship is often discussed in the context of the academy. Rarely is the real world impact of the educational process discussed as it pertains to how people transition from students to professionals, with regard to how and what they take with them into industry. We believe this to be an important, but overlooked aspect of design practice.

Responding to the call of Nelson and Stolterman we attempted to articulate that design culture is alive and well within the context of design education. Further, that the examination of the gap between pedagogy and design practice seems to be widening. The design world examines design work, the academy examines scholarship, we have made an initial attempt to examine how pedagogy is acted with or upon by students when they become practitioners. We believe that design as a discipline seeks to mold and shape the world, and that pedagogy as education molds and shapes people who will practice design. Lastly, we believe that this is an interesting area for future education deserving of discussion.

8 Conclusion

We found through our initial exploration that education shapes designers and those designers shape the world. We believe that as design seeks to “better” the world that there is a need for a cohesive and inclusive discussion around how education is acted upon by designers in design. Furthermore, we believe that we have shown that there is a distinct connection between how designers learn to design and how they do design. While this may seem intuitive we assert that there is an increasing need for these types of discussions as design becomes ever-increasingly transdisciplinary. As noted in this paper, the two programs we compared both produce designers, however, they do so in drastically different ways, with different methods, values, and goals, skills, and practices.

In summary, we believe this study, liminal as it may be, has exposed an interesting area of discussion currently lacking. The diversity of educational methods can strengthen the community, but it might also just as easily fracture. We believe we have merely scratched the surface with this study and encourage others to share perspectives with the hope of starting a constructive conversation within the field.

Finally, what we have attempted here is not just to look at the design work and/or results that are being produced, or just at the design pedagogy and educational values that guide these students as they gain competence and transition into professional careers. Rather, we have examined the bridge between these; in what way do these two viewpoints correlate and in what ways do they influence each other? We believe this discussion to be of value because these processes heavily influence the burgeoning field of interaction design, when these students become practicing designers they carry with them the aforementioned methods, values, goals, skills, and practices and embody them into their designs.

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