



Design as Technology OR Technology Schmechnology

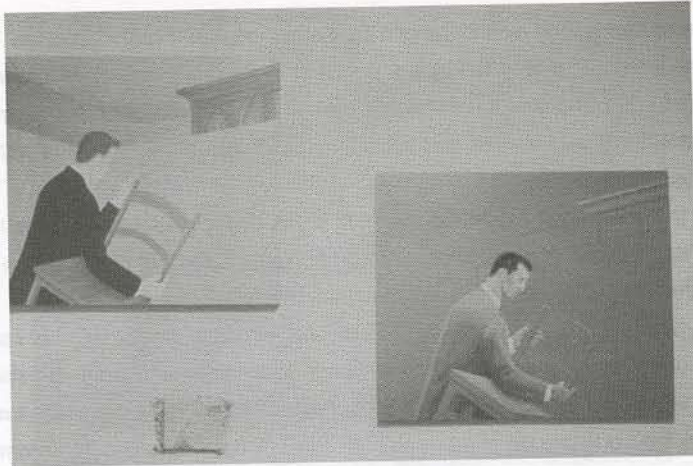
LOUISE SANDHAUS

LATELY, SOME EVENTS have occurred in my academic and professional life that have caused me to reconsider my own techno-evangelism, as well as my errant philosophies and public diatribes about design as a mutating profession in the context of "new" technologies. In other words, I'm reconsidering my idealism in thinking that computers are the greatest things in the last millennium. At the same time, I am evaluating my quasi-dystopic view that because graphic designers' roles are seemingly changing so dramatically in the context of new technologies, perhaps we're no longer *graphic* designers. This, therefore, is an initial attempt at making sense of the relationship as I now see it between *graphic* design and technology.

What has led me to newfound thoughts? The first, is the interactions with colleagues at CalArts (where I teach and co-direct the Graphic Design Program). In our combined efforts to formulate where we are going with the Program, and thus where we'd like to see this profession in the next millennium, I have been provoked into thinking about the cultural and technological moment in which graphic design as a practice and profession exists. This examination observes and compares the practice and profession against the circumstances that cause it to permutate and splinter, but never quite go away.

The second—an event that occurred on the professional front—was that in 1998, I was chosen (along with my project partners, architect and interface designer Tim Durfee and architect Iris Regn) to design a 47,000-square-foot exhibition. After we were notified that we got the job, I kept waiting for a call to tell us there'd been a terrible mistake: "Oops, sorry." But the call never came. Now, the reason for this paranoia was that neither my partners nor I had ever designed an exhibition, not even a teeny-tiny one, and here we were hired to do the mother of all exhibitions. But ultimately, it was through this project that I was able to see why and how hiring us made sense, and through that to understand in a more complex way what it is I do as a *graphic* designer: I invent and innovate technology for communications.

Before I go too far in describing what I'm suggesting—in particular, what I mean by "technology"—it seems important to convey the significance of "invention" and "innovation" in the first place, and why in the larger scheme of things I think these matter. And that means that, for a moment, I'm going to bare the breast of my social and political concerns.



Untitled painting by Francis Alÿs (small original work) with copies by Juan Garcia and Emilio Rivera, 1996. In interpreting Alÿs's original work, the ideas, as well as the poetics of the works, shift and are altered. Comparatively, these works convey how form informs—not content alone—and invokes meaning and emotion. Courtesy of the artist and ACME, Los Angeles, photo credit: Robert Wedemeyer.

These concerns have to do with a tension that I perceive between the multi-nationals as they more aggressively attempt to interpret life as simple, manageable forms, images, experiences, and desires—and, all that “messy” stuff—the other forms, experiences, knowledge, and perceptions that offer a richer, and more interesting, diverse, and splendid world of existence. I'm interested in invention over homogeneity. In turn, I see innovation as ultimately allowing us to connect to each other in more meaningful ways. If this isn't the larger point, I honestly don't know what the point *is* of all this crap we keep creating. But one last note on this before I leave you with the impression that I'm either a way-out-of-step utopian or a hackneyed Marxist; I actually *love* capitalism. Plenty of truly provocative things and ideas have been chauffeured into the world on the wings of capitalist enterprise: the lightbulb, the telephone, the phonograph, and the car, to name a few. And I wouldn't forget Disney or Las Vegas either.

What is Technology?

