Sketching User Experiences

getting the design right and the right design

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MK MORGAN KAUFMANN

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To the love of my life, Lizzie Russ.

Contents

Preface

This is a book about design. Mainly, it is about the design of appliances, structures, buildings, signs, and yes, computers, that exist in both the physical and behavioral sense. That is, there may be something concrete that you can touch, see, and hear. But there is also something that you can actively experience: something that involves dynamics or time; something with behavior that is usually the result of software running on an embedded microprocessor; and something whose design needs to be grounded in the nature of that experience.

The underlying premise of the book is that there are techniques and processes whereby we can put experience front and centre in design. My belief is that the basis for doing so lies in extending the traditional practice of sketching.

So why should we care about any of this?

Hardly a day goes by that we don't see an announcement for some new product or technology that is going to make our lives easier, solve some or all of our problems, or simply make the world a better place.

However, the reality is that few of these products survive, much less deliver on their typically over-hyped promise. But are we learning from these expensive mistakes? Very little, in my opinion. Rather than rethink the underlying process that brings these products to market, the more common strategy seems to be the old shotgun method; that is, keep blasting away in the hope that one of the pellets will eventually hit the bull's eye.

Now if this is a problem, and I believe that it is, it shows every indication of getting worse before it gets better. The pundits, such as Weiser (1991) and Dourish (2001), as well as those contributing to Denning & Metcalfe (1997) and Denning (2001), tell us that we are in the midst of a significant transition in the very nature of the products that are going to emerge in the future. Others, such as Forty (1986) and Borgmann (1987) would say that this transition began a long time ago. Both are accurate. The important point to recognize is that whenever it started, the change has reached a tipping point (Gladwell 2000), where we ignore it at our peril if we are in the business of creating new products.

By virtue of their embedded microprocessors, wireless capabilities, identity tagging, and networking, these products are going to be even more difficult to get right

than those that we have produced (too often unsuccessfully) in the past. For those of us coming from computer science, these new products are going to be less and less like a repackaging of the basic PC graphical user interface. For industrial designers, they are no longer going to be the mainly passive entities that we have dealt with in the past. (The old chestnut problem of the flashing "12:00" on the VCR is going to look like child's play compared to what is coming.) For architects, buildings are going to become increasingly active, and reactive, having behaviours that contribute as much to their personalities as do the shapes, materials, and structures that have defined their identity in the past.

And then there is the business side. These new products are going to present a raft of new challenges to the product manager. Finally, company executives are going to have to acquire a better understanding of the pivotal role of design in achieving their business objectives, as well as their own responsibilities in providing the appropriate leadership and environment where innovation can thrive, as opposed to just survive.

On the one hand, the change that confronts us is rooted in the increasingly rich range of behaviours that are associated with the products we are being asked to create. These products will be interactive to an unprecedented degree. Furthermore, the breadth of their form and usage will be orders of magnitude wider than what we have seen with PCs, VCRs, and microwave ovens. Some will be worn or carried. Others will be embedded in the buildings that constitute our homes, schools, businesses, and cars. In ways that we are only starting to even imagine, much less understand, they will reshape who does what, where, when, why, how, with whom, for how much, and for how long.

On the other hand, as suggested by this last sentence, the extended behaviours of these products will be matched, and exceeded, by the expanded range of human behaviour and experience that they enable, encourage, and provoke—both positive and negative.

Some academics, such as Hummels, Djajadiningrat, and Overbeeke (2001), go so far as to say that what we are creating is less a product than a "context for experience." Another way of saying this is that it is not the physical entity or what is in the box (the material product) that is the true outcome of the design. Rather, it is the behavioural, experiential, and emotional responses that come about as a result of its existence and its use in the real world. Though this may always have been the case, this way of describing things reflects a transition to a different way of thinking, a transition of viewpoint that I characterize as a shift from object-centred to experience-centred.

And it is not just academics touting the experience-centric line for both products and services. It is also reflected in the titles that we find in the business sections of airport bookstores, such as *Priceless: Turning Ordinary Products into Extraordinary Experiences* (LaSalle & Britton 2003), *Building Great Customer Experiences* (Shaw & Ivens 2002) and *The Experience Economy* (Pine & Gilmore 1999). However, my favorite way of hitting this particular nail on the head comes from a designer friend, Michael Kasprow, the creative director of Trapeze, a design firm in Toronto:

Content is content ... Context is KING.

New labels tend to carry with them the risk of being reduced to a trendy change in language, rather than any significant change in substance. It is one thing to talk about experience design; embracing it in one's practice is quite another. Expanding the sphere and responsibilities of design to include such experiential concerns carries with it a very real burden—a whole new level of complexity, especially if we factor in the broad range of emerging technologies that are involved. It really requires a rather different mind-set and range of concerns than those that traditionally have driven the practice of design and engineering.

