



Post-Modern Usability

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"I ain't got a hammer, I ain't got a pencil, and I ain't got a lasso, so I'm doing it the hard way like a post-modern man." - Devo

A few years ago, I was talking to my boss about the iterative, user-centered design plan we had laid out for our products. He was an engineer by training, and quite well known and respected in his field. He had even managed a user experience department at the original AT&T Bell Labs, back when they were still called human factors departments. You would think he would be well-informed about what usability professionals do. As we talked, he leaned toward me, took another bite of his sandwich, and said in all seriousness, "Don't people in your field actually know anything?"

From what I read on the list-servs, blogs, and other places where usability professionals hang out, there are many people even in our field who would answer "No!" They tend to see usability as a craft and question whether anything can be known about human-system design in a way that can be codified, or at least codified in a useful way. I would disagree, but I do think our field is passing through an evolutionary stage, where we have been working toward satisfying the business requirements for improved productivity and, as Jakob Nielsen (2005) recently proposed in the Journal of Usability Studies, expanding our potential impact through discount research methods. We have shifted from a focus on engineering useful design for

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populations to a focus on removing design problems, and hopefully, delivering contextualized, personal value.

On the positive side, this trend sets the stage for the more culturally aware design, for which Aaron Marcus (2006) has been such an effective spokesperson. Unfortunately, it strikes me as I look at the past history of our field that, in this era of post-modern usability, one could argue that the profession's credibility inevitably has been undermined despite the best efforts of many in the field. At the same time, if we project several important trends forward, I am hopeful that if we can move into a more post post-modern era of usability, we can find a new synthesis and take the user experience to a new and better place.

Engineering science era

When I began my career, the iterative testing and design process was still using the experimental method widely. The experimental method was designed to make results replicable, to give an appropriate level of understanding about reliability, and to be as objective and valid as possible. The experimental method as used back then in the practice of product development also often compared design alternatives, so when it was demonstrated that one design was better than another, the results came with specific, data-based recommendations. Because the method came from the science, there was at least the possibility of deriving theory and more general principles so that one design or one release of a product actually enabled the next one to start on a better foundation.

We attempted to create the designs we were testing in part based on the best knowledge available at that time

from behavioral science, social science, anthropometry, and biomechanics. Usability clearly was part of a human factors engineering discipline. Much of the ANSI-200 software design standards work that is currently being released is based on that early academic and industrial work.

There was, of course, the regular challenge about generalizability due to over-control or to controlling inappropriate variables, but the experimental method provided a way to deal with it. Some argue that including a dozen people in a usability test is the gold standard. Believe me, when design was driven by experiments, that was the gold standard. So, what happened? If it was so hot, if its results were so valuable across products, if it was so useful to actually base design on a deep, science-based understanding of users, what happened?

What happened was that it was expensive and time consuming; the technology was evolving faster than studies could be done to explore all the relevant design variables. There was also the, perhaps, unreasonable expectation that practitioners would know quite a bit about the science of human cognition, perception, anthropometry and biomechanics, social behavior, design, and the use of systems to do it well.

Post-modern era

Post-modernism is about the failure of formal structures, processes, and institutions to recognize the complexity of life, and in rejecting that formalism to embrace the experience of the individual. While perhaps that wasn't where the current wave of usability started, it does characterize much of the field at the moment.

I recall the first time we adapted the *in situ* field-testing techniques to laboratory situations. Sit a user in front of a system, have them use it, write down the problems. What could be easier? What could have more face validity? When Gould and Lewis (1985) laid out the principles of interactive testing and design, it captured the emerging zeitgeist. But when this era began, usability was still being treated as an engineering science. Even the studies that argued for various discount approaches to usability, argued based on a more academic approach.

In many companies, usability was a natural next step in the testing process designed to ensure the quality of the product. You can just envision the manager thinking, "Hey, we are testing the software for bugs; we should test the user interface for bugs!" Besides making a certain amount of intuitive sense, it also bears a striking similarity to the use cases used to test software. At a time when corporate productivity was critical for competitiveness, it was nice to know it cost less than a more rigorous approach, especially if the data supporting discount usability could be believed. The method was simple enough, in fact it appeared that almost anyone could do it, and during the internet bubble, people entered usability from many diverse fields. A nice by-product for some managers was that the costs of staffing a usability program were far less than when they had to hire professionals with graduate degrees in the field (and the law of supply and demand has helped keep those costs relatively low). For many, usability became focused on finding errors, and the highest goal was ease of use.

One can speculate about the dark side, of course. If Jakob is right and everyone should and can easily be

trained in the craft, how valuable can the profession be? When a design problem is clearly there, isn't it just common sense? Is the usability tester's opinion any more valid or weighty than that of an engineer's or a marketer's or even the manager's for that matter? Many (e.g., Gray and Salzman (1998)) have done an excellent job of critiquing the research that purports to justify common usability methods, and Rolf Molich's comparative usability work can be interpreted as confirming the unreliability, and perhaps, the validity issues that come with relaxed methodological rigor.

The apparent efficiency of discount usability hides the fact that much of the data that are being gathered about various designs informs the designs, but then is lost. The ideal of building a theoretical, engineering base of knowledge that makes it easier and easier to produce great designs going out the gate is often forgotten.

