Designing Innovation

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KEYWORDS Innovation, Creativity, Design education, Interdisciplinarity, Narrative.

The growing prominence of design has brought increased attention to new methods and strategies for achieving innovation, both in the professional world as well as in design education. This article addresses three different approaches to design innovation: the practice of creativity by engaging with areas of knowledge outside design; interdisciplinary cross-pollination among different design fields; and a narrative approach to design.

As recently as ten years ago, innovation was largely understood in terms of technology. New products that captured our imagination and the marketplace, such as the array of new cell phones, were largely based on technological advances. In the last few years we have seen a detectable shift toward understanding innovation as the fruits of creativity, specifically the creativity of artists and designers. In the United States, BusinessWeek has been one of the leading advocates of this shift. Bruce Nussbaum's article in the August, 2005 issue exhorted business to "Get Creative!" and announced that the "Knowledge Economy as we know it is being eclipsed by something new - call it the Creativity Economy"[1]. The most recent issue introduces a new innovation and design quarterly with the cover story, "Innovation Champions: The new breed of managers and their radical cultures of creativity"[2]. Two other barometers of the rise of creativity, and there are countless more, include Richard Florida's popular book, The Creative Class, which heralds today as "the Creative Age," and Daniel Pink's widely read A Whole New Mind: Moving from the Information Age to the Conceptual Age. Pink sees a "seismic shift" from "an economy and a society built on the logical, linear, computerlike capabilities of the Information Age to an economy and a society built on the inventive, empathic, big-picture capabilities of what's rising in its place, the Conceptual Age"[3]. This book followed Pink's often quoted claim in the Harvard Business Review that "the MFA is the new MBA"[4].

Of course, technology will continue to deliver many new and important breakthroughs but its dominance in the innovation game may be slowing down. As new technologies become more quickly available and easily imitated, they no longer differentiate one product from another as effectively. A second reason carries even more weight: technology has not sufficiently addressed the human experience, although there are many indications that this is changing. Although I am not sure we have transformed into a completely new "economy," as the prophets above declare, at the very least there is a new conversation going on, one that gives designers considerable new opportunities and a much more important voice in the innovation process. But exactly how does design lead to innovation? What unique skills and abilities can designers bring to the creative process? As a design educator producing the next generation of designers in a world that appears to value creativity and innovation more than ever before, what educational practices and strategies should we teach? In the following essay I will focus on three key elements of design practice and education that will help designers succeed at innovation: cultural creativity, cross-pollination and storytelling.

1. Cultural Creativity

Creativity is usually imagined as a solitary activity that originates deep inside some part of us. Our paradigm is the artist, Van Gogh or Beethoven, as a nomadic figure cut off from society, unwilling or incapable of interacting with others. However mythical, this idea still shows up in the belief that creativity is something you are born with or not. In talking about his own creative process, the great American designer Paul Rand was once asked, "What are the fundamental skills of a designer?" He answered, "It's all intuition. And you can't teach intuition"[5]. The source of this cherished element of creativity, the genius theory of the divinely inspired fine artist, is evident in the follow-up exchange. Asked the difference between a designer and an artist, Rand said: "There is no difference between a designer and an artist. They both work with form and content. I try to create art, whether I make it or not is not up to me, it's up to God." Intuition is a "flash of insight" which "cannot be willed or taught." Like God, it "works in mysterious ways"[6]. And that is because, again quoting Rand, "good ideas in the field of communication take shape unconsciously." Whether derived from God or from our unconscious, intuition as the source of creativity is inexplicable and un-teachable.

Although there are certainly creative processes and patterns of thought that we cannot fully anticipate, Rand's belief is part of a long history in the west of romanticizing creativity and genius that is inseparable from our religious tradition. And it depends on the idea that creativity means coming up with an idea or visual image that is completely and utterly original. Originality in its purest form is also a largely mythical idea, as Rosalind Krauss has argued persuasively in *The Originality of the Avant-Garde and Other Modernist Myths*[7]. A much more productive and accurate

[1] BRUCE NUSSBAUM, "Get Creative!," *BusinessWeek* (August 1, 2005), 62.
[2] *BusinessWeek* (October 11, 2006).