For example, think about the introduction of texting (more properly called Short Messaging Service, or SMS) into mobile phones. The traditional object-centred approach would view SMS as the design of a protocol to enable text messages to be sent between phones, and then its implementation in hardware and software (along with the associated model for billing for the service). Yet that description does not even begin to accurately characterize the real nature of SMS. This is far more accurately reflected by activities such as voting for your favourite performer in American Idol, or flirting with someone across the floor in a dance club. That is SMS, and I don't believe that you will find anyone involved in its design who would claim that they anticipated, understood, much less considered any of that when they were designing the feature.

This SMS example leads us to yet another dimension in which these emerging products are becoming more complex: increasingly, the technologies that we design are not islands—that is, they are not free-standing or complete in their own right (to the extent that they ever were, but more on that later). Rather, they are social entities. As with people, they have different properties and capacities when viewed as a collective, within a social, and physical context, than they have when they are viewed in isolation, independent of location or context. For example, just as I behave differently when I am alone than I do when with others (among other things, I talk with them, but hopefully not to myself), so it will be with our devices. When they approach other devices, or possibly people, they will become social animals. Just like you and me, their behaviour will vary, depending on whom they are with, in the same way you and I behave differently with family than we do with strangers, business colleagues, or alone.

Success in this emerging world is going to depend on significant change in how we work. Nevertheless, I believe that this change can respect the best of the traditions of the past—that is, it involves change that builds on, rather than replaces, existing skills and practice. It is change that must recognize, acknowledge, and respect the importance and interdependence of the different design, engineering, management, and business disciplines involved. Each is essential, but no single one is sufficient.

As it is with people, so it is with technology. Industry also must learn to reconcile these interdependencies with the idiosyncratic properties—and demands—of the new technologies and types of products that it is trying to bring to market. And to really succeed, these products must be reconciled to the needs and values of the individuals,

societies, and cultures to which they are being targeted.

However, today's reality is that in this equation, the value of design is too often being questioned, and the contributions of the designer are being seen as an expensive luxury. Similarly, in software products, we are seeing the notion of user interface design disappearing as a professional description, too often being replaced by usability engineering, something that is ever more remote from something an industrial designer, for example, would recognize as design.

Against this backdrop is the compelling observation that there may never have been a time when design was more important, and the specific skills of the designer more essential. And yet, with far too few exceptions (such as Sharp, Rogers & Preece 2007 and Moggridge 2006) design as it is currently taught and practiced is better suited for how things have been in the past, rather than meeting the demands for what is coming in the future.

The psychologist Jean Piaget has defined intelligence as the ability of an organism to adapt to a change. The substantial—and largely technology-induced—changes affecting us now are a clear challenge for the design professions to adapt their skills to the redesign of their own practice. This is not only the intelligent response, it is essential if design is to fulfill its potential role in shaping our collective future.

> Technology isn't destiny, no matter how inexorable its evolution may seem; the way its capabilities are used is as much a matter of cultural choice and historical accident as politics is, or fashion. (Waldrop 2001; p.469)

This book is based on the premise that design is a distinct discipline. It involves unique skills that are critical to the molding of these emerging technologies into a form that serves our society, and reflects its values. Far from being a luxury, informed design is essential from the technical, economic, and cultural perspective.

A second key premise is that although design is essential, it is not sufficient. Design is just one—albeit an important one—of the components requisite to the development of successful, appropriate, and responsible products.

But what is the role of the designer? How does design fit in among all the other components of the process? For example, how does design fit in with engineering, marketing, or the corporate plan and executive objectives? If I am an architect, industrial designer, environmental graphic designer, or software developer, what is my role? What skills do I need to cultivate? How can they best be deployed? If I am an educator, what should I be teaching so as to prepare my students for what is coming, rather than how things have been done in the past? If I am an investor, businessperson, or manager who aspires to bring new products to market, how do I staff my teams? What kind of process should I put in place?

These are the types of questions that motivated me to write this book. For over thirteen years, but especially in the past four or five, I have had the pleasure and privilege to work with some of the world's most outstanding designers, from almost all

disciplines. I was a willing student, and they were generous teachers. Having come from a background in the arts (music) and technology (computer science), as well as some experience as an executive of a mid-sized company, I have been lucky. I was in an unusual position to see things from a unique and privileged perspective. My hope is that what I have written here is respectful of those who were my teachers, and worthy of the confidence that they placed in me.

Ultimately, this book is about product design, with an emphasis on products that have dynamic behaviour due to the incorporation of embedded digital technology. It tries to address the topic while looking in a few different directions: outward, to other parts of the overall organization that is trying develop the product; further out, to the users and even culture within which the product is destined; and inward, to the staff, techniques, and methods of the design team itself.

