

# Complicating HCI/Arts Collaboration

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## INTRODUCTION

We have been exploring collaborative design with Arts and HCI practitioners in the context of several university courses open to both graduate and undergraduate students. Recently we have begun applying lessons from these courses in further explorations of creativity and creativity support tools [2]. Presented here are some of our findings and points for further discussion surrounding the synthesis of design methodologies.

## COLLABORATIVE DESIGN

In contrast to approaches that foreground a particular methodology, our courses have used themes as starting points for design discussions. In one instance these themes were mobility and mapping and how both of those broad topics are represented in Computer Science and the Arts [7]. In another we explored how techniques common to site based art can inform the deployment of ambient or ubiquitous computing [1]. Our current course is exploring issues of history and individual/collective memory in the built, and increasingly “smart”, environment [6]. Enrollment in these classes is spread across a number of disciplines; for the current course equal numbers from computer science, architecture, and art and design.

These theme (in contrast to methodology) based courses facilitate a particular style of working. When selecting themes we have found it crucial to pick topics that are “neutral” – those which are not immediately claimed by any one discipline. Mapping and memory are clearly a part of computer science but equally part of art practice. In contrast, we’ve found that a given methodology whether qualitative, ethnographic, quantitative, seems to reflect a more immediately recognizable ideology that can turn-off some students.

Even with appropriately neutral course themes, specific content can be equally crucial. At the outset of our collection of courses we had expected, perhaps naively, that the inclusion of technology would be enough to inspire creativity in the engineers and computer scientists. Similarly we had hoped that artistic elements would be enough to cement buy-in from the sculptors, painters, musicians, and dancers. Instead equally “neutral” content has been best for individual projects. Low complexity physical computing and analog media have proven especially useful when designing projects. These materials

have been almost universally unfamiliar, and create a situation where the entire team is on level ground. (Related issues appear in [3, 4]).

Several elements have emerged as important in our model of collaborative design. First the process needs to be productive and “artifactual.” By this we mean that the results of the collaboration need to be seen as carrying currency within a given disciplinary practice – resulting ultimately in something that can become part of a publication or portfolio. Our design projects are always “artifactual” in that we require documentation of the collaborative sessions and the various iterations of the design solutions.

Also regardless of disciplinary inclination, the most successful projects have been those that were rigorously positioned, discursive, intentional, and explicit in their design choices.

In many cases the final projects for our courses engage with an audience or situated public. This requirement raises the level of commitment with the students, and also elicits more feedback during prototyping sessions.

## WEAKNESSES IN COLLABORATIVE DESIGN

For all of the strengths of our approach several points continue to pose significant problems. Often students are not familiar with the reasons for creating, or are unconvinced of the utility of, material referents. Content instead to keep design meetings highly conceptual and leaving construction to the final stages of collaboration, students sometimes struggle when forced to expose unfinished work to teammates.

Role allocation within teams is sometimes deeply engrained. By choice or social pressure, it is not uncommon for students to reflect “comfortable” stereotypes – the artist does the sketching, the computer scientist does the technology.

Tools to aid design reflection remain difficult to use. Students complain about the state of current creativity support tools or groupware systems, relying instead on more lightweight systems – del.icio.us, flickr, YouTube.

## BOUNDARIES TO TOOL ADOPTION

A surprising consistency, given the diversity of our students and their backgrounds, are the boundaries to adoption of



Fig. 1. Low complexity technology and tools provide a common starting point for all students.

creativity support tools. Issues like maintenance, overhead, startup time – perceived technological boundaries – exist almost always at the team level. Entire groups come to a quick consensus that the amount of effort is greater than the potential gain. These groups shy away from Wikis and websites, preferring ad hoc methods, often with a single team member relegated to the role of archivist.

When a support tool is rejected by an individual team member it is often due to a “disciplinary culture” boundary. For example, deep commitments to disciplinary myths – a singular creator, or elite coder – can lead team members to ignore the benefits of contributing to an externalized group process.

#### ADDRESSING DISCIPLINARY DEFICIENCIES

Repeatedly we have been confronted with two disciplinary distinctions: artists are poor methodologically and technologists are poor at evaluation. This is not to say that within their given fields the practitioners lack some fundamental skill; quite to the contrary. It is often the most adept students that are the least open in these collaborative settings. Rather these deficiencies appear when students need to apply a method or evaluate a new project outside of their fields of expertise. Artists in our classes when confronted with a problem of content have had little formal exposure to effective techniques common in HCI – prototyping, cognitive walkthroughs. By the end of the course, they often report these as invaluable. Technologists on the other hand are often familiar with framing problems so that various dimensions are measurable. When dealing with issues of aesthetics and interaction design, the nuanced models of evaluation are often hard to grasp. We are currently exploring methods for bridging these gaps.