So to continue, what do I mean when I say that I “innovate technology for communications”: You thought I was talking about graphic design, not engineering. The answer lies in how I'm defining “technology”—the fancy schmancy term often used to mean “computers,” as in “I've got a Pentium 9 with a 2-billion-megahertz processor, what's your technology?” Yet, somewhere in the back of our over-extended, multi-tasking brains, we know it's not that simple; a quick trip to even the most common of dictionaries reveals that technology has to do with the application of knowledge and that machines aren't even specifically mentioned. While technology may include a material component, more important is the immaterial. The point I'm trying to make is that there are lots of things that are technologies: the way we think is a technology—in other words, the mental systems that classify “computers” in our minds as “technology” *is* a technology; the language in which we think is a technology. We don't generally perceive the form in

which we write as technology (whether that's the Semitic alphabet or the typeface Times Roman) nor the tools with which we write—a pencil or Word—but these are *all* technologies. Because technology is whatever it is that I utilize which allows me to manipulate, make sense of, and engage with my experiences and surroundings. It allows me to engage with the world in productive ways.

So rather than talk about machines, I want to break down these technologies I've just described as "applications of knowledge"—into three types. (Or to put it another way, I'm going to create a technology to probe deeper into technology.)

The first type of technology is Modes of Perception—in other words, ways of classifying and making sense of our experiences; the second type is Technology as Forms—the shape or the mode through which something exists; and third, Technology as Tools—by which I mean devices used in the performance of an operation. This is what we may more commonly think of as technology: such as hammers, paintbrushes, and computers—or what we don't: tools can also be organizational systems that serve as devices.

I want to look at these technologies, or "applications of knowledge," more closely—first, to clarify how I see them as technologies, and then ultimately to observe how as technologies they *have* or might inform design practice.

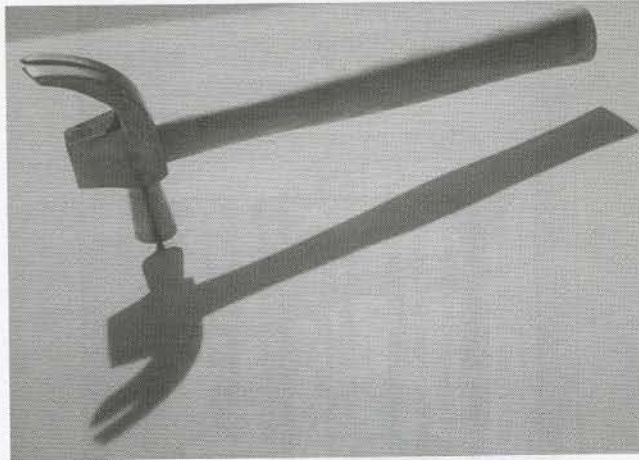
Elaboration of the Three Examples of Technology

1 | TECHNOLOGY AS A MODE OF PERCEPTION I have a Japanese friend who happens to be a Zen Buddhist priest. When I first met Hiro, he told me about how difficult it was when he came to the United States to attend University. Rather than the rationalist system of education established by General MacArthur during the occupation of Japan after World War II, Hiro had been educated at the temple where he had grown up, becoming versed in fables, myths, crafts, and the natural world.

When he came to the United States to "further" his education, he discovered that knowledge and ideas were classified and segmented into strange alien groupings—ideas were either science or art, mathematics or humanities, etc. Not only were the subjects strange, but the fact that consciousness was sliced up and packaged seemed totally weird and disorienting.

I found myself dwelling on this revelation, trying to imagine how the world might seem if the whole mode through which I knew and understood it was altered. As if having been abducted by aliens, I could no longer look at life in the same way. ET was no longer a fairy tale, but a testament to our times. What would be revealed to me through this altered experience? What would I now understand? Find of interest? Engage and connect with?

Previously, what I had taken for granted—that cognitive perception was inherent and required no special training (like being able to discern hot from cold)—now appeared like a device—like rose-colored glasses or a telescope, filtering and framing my vision and therefore shaping my knowledge and experience. Or, as the saying goes, "if you have a hammer, the whole world looks like nails." The forms through which we perceive don't just shape the experience—they *are* the experience: in other words, how we think is *what* we think.