My approach is built largely around case studies and examples, supplemented by a discussion of the underlying issues. Hopefully, along the way, I will shed light on some of the key questions that might help us innovate effectively in this ever more techno-logically complex environment. What are some of the core skills that one should expect in a modern design team? What should be taught in design programs, and how? What are some of the issues of managing a modern design team compared to engineering?

This is a start. It is a rough sketch. The best that I can hope is that its timeliness will in some way compensate for its broad strokes.

After all, isn't that what sketching is all about?

Audience

To have the intended impact, this book must address multiple audiences. No matter how well one group performs, it is unlikely that the overall job will be done successfully unless the rest of the organization is working in concert. For this to happen, everyone has to be singing from the same song sheet. In order to help bring this about, I have tried to speak to the following key groups:

User interface designers: people who have primarily a software and/or psychol-ogy background, and who have traditionally dealt with things like icons, naviga-tion, menus, search, etc.

Industrial designers: people who largely studied at a design school, and whose specialty is product design.

Related design professionals: people who have studied architecture, environ-mental graphic design, illustration, film making, etc.; that is, those who make up part of the ever-richer mosaic of the new experience design team.

Software engineers: people who are hard-core computer scientists, who have the responsibility to build shipping code that is robust, maintainable and meets specification.

Usability engineers: people who test and evaluate products during their development in order to ensure that they are fit for human consumption and that there are no unexpected negative surprises for the user.

Product managers: people who typically come from marketing or an MBA type of background, who have to perform like the conductor of an orchestra of disparate instruments.

Executives: the people at the top of organizations who ultimately own responsibility for providing both leadership as well as a physical, intellectual, and organizational ecology in which design and innovation can thrive.

That is a start, at least. I know that I have left off some, but the list is already daunting, if not foolhardy. And, just to make things more complicated, my hope is to write something that speaks to each of these groups, regardless of how you slice the pie among the following categories:

Student
Teacher
Practitioner
Researcher

So although this is not a textbook, it should be of use to teachers and students. It is not a recipe book that you can throw at a product development team and say, "Go and implement this." But it should help companies understand how to improve their performance.

I have tried to provide examples and ideas that will help all readers in the practice of their day-to-day profession. But what is foremost in my mind is to paint a larger, holistic picture. My overarching goal is to help this diverse cast of characters better understand their role in the larger intertwined performance that constitutes our companies, schools, and practices. In this I have attempted to find a balance between going into sufficient depth in any topic so as to have relevance to the specialist, while still sustaining comprehensibility and interest for others.

Overview

The rest of this book is structured in two parts.

Part I lays the foundation. It talks about the current state of design, as well as much of the underlying belief system that drives my thoughts on experience design. Much of the focus is on software product design. Initially, this may seem remote, or not too relevant to an industrial designer, for example. However, I think it is important for someone from the traditional design professions to understand the state of software design.

There are two reasons for this. First, it will probably remove any lingering delusions that the software industry will come in with some magic bullet and solve all our current problems. The second reason is that there is nothing even vaguely resembling a "design process" in software, at least not in the way that an industrial designer would understand that term.

I realize that this is both a contentious and provocative statement, and in making it I am not trying to denigrate software developers. Rather, the exercise that I am trying to bring about is for them to look more deeply into the skills and practice of design professionals, and compare, contrast, and understand these with their own. Neither design nor engineering is sufficient for the task at hand, and both are essential. What is required is a new relationship involving an adaptation of both skill sets that reflects the demands of the new design challenges.

Part II is about methods. It moves to a more pragmatic realm. It is primarily made up of a number of case studies and examples. If we bump up a level, it is about techniques for bringing design thinking to the design of interactive products and the experiences that they engender. It is also a bit of a history lesson. It is intended to provide some exercises and examples that one can work through in order to help build a base literacy around the problems of designing in this new space. These include problems of process. I have chosen many examples from the prior art. Despite repeatedly talking about "new" problems and "new" design challenges, there is simply not a broad awareness of what has already been done. This is good news. It means that we don't have to start from scratch, and by building our awareness of the literature, we can proceed from a much better position. To emphasize that what I am advocating is within our reach, I have balanced the examples of past masters with several from young students of today.

We end with a coda. It tries to synthesize some of what we have seen. It is both a summary as well as an essay around the implications of what we have discussed. This section will be of aid not only to the student and practitioner, but to the educator, the manager, companies developing new products, and even governmental policymakers.

Finally, in addition to the book itself, there is a web page containing supplementary material (www.mkp.com/sketching). Perhaps the most important of this is the collection of video clips that are referenced throughout the text. Given that we are dealing with experiences that have a strong temporal component, these really help bring much of the material to life.

Overall, my goals are probably overly ambitious. But after all, aren't designers supposed to be dreamers?

Leadership = CEO
Stewardship = COO
Resource Management = CFO
Technology = CTO
Design = ?