[3] RICHARD FLORIDA, *The Creative Class And How It's Transforming Work, Leisure, Community* (Basic Books, 2002). See also DANIEL H. PINK, *A Whole New Mind* (Riverhead Books, 2002).
[4] DANIEL H. PINK, "The MFA is the New MBA," *Harvard Business Review* (February, 2004).
[5] PAUL RAND, *Design Form and Chaos* (Yale University Press, 1993).
[6] Rand, *Design Form*, 45.
[7] ROSALIND KRAUSS, *The Originality of the Avant-Garde and Other Modernist Myths* (M.I.T. Press, 1986).

model of originality is not ex nihilo creativity but instead creativity deriving from new and original combinations of existing elements, in effect, creative borrowing. Shakespeare, one of our great "original geniuses," in fact borrowed the storyline for every one of his thirty-seven plays. His original contribution was to translate, embellish and in many ways improve the telling of these stories. Beethoven's quartets are similarly indebted to the earlier work of Haydn. In today's postmodern culture, students are much more inclined to understand originality as assemblage and combination, seen in the popularity of original *sampling* (not an oxymoron today) in record production, or *spinning* in hip hop music, where top deejays are often given the label of "genius." This paradigm of creativity is one reason (the internet is the other) why plagiarism has become epidemic in the classroom. But if these examples suggest a different paradigm of originality, they also require a different creative process, one that utilizes the many sources and influences that are available to us. I call this "cultural creativity" to suggest all the important contexts that sustain the creative information and experiences which the individual synthesizes in the creative process. There are still intuitive leaps in this model, but they are informed and shaped by the broad context of other ideas, information and experiences.

Quite apart from Rand's intuitive and individualistic basis of creativity, cultural creativity is a social model, based on the idea that the more cultural and historical ingredients in the pot, the richer the stew. As Mihaly Csikszentmihalyi writes in Creativity: *Flow and the Psychology of Discovery and Invention*, creativity arises from the synergy of many sources and not only from the mind of a single person . . . it is based on the interaction between a person's thoughts and a socio-cultural context." Further, "in our age of specialization . . . creativity generally involves crossing the boundaries of domains"[8]. Later in this essay, I will explore the connected idea of crossing boundaries in the section on cross-pollination. According to Csikszentmihalyi, instead of the largely individual, quasi-spiritual model of intuition, creativity and innovation are deeply embedded in the world around us. This version of creativity has important consequences for design practice and design education, to which I will now turn.

Design education emerged from its nineteenth-century roots in guild-based crafts to the more formalized programs we see in colleges and universities today. But its origins are still apparent in the largely skill-based studio programs that dominate current design curricula. In the United States, the demands of national accreditation required design programs to develop non-studio classes in the liberal arts and sciences, but for most students and teachers this addition was seen as a distraction from the primary "technical" skills of the designer. This attitude is still widespread today. In many European universities (as opposed to small art and design schools), design education is perhaps too academic and would benefit from a stronger skill foundation, while Asia is more imitative of the American model. Based on the idea of cultural creativity, designers need to aware of and involved in an array of historical and contemporary discourses and practices; they must have their hand on the pulse of our global culture. The expanded influence that designers are beginning to enjoy in business and in shaping culture, as creators of their own ideas rather than decorators of others' ideas, depends on an expanded concept of design education.

[8] MIHALY CSIKSZENTMIHALYI, *Creativity: Flow and the Psychology of Discovery and Invention* (Harper Collins, 1986), 23.

My own school, the Art Center College of Design, recognized these new opportunities in the design field six years ago when Richard Koshalek took over the presidency. I was hired as the new Chair of the Liberal Arts and Sciences department and given the direction to create a rigorous and relevant program that would educate "Renaissance" designers with the intellectual tools needed to play a larger role on the world's stage. At Art Center, we built a new curriculum based on the importance of critical and historical thinking, writing and presentation, design research, applied business skills, new classes in anthropology, psychology, political science, sustainability and ecology, as well as science courses such as robotics, nanotechnology and bio-mimetics. In order to create such a curriculum we have brought in many new faculty members from "academia": PhD's with in-depth training in the traditional disciplines of the liberal arts and sciences. Our premise has been that designers need the broad understanding of the human experience afforded by the liberal arts and sciences, and that these courses should be integrated with studio practices so that there would no longer be a perceived division between intellectual and creative practice. If design is most simply the visualization of concepts, we needed to make our students' concepts as compelling as their visualization skills, a marriage of studio practice and liberal arts and sciences.