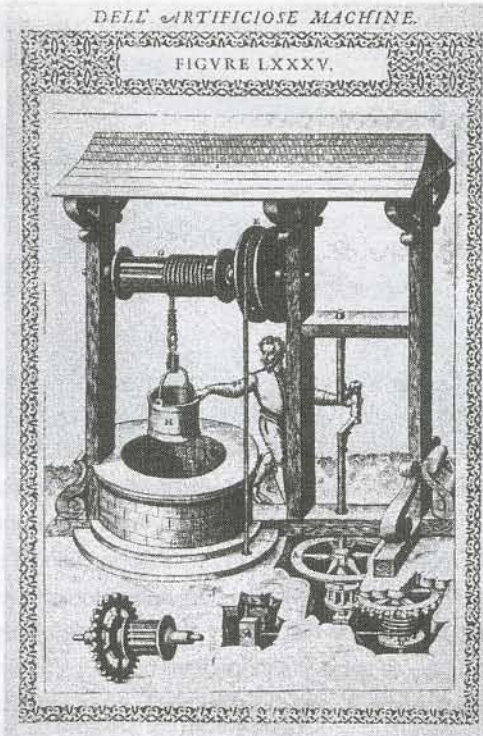


Coathammer Jut by Henk Stallinga, 1997. Coat hanger designed to install in one easy blow.

2 | TECHNOLOGY AS FORM In an article that arrived at my doorstep through a curious set of circumstances, the following quote shined forth: "In their hands, picture-making was becoming a pictorial language that, with practice, could communicate more information, more quickly, and by a potentially wider audience than any verbal language in human history." This quote, which comes from a scholarly article by Samuel Y. Edgerton, argues that the scientific revolution born of the Renaissance could not have happened without pictorial invention. He demonstrates his argument with two images.

The first image shows a late sixteenth-century engraving of a windlass pump by Agostino Ramelli. Perspectival representation and *chiaroscuro*—*inventions* that already existed, allowed for the illusionary representation of three-dimensional space—considerable innovations to begin with; but it was the additional pictorial conceptions of the rotated view, the exploded view, and the transparent view that Ramelli utilized that allowed for further observations and understandings about how this complex piece of machinery operated. I know it's easy to take these technologies of form for granted. But imagine trying to understand how to build one of these, or explain how this pump operates using verbal language alone. The second image of the two that Edgerton discusses shows the same drawing "copied" by Wang Cheng in the early seventeenth century. The drawing has lost all significance because of the lack of pictorial devices that communicate the required meaning. The artist, unversed in these formal innovations (such as the exploded view), is therefore unable to translate Ramelli's vivid explanation.

To return to Edgerton's statement about the impact of this pictorial development, it's important to note that this progression is tied to the proliferation of the printing press spreading throughout Europe at this time. This meant that these technologies of form could convey ideas to a broader populace. And, in turn, these ideas—or "knowledges"—were utilized by a more varied public to build pumps, modernize communities, and develop even better pumps and maybe even down the line—a toilet. From here we can begin to imagine the explosive political, industrial, and scientific development in which this technology of form played a significant role.



Engraving of windlass pump, from Agostino Ramelli, *Le diverse et artificiose machine*, 1588. This image uses cutaways and exploded views to enable viewers to see relationships of parts and, therefore, understand construction and operation. Originally from Houghton Library, Harvard University.

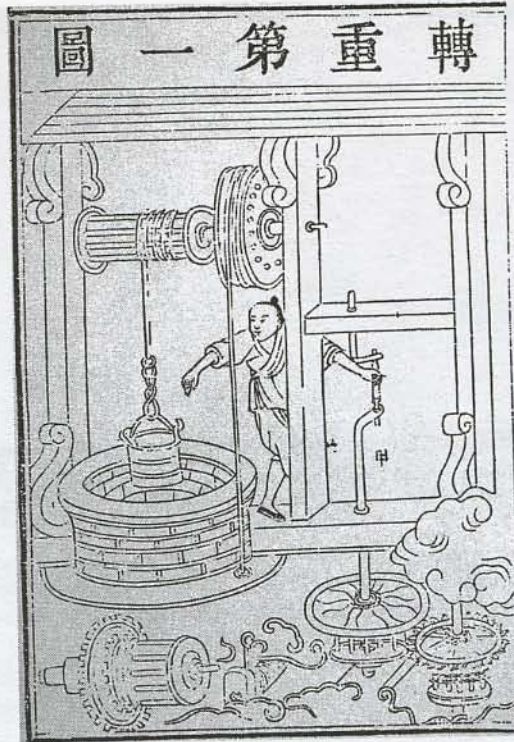
Another example of knowledge as form (and form's relationship to meaning-making) can be drawn from the work of Francis Alÿs, a contemporary Belgian artist. Alÿs paints a somewhat surreal depiction of a simple domestic scene, which he then passes on to a collective of Mexican sign painters who then "copy" the original work.