#### EDUCATIONAL IMPLICATIONS

Our approach is fiercely interdisciplinary. Our courses drive home the fact that disciplinary rigor is essential to meaningful contributions, but a solution that is blind to the



Fig. 2. Physical walkthroughs with early prototypes have proven effective.

complex issues surrounding a topic will rarely be useful and hard to build upon. We also provide a venue for new forms of collaboration [9] and participatory critique [8].

These classes are well suited for the exchange of threshold concepts. Threshold concepts in a given discipline have been described as ideas that define critical moments of irreversible conceptual transformation in educational experiences, like *limit* in Mathematics or *irony* in Literary Criticism [5]. By requiring rapid and deep investigation across disciplines, we believe that our HCI/Arts courses provide a space where threshold concepts are necessarily embedded in the collaborative practice.

Some questions we are currently exploring include: How can creativity support tools better convey threshold concepts in artifacts or in parts of the communication process? Can support for threshold concepts be generalized, or is it deeply contextualized?

#### CURRENT QUESTIONS ABOUT GROUP CREATIVITY

In the context of these courses we have begun a deeper exploration of the role of creativity, creativity support tools, and the science of design. In particular, how creativity might relate to contemporary social theory – Habermas as a primary recent example. Where is creativity situated as a communicative act, what communicative acts are creative, what traits are necessary or sufficient for creativity, and how is creativity recognized in social interaction?

If creativity is “socially-constructed”, is there such a thing as a creative individual? Is there a pre-social component to creativity? In common usage “creativity” often assumes a pre-social component - individual creativity. Is creativity an inherent trait that exists outside of social norms or group (perhaps collaborative) practice, however large the group? Perhaps more importantly, is there something about solutions that exists outside of their discourse that makes them creative?

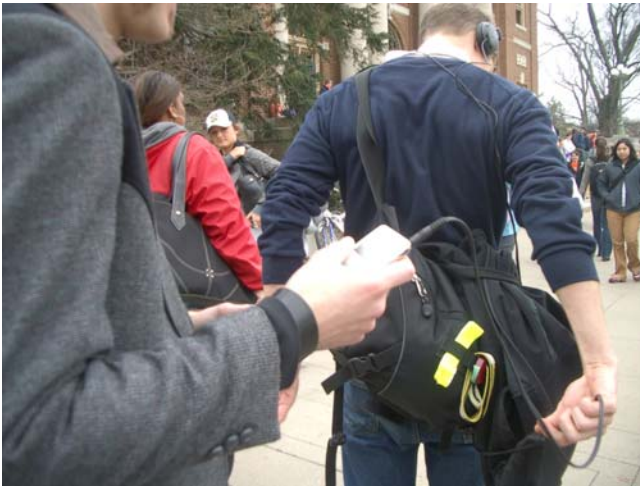


Fig. 3. Siting design problems helps by immediately making design discussions concrete.

If we take a creative solution as a communicative act (an extended speech act, or performative) do the structures that let us analyze those acts let us get closer to creativity? As an example, for Habermas, the validity of a speech act rests on the reasons that lend it support. So validity moves beyond truth-conditional approaches to include more ambiguous language – perhaps “creative” language. In these models creativity becomes the unique juxtaposition of methods of appeal, evidence embedded in support of the material, and the expressive act of presentation.

Perhaps creativity resides not (only) in a cognitive appeal familiar to the hearer and embedded in the “standard” solutions, but instead in the expressive communication and in the set of reasons that are implied by the speaker. And the process of creativity rests not in the making, but in the process of bringing about new realizations in the mind of the audience - the construction of a new intersubjective consensus.

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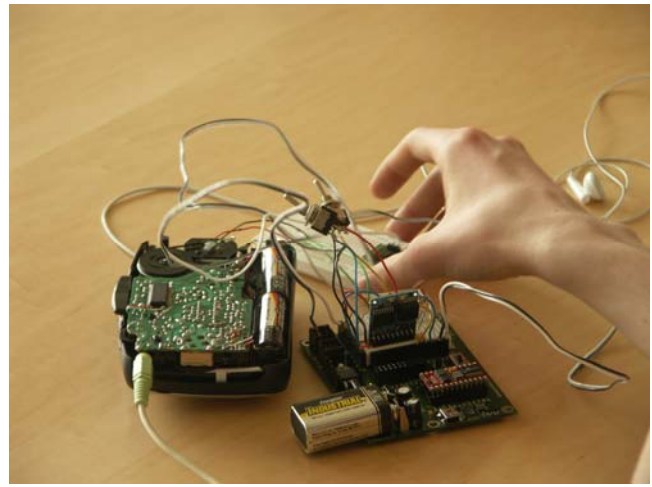


Fig. 4. Artifacts and documentation often convey discipline-specific practice better than discussion.

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