This curriculum is driven by a different understanding of the creative process and it offers a unique recipe for innovation. Instead of individual intuition as its center (although creative leaps are still crucial), we have created a synergistic model based on the interplay of different skills, knowledge sets, ways of thinking and real-life experience. In this model, innovation and creativity derive not from individual inspiration but from the original or new arrangement of different elements drawn from the many different fields of the liberal arts and sciences that support, deepen and challenge studio-based departments. To implement this curriculum, we created collaborative, team-taught design projects involving studios and the liberal arts faculty called "transdisciplinary studios" that demonstrate to students the integration of the two sides of their education. In particular, the work of designmatters@ArtCenter has shown the critical importance of bringing liberal arts into the studio, this being the arm of the college that brings in humanitarian-based projects such as public service announcements for the Pan-American Health Organization and campaigns on behalf of the United Nations Millennium goals.

2. Cross-Pollination

In the previous section I addressed collaboration between the design disciplines and liberal arts and sciences as the basis of "social creativity." In a similar way, I would also like to look at how innovation arises when different disciplines cross-pollinate each other.

What are the advantages and disadvantages of interdisciplinary education? As educators, how can we design successful interdisciplinary projects? What combinations of design fields are likely to produce the most innovative results? To answer the first question, it is important to acknowledge the small but vocal opposition to interdisciplinary design education. The most interesting opponents argue, quite rightly, for the importance of disciplinary expertise; they believe that an interdisciplinary curriculum will create "generic" designers who lack in-depth skills and knowledge in their fields. Other opponents, however, seem more concerned with protecting their own territory, driven by self-interest and job security. If you're teaching in an Advertising program that's about to be folded into Graphic Design, you're likely to be strong proponent of disciplinary autonomy. The same tension operates among professional designers in studios and companies as well.

A quick look at the history of design disciplines reveals that they are not only recent inventions but also porous at their boundaries. This disciplinary fluidity is just as prominent in the design disciplines mostly because, with the exception

of architecture, they are relatively young. Of course the *practice* of design has been around since the emergence of culture itself, but as a discrete set of disciplines its history is recent. This is a good moment to define what I mean by a discipline. A practice becomes a discipline when it creates an articulated history, an agreed-upon pedagogy, a critical awareness of itself as a discipline, and when it offers degrees that confer legitimacy on their holders. Especially this last criterion is new in design. At Art Center, students well into the 1970's often left the College without earning a degree; they came to learn a skill set but the degree meant very little. Another good example of design's disciplinary fluidity involves Graphic Design. The first Graphic Design program was established at Yale in the 1950's by Josef Albers, where it was carved out of the existing program in Advertising. Today, many Advertising programs are being subsumed into Graphic Design, exactly the opposite trend in a very short time. Environmental Design was invented in the 1960's, and it is still trying to define itself at most schools. The digital revolution is changing the practice and profession of Photography, and even such "traditional," manual-skill based disciplines as Illustration are being transformed. Even in the 1930's, more or less the origin of design disciplines, professional designers rarely worked in just one discipline. Raymond Loewy was trained as a fashion illustrator but he went on to design steam engines, cars, a Greyhound bus and packaging for cigarettes, food and soft drinks. At Art Center today, we are engaged in an interesting curricular debate over which department owns figurative painting. Long a mainstay of Illustration, we are now starting a figurative painting track within the Fine Art department to respond to the so-called "return to painting" in the fine art world. The debate is centered on the distinction between career opportunities in commercial painting as opposed to fine art painting, but that distinction has been blurred at least since Warhol. In this case, a curricular debate mirrors the cultural and professional fluidity of the disciplines. So design disciplines find themselves at a curious moment in their history, especially relevant to the disciplinarity / interdisciplinarity debate: without ever having established clear, strong boundaries in the first place, they are already engaged in dissolving those boundaries.

Given this situation, what should we do? Should we maintain disciplinary boundaries that offer depth of field and expertise? Or should we design curricula that encourage students to move across disciplines, producing designers who are able to synthesize different kinds of knowledge and skills and work well in collaborative teams? Do we want specialists or generalists? Like any thoughtful solution to a complex question, the answer here is not one or the other, for there are advantages and disadvantages to both sides. Pure disciplinarity can result in professional and creative isolation, preventing designers from realizing the creativity and innovation that comes from borrowing and translating from other disciplines. It may also produce professional immobility in a world where we are likely to change jobs every five to seven years, according to recent statistics. On the other hand, interdisciplinarity runs the risk of creating identical designers, where everyone does more or less the same thing, and that superficially. An interdisciplinary studio with nine Art Directors, all "producers" without comprehensive expertise, is not likely to result in very interesting solutions. Dynamism comes from the mix of differences.