This process results in something that demonstrates the remarkable relationship of representation to understanding and interpretation; or, to put it another way, the qualities and uncanniness of all that a form possesses in its entirety as a vehicle of meaning.

Using the elements of color, shape, line, proximity, relationship, spatialization, etc., form communicates in complex ways. The sign painters are left to make sense in every respect—from the intention of the painting, to the intention of the content of the painting, and in interpreting it can't help but transform the meaning and significance of the work.

There are a breadth and depth of inventive technologies of form, each of which allows us to visualize different kinds of ideas and information, but a few worth mentioning are:

- Perspectival rendering
- PROJECTED drawings—those that show how physical space is arranged, such the plan view but also charts and diagrams convey cognitive space
- AXONOMETRIC drawings, which allow relationships within volumes to be conveyed

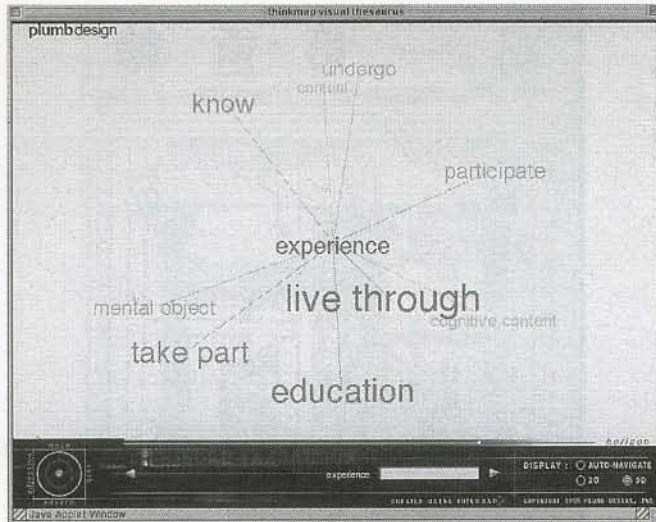


Woodcut copied from Ramelli's windlass-pump engraving, by Wang Cheng, Ch'i Ch'i T'u Shuo, 1627. This copy of Ramelli's drawing by comparison, although formally inviting, doesn't accurately depict the pump operation. From Harvard Yenching Library, Harvard University.

- COLLAGE, which offers transformed experiences of the represented world
- Depictions as apparatus have long been used by mathematicians to give shape to thought, allowing them to test their theories, as well as describe them
- Time-based forms, such as film, and the representation of time through seriality, such as comics
- Configurations, such as El Lissitzky's 1932 invention of the tab, which created a means of interaction, as well as allowed parts to relate to a whole

3 | TECHNOLOGY AS TOOLS Now we get to that technology which seems more familiar as "technology": things or devices used in the performance of an operation—more commonly referred to as tools. Again, to point out, however, these "things" may be implements that do not exist in the material world, which makes them a bit harder to recognize, particularly when these implements may be in the form of "code." Or, as I remarked earlier, tools can also be organizational systems that serve as devices.

Tools mediate between the mode of perception and form, and allow for the figuring and refiguring of relationships, such as the relationship between construction and the hammer and nail. This simple relationship in making possible a dwelling draws upon an entire history of logic and experience, which in turn influences these very systems of logic. Mark Tinkler's Visual



Plumb Design, Visual Thesaurus. www.plumbdesign.com/thesaurus. This example demonstrates Thinkmap, a software "tool" that allows certain types of databases to become useful and valuable, by allowing the relationship of data to dynamically shift according to user need. The Visual Thesaurus utilizes Princeton University's WordNet database.

Thesaurus is a prime example. To briefly describe it, the Visual Thesaurus utilizes an engine called Thinkmap that can depict data as dynamic, complex connections of related information. The Thesaurus offers a more elegant and understandable way to represent and utilize Princeton University's WordNet database, which is essentially a dictionary based on "sense relationships."

