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Navigating Collaborative Projects

I will present a strategy for maintaining the integrity of the design process throughout the milieu of a multidisciplinary project. Increasingly, my academic and industry colleagues are coming to our industrial design program because they perceive that designers can make a positive contribution to their projects. Of course, these opportunities are welcome but I have found they need to be navigated with care to insure respect for the design process.

Because designers posses unique problem finding and solving skills, and frequently produce innovative results, we are viewed as valuable members of a team. Yet, many times our colleagues on such projects seek subtle and not-so-subtle ways to dictate design methods and ways of working. In the face of this pressure, we designers may be tempted to adopt more quantifiable or "legitimized" processes that attempt to speak the language of our collaborative partners. But often the result of such conformation is the abandonment of the very modes of working that we rely upon for good design.

I will discuss three ideas that, if applied to our collaborations, will better enable us to have productive experiences with our colleagues. These suggestions are based on my experience of multidisciplinary projects and writing multidisciplinary curriculum with my business and engineering colleagues.

Structure
The structure of a particular collaboration is important because it: (1) determines working relationships between colleagues and to the project itself, (2) shapes in obvious and subtle ways individual perceptions, (3) influences cognitive approaches to the project that (4) affect the final outcome.

I have found that my colleagues in business and engineering tend to the "working for" type of collaboration identified by Middleton. In this pattern a director will control a project and collaborators are used as professional consultants to be brought-in sporadically. This type of structure may be "efficient" and easily managed, but because the participants are essentially working alone and so compartmentalized, it does not lend itself to generating innovative results or creating new knowledge. Even when participants are involved throughout the

entire project, they are still given considerable direction and are expected to be working for the project director. In my experience, some collaborators can insinuate this "working for" pattern even when it is not explicitly organized. Allowing this hijack to proceed will change the nature of the project and the designer's role in it. One reason this may occur with some regularity is the underlying paradigm of the designer-client relationship. As designers we are probably comfortable "working for" a client, and at times may slip into modes of working that open the way for our colleagues to "direct" us. If all involved want to reap the benefits of multi-disciplinary collaborations then we all need to organize and maintain structures that define relationships and ensure a "working with" pattern of collaboration.

Middleton's "working with" pattern is characterized by the absence of a "director" and the presence of a system by which the project is advanced collectively. Colleagues share responsibility, knowledge and make important decisions together. In practice I have found this pattern can very easily slip into an exercise in only "working next to." This occurs when colleagues from multiple disciplines simply trust each other to apply their particular expertise to find or address a problem and report their results back to the group. When this happens, the collaboration is diminished by the absence of a vigorous dialogue about process and analysis. I'm not suggesting that expertise not be respected, nor am I saying that all participants need to be involved in every detail of the work that is done. But I am saying that a forum should be organized, a regular, face to face (if possible) event where methods, processes, concepts and results are vigorously questioned and scrutinized from all different points of view. Working with each other in this way increased the likelihood that our collaborations will reach innovative results.

Design Science
Since Buckminster Fuller first articulated his problem solving approach in the mid-sixties, there has been an effort to constitute design as a science. Some in the design and academic communities, seeking to develop a theory of design, have attempted to develop an "…explicitly organized, rational and wholly systematic approach to design: not just the utilization of scientific knowledge of artifacts, but design in some sense a scientific activity itself." (Cross, 2006)

Certainly this drive to construct design as a science is not a surprise nor is it an isolated effort. Neil Postman in his book *Technopoly* has a chapter devoted to the rise of "scientism." He argues that, particularly in the social sciences, there has been and is a desire to render social research as scientific discovery in order to enjoy the status and support that natural science does.

In a Technopoly culture (such as our own) Postman writes, we desire to have hard facts. "We might even say that in Technopoly precise knowledge is preferred to truthful knowledge but that in any case Technopoly wishes to solve, once and for all, the dilemma of subjectivity. In a culture in which the machine, with its impersonal and endlessly repeatable operations, is a controlling metaphor and

considered to be the instrument of progress, subjectivity becomes profoundly unacceptable. Diversity, complexity, and ambiguity of human judgment are enemies of technique."