Many have noted that the same mistakes seem to be made over and over again. That provides some job security, but in the end it doesn't help the goal of enabling people to realize their full potential through technology. Often, it also means that people work at a fairly superficial level. Problems are identified, but there is little support or theoretical basis for specific solutions. Problems aren't prioritized based on a deep understanding of the nature of the users and how the context of use shapes their experience and activity, and more subtle problems that don't show up as obvious errors but that do impact the core value of a solution may be missed entirely. I've seen usability studies where an "error" made by a single user had the potential of driving a design change that would harm a significant population of users.

Some years ago, I began to realize that all the design problems could be removed and the product could still be a failure in the marketplace. Ease of use is only important in the extent to which it enables users to experience more of the value that matters to them. ISO 9241-11's definition of usability in terms of efficiency, effectiveness, and satisfaction does a nice job of capturing this richer view of usability, and confirms our early work showing that the most important area where we could focus our efforts was not on usability errors, but on usefulness. There is a rich tradition of research around the adoption of technology (e.g., Venkatesh, Morris, Davis, & Davis (2003)) that is consistent with our experience and work. Furthermore, we found that to successfully drive usefulness required growing and leveraging the body knowledge about how to design effective user interfaces. Making the film is harder than being the critic reviewing the film, but it is often more rewarding.

Post post-modern era

Moving into the next era is about embracing both the existential understanding of the user in context as we design experiences that capture every aspect of the user, and recognizing that the design being shaped is a technology that is advancing based on science and engineering. Furthermore, as complex as the user is, to fit the technology and the user together requires treating that user as a part of the system in order to optimize the entire system. The technology needs to be treated as an extension and expression of the user to create products that are compelling. Certainly for many projects I've worked on over recent years, the software interaction can't be treated independently of the hardware design, and the physical, social, and other

contextual forces that shape the user's expectations and behavior must be understood to be an effective researcher and an effective designer. In other words, post post-modern usability is about shaping a practice that is a synthesis of the understanding of the user and context, and the growing understanding of the principles of how people interact with the world. It means the best usability people need to acquire knowledge from user experience areas that were neglected during the post-modern era, and the field itself needs to grow as a science and engineering discipline based on research and at least as importantly theory.

Charlie Krietzberg's (2006) proposal to create a collaborative knowledge space, and the various efforts that are continually made to drive design patterns (e.g., Hughes (2006)) are consistent with recognizing the importance of mining usability data to produce knowledge, principles, and significant insights. The efforts of UPA (the Usability Professionals Association) to create a repository of knowledge (www.usabilitybok.org) are consistent with similar efforts within ACM SIGCHI and HFES (the Human Factors and Ergonomics Society), and the efforts of certification bodies like BCPE (the Board of Certification in Professional Ergonomics) to identify what we actually know and to enable practitioners to assess whether they know what they need to know to be most effective in the broader user-experience field. The growth in techniques for modeling contextual data (e.g., Morris & Lund's (2001) paper on experience modeling) in order to move beyond a simple description of individuals to a deeper understanding and prescriptive design guidance are also consistent with this direction in the field. This trend doesn't mean that educating the world about

usability isn't important, but it does suggest that usability is a real discipline and a few hours of training, a user aid with heuristics, and a book with interesting stories of usability problems doesn't turn an engineer, marketing person, or manager into a usability professional. Usability's growing value and impact will come from a foundation of knowledge that is expanding and responding to an evolving, diverse world, and yet that is applied with discipline.

It can be done. Methods are being drawn from the various disciplines that overlap with user experience, and are adapted to make them as efficient as possible. These methods are typically the result of a combination of generations of practice as well as science and engineering. Professionals in the component fields take years to learn what they need to know to be effective, and I'm suggesting that usability professionals will need

to at least walk part of the way within each of the disciplines to deliver the usefulness that is critical for usability to achieve its goals. We need to not only understand the basic human factors that are important for usability, but we also need to grow and apply an understanding of the factors that drive subjective attitudes and feelings, aesthetics, and culture. We need to understand motivations and values as they shape desires and experience. We need to at least understand the engineering and aesthetic principles of hardware and software design to know which data are important, and how to turn those data into design effectiveness. We need to know something. If we can move usability into the post post-modern world, we can deliver the impact we believe we should have and transform that world. In the words of my alma mater's motto, "Let knowledge grow from more to more, and so be human life enriched."

References

- Gould, J. D., & Lewis, C. (1985). Designing for usability: Key principles and what designers think. *Communications of the ACM*, 28(3), 300-311.
- Gray, W. D. & Salzman, M. C. (1998). Damaged merchandise? A review of experiments that compare usability evaluation methods. *Human-Computer Interaction*, 13, 203-262.
- Hughes, M. (2006). A pattern language approach to usability knowledge management. *Journal of Usability Studies*, 2(1), 76-90.
- Kreitzberg, C. B. (2006). Can collaboration help redefine usability? *Journal of Usability Studies*, 3(1), 109-111.
- Marcus, A. (2006). Culture: Wanted? Alive or dead?. *Journal of Usability Studies*, 2(1), 62-63.
- Morris, M., & Lund, A. M. (2001). Experience models: How are they made and what do they offer? *Loop*, 3, <http://loop.aiga.org/>.
- Nielsen, J. (2005). Usability for the masses. *Journal of Usability Studies*, 1(1), 2-3.
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003) User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3), 425-478.



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