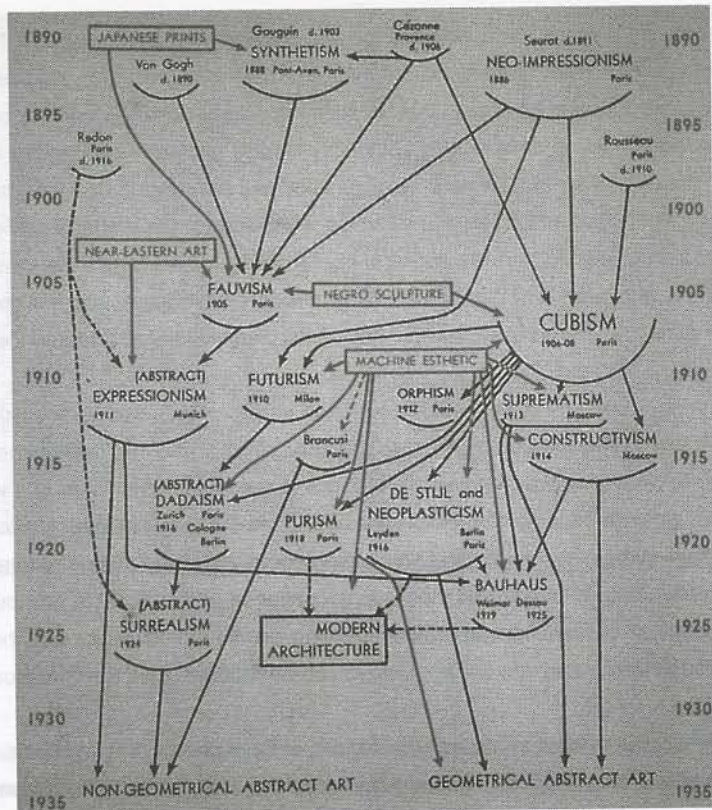
What you see is a word surrounded by a Web of associations that exist in the WordNet database. By manipulating the Part of Speech controls on the interface, the term can be viewed as a noun only, verb, adjective, or adverb.

Another tool is "Atom in a Box" created by Dean Dager, a graduate student in physics at UCLA [www.apple.com/education/hed/aua101/atominabox]. Atom in a Box models or visualizes quantum physics as it pertains to hydrogen atoms. The purpose of the project was to enable students to visualize, and thus, it was hoped, more complexly understand, the relationship of an electron bound to an atomic nucleus.

How the Three Examples Collapse into Each Other

Finally, despite all attempts to neatly package these "applications of knowledge" it seems increasingly clear that these technologies can't be separated. While Dager may have created a tool, he was, at the same time creating other technologies: modes of perception and form. In fact, for Atom in a Box to be of value all three aspects have to be conceived and arrived at almost simultaneously.

And here's where we get to graphic design.



Alfred Barr, Jr. for the Museum of Modern Art, 1936. This diagram shows a cognitive projected view—a formal invention that conveys relationship of ideas—in this case the relationship of cubism to other Modern-art movements. (From cover of catalog, *Cubism and Modern Art*, MoMA, 1936.)

How the Three Examples Collapse into Graphic Design

A few years back, Apple's head of the Advanced Technology Group, Dan Russell, offered me a glimpse at a project he described as "dynamic typography." An engineer doing typography? Now that was a scary thought. But, as it turned out, this was an engineered system that "read" a text and redisplayed the data according to user-established parameters. (For instance, the user would tell the system: "Reduce this 20,000-word article to a 50-word synopsis.") How was this typography I wondered? It seemed more like . . . engineering and maybe editing.

Then, in a bonk-in-the-middle-of-the-forehead moment I remembered that typography, and for that matter, graphic design, was about the graphic display of thought. Duh. After all, this was what letterforms and the arrangement of textual matter had to do with. And through this I began to recognize the familiar role of graphic design in something that at first glance was wholly alien. Typography, born of that earlier revolution in the display of thought—print technology—was being reconsidered in the contemporary terms of *Daily Me* customizable digital data.¹ Only now

the conditions for the display, which included the typography, were integrated into the meaning-making process of tools. They were all part of the form-making or form-giving process.

In the Dynamic Typography project the question was: What does this need to be in order to do what it needs to do? In other words, I have this lengthy text and I need to get what it is about without the details, for the moment. Here, function is the driving force. How can that happen? And that's where you end up having to create technologies: the mode of perception is whatever values are assigned to make sense of the longer text, then there's the shape it needs to be delivered in, and what kind of tool makes this happen. But each aspect instigates and influences the other: the minute you ask how does it happen, you're forced to conceive what it is and vice versa.

Books, as we know them today, resulted from the transformation from oral culture to print culture in response to the question: what does a reader, as opposed to a listener, need? Books are the answer to what it means to physically embody ideas and convey them to a wider audience. And what types of ideas can be embodied flows from the current technological—as well as the conceptual—circumstances for realizing a representation, or the means required to communicate understanding. Invention and innovation, mentioned earlier, flows in and out of need, desire, and possibility, conversing with and determining bodies of knowledge and the subsequent form through which they are known. Design can be thought of as the infrastructure of the meaning.