Of course it is just such subjectivity and human judgment that is integral to the process of design. This traditionally places faculty at research institutions at a distinct disadvantage. Their professional practice is not considered scholarship at the University, and by extension, their collaborative partners fail to find the scholarly value in what design practitioner professors do. In a sense, professional practitioners at research universities tacitly agree to practice as if their discipline is an application of, or based upon scientific principles.

This is problematic for the faculty member because there is no developed science of design upon which to base our practice. Design in my opinion is not a scientific endeavor, but the colleagues that I collaborate with assume I am operating on the same scientific foundation they are. The pressure to conform to these assumptions coupled with incentives at the research institution to legitimize design activity by making it into design science may cause some designers to alter their design process to more closely resemble the clear, consistent, rational, and less risky approach their colleagues practice.

Design Epistemology
If trying to associate design with science by modifying our design processes to closely resemble the processes of "technical rationality" (Schon) is undesirable, then how do we demonstrate to our multi-disciplinary colleagues that "designerly ways of knowing" (Cross) are legitimate and useful? And that the design activities we engage in need not conform to their perception of what design is or should be.

First, I think we must understand for ourselves that design epistemology is a unique and valuable way of knowing. This can be tough to grasp because it is difficult to know how you know something. When we are in the middle of a design project, we seldom step back and study ourselves to gain a more complete picture of what we know and when we know it. Many times we cannot say what we know, but if we look at the actions we take as designers or the behavior of our design activity, we can identify a implicit knowing embedded in design.

Writing about the "natural intelligence" of design ability, Cross develops from interviews with expert designers, a list of design behaviors that could be keys in realizing how we know as designers. Design is: exploratory, emergent, opportunistic, abductive, reflective, ambiguous, and risky. We may not normally think of our design actions in those terms, but to list them enables us to see the complexity of our thinking and knowing, and to begin to see how practice can demonstrate a way of knowing.

Shon writes about an epistemology that is based firmly in practice. "Perhaps there is an epistemology of practice that takes fuller account of the competence practitioners sometimes display in situations of uncertainty, complexity, uniqueness, and conflict. Perhaps there is a way of looking at problem-setting and intuitive artistry that presents these activities as describable and as susceptible to a kind of rigor that falls outside the boundaries of technical rationality. When we go about the spontaneous, intuitive performance of the actions of everyday life, we show ourselves to be knowledgeable in a special way…. It seems right to say that our knowledge is in our action. And similarly, the workaday life of the professional practitioner reveals, in its recognitions, judgments, and skills, a pattern of tacit knowing-in-action."

In a multidisciplinary setting, a designer's knowing-in-action may be difficult to articulate. My colleagues do not have the time or inclination to engage in a meaningful dialogue about how designers know what they do. But I have found that I can engage them in such a discourse by inviting them into a fundamental part of my process - sketching.

Sketching is, of course, a basic tool for most designers. At some point in our process we need to provide a model of the object in order for it to be communicated to the maker, manufacturer, or producer of the product. Whether the model is a 2D, 3D or virtual representation, designers usually progress through a requisite sketching process. Generating a series of sketches is a process of exploration and discovery. It allows a designer to hold multiple variables in consideration simultaneously, the larger overall problem at hand and the details can be explored in the same space and time. Sketching also provides a concrete record of thought and serves as a way to generate new ideas and knowledge. We can use sketching to frame problems and propose solutions not as a separate activity, but as a continuous flow of ideas.

When our colleagues from multiple disciplines are persuaded to engage in any kind of modeling activity, they are participating in a design way of thinking and knowing. Even if they are not actually drawing or creating, but somehow engaged in the modeling process, it may become clearer to them the legitimacy and value of how a designer comes to understand problems and solutions.

I have found when they recognize this, and likewise when I try to comprehend the ways they know about the world, the quality of our collaboration is very much improved and we are free to work together as informed collaborators and colleagues.

What I have tried to show is a simple strategy for creating worthwhile multidisciplinary projects. We need to take care to structure a project such that all collaborators are working with each other on an equal footing. This will promote active questioning and further innovation. We must also be aware that as designers, at least initially, we will be probably be misperceived as design scientists.

Given our culture and particularly the culture of the research university, this is understandable. Design faculty can resist this notion, and then articulate, through the sketch, the peculiar and ordinary way designers know what they do.

References

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