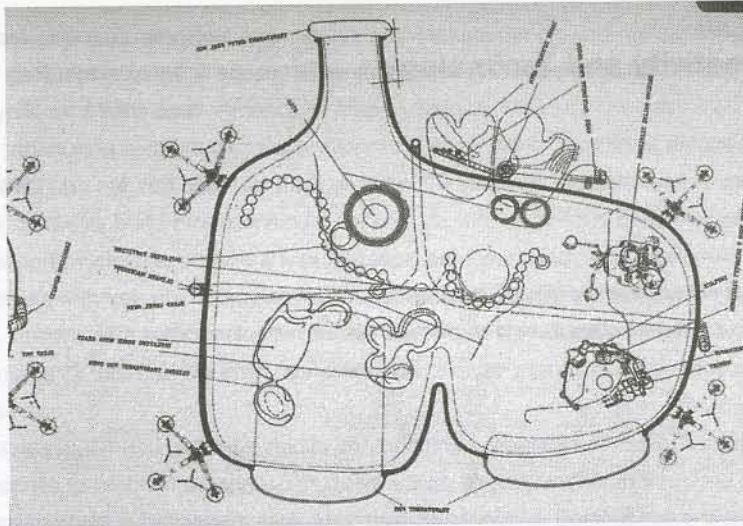
What now seemed evident to me was that Modes of Perception, Form and Tools, or to put it another way, content, form and function, aren't separate from one another—they're symbiotic, like dancer and dance or DNA and chromosomes—you can't consider one without the other. Or, as the legendary computer scientist Alan Newell put it: "As anyone in computer science knows, the boundary between data and program—that is, what is data and what is procedure—is very fluid. In fact . . . there is no principled distinction in terms of form or representation of which is which."

The three modes of technology that I have just described meet in graphic design: Because graphic design is the crucial link between what is being said and *how* it is being said. It makes what is being said meaningful. Graphic design renders thought visible and therefore experiential.

In other words, without the perceptual apparatus of form, whose shape may be generated by a tool, there is no meaning. The shape embodies or articulates a point of view. The key questions for the designer are: what needs or wants to be communicated, how can it be communicated, and what can or needs to be invented to enable the communication—and how does or could that invention further, or transform, or make possible what can be experienced? The ways in which we understand and make sense are vitally interconnected. What I'm suggesting then is that we reorient our thinking about how we conceive what we make as graphic designers.

Technology isn't computers. It's about inventing and innovating applications of knowledge in order to make sense of our experiences. Sometimes this is a way of classifying experience—finding a form to convey the experience or the means to convey that experience. Graphic design as a practice needs to understand its role in communications by working with all of this in mind, harnessing and utilizing the possibilities by inventing and creating technologies for communication.

Before I close I'd like to leave you with one last idea that connects back to the question of



Archigram, Living Pod. This projected plan view for Living Pod shows relationships of objects in space.

why *Graphic Design* and not *Information Design*, or *Information Architecture*, or *Interaction Design*, or any of the other dozens of monikers graphic design has splintered into. We've been talking about really smarty-pants, elegant design without ever mentioning what I believe is that other crucial contribution—sexiness—in other words we haven't covered the terrain of making something that *looks* as compelling as it is. We've been talking about cake, and now I want to mention icing. As graphic design educator, historian, and practitioner Lorraine Wild put it, in arguing about the very particular values of graphic designers if they are going to survive beyond the competition for great and meaningful ideas: "Is graphic design only a conceptual process? . . . [then] where are all these design 'conceptualists' . . . going to find the 'commercial artists' of the future to translate their "big idea" into beautiful or remotely interesting forms that anyone else will want to look at?"

Something can be elegant, smart, sophisticated, and efficient—and graphic design can provide all that, but there still needs to be one more link between thought and experience: the bridge between thinking and experience is engagement—and engagement *is* sexiness. And this I'd like to think of as the very special domain of graphic design. Hail smart 'n' sexy graphic design as technology.

NOTE

1. Nicholas Negroponte, founder of the MIT media lab, refers "The Daily Me" as the personally edited newspaper of the future made possible by digital filtering systems. Page 153, *Being Digital*, Alfred A. Knopf, New York, 1995.