Interdisciplinary education succeeds best when it is comprised of very strong discipline-based programs. I call this the dialectic of disciplinarity and interdisciplinarity, the mutual dependence of both sides. Each student must bring depth, expertise and differentiation to the interdisciplinary experience. And for that to happen, design curricula must give students discipline-specific skills and ways of seeing before introducing interdisciplinary projects. The stronger the disciplines, the better the interdisciplinary experience. As Michael Press and Rachel Cooper write in *The Design Experience: the Role of Designers in the Twenty-first Century*: "the increasingly team-based approach to product development has led to a broadening of roles: individuals are no longer seen as specialists with narrowly defined responsibilities, but as generalists with a particular area of expertise"[9].

It is equally important to design the interdisciplinary studio with considerable care and planning: the least successful interdisciplinary studios result from failing to consider the overall educational experience and desired outcomes. This is indeed a design problem and should be addressed with the same insight and creativity as we would apply to any other design challenge. Based on my experience at the Art Center, here are some of the keys to ensuring a successful interdisciplinary studio. First, a balance of aligned and less-aligned disciplines according to the nature of the design brief is critical. By "aligned and less-aligned," I mean those disciplines similar in assumptions and ways of working ("aligned") and those further apart ("less-aligned"). I will develop this idea below. Second, not all projects are alike, which means that every project team needs to be tailored according to the desired outcomes (both the educational process and final product). Third, advance planning among faculty and department chairs is essential; this includes imagining scenarios in the studio, anticipating potential problems (such as the ghettoizing of disciplines) and articulating the shared language that will allow for interdisciplinary dialogue. Fourth, it is imperative to establish a strong commitment to working in collaboration among faculty and students in advance, this does not happen naturally. Without this commitment, you are more likely to fall into discipline protectionism and unhealthy competitiveness among both students and faculty. Finally, assessment of the collaborative experiment needs to be an ongoing practice of all participants. Waiting until the studio is over to assess its success prevents the opportunity to make creative changes along the way. The interdisciplinary experience is like a living organism, which means you cannot always anticipate what form it will take.

I would like to return to my first point above, which involves creating the most successful balance of aligned and less-aligned disciplines in the interdisciplinary studio. In a recent article in *The Harvard Business Review entitled "Perfecting Cross-Pollination,"* Lee Fleming studied 17,000 patents that had been filed by business es in the United States. Fleming's premise was that patents represent innovation and his goal was to establish how the innovation came about in each case. Specifically, he looked at the composition of the interdisciplinary collaboration that led to the patent. Fleming's findings derive from innovations in business, but they are quite relevant to the design of interdisciplinary design education[10].

Interestingly, Fleming found that the number of innovations increased when the disciplines involved were more aligned, that is, closer in their governing assumptions and creative processes. However, although there were fewer innovations produced in teams comprised of less-aligned disciplines, these were of a higher value and more likely to produce a significant breakthrough. Fleming describes this as "the inverse relationship between the average value of a team's innovations and the similarity or alignment of the disciplines represented on the team"[11]. To put it simply, teams with similar disciplines produced more innovations but of less value, while teams with very different disciplines produced fewer innovations but of greater value to the company. It follows that designing a team made up of highly differentiated disciplines incurs greater risk but also potentially greater reward: they are more likely to fail but their successes will be more dramatic. Conversely, a design team compri-

[9] MICHAEL PRESS and RACHEL COOPER, *The Design Experience: the Role of Designers in the Twenty-First Century* (Ashgate, 2003), 156.
[10] LEE FLEMING, "Perfecting Cross-Pollination," *Harvard Business Review* (September, 2004), 1-2.
[11] FLEMING, "Perfecting Cross-Pollination," 1.

sed of similar disciplines is the safe bet: success is likely but probably not the breakthrough variety. The main reason for this equation is that less-aligned disciplines may not share enough assumptions or language to interact at all; but if they do, it will produce something radically new. Aligned disciplines speak to each other quite easily and thus will produce more innovations. But they do not challenge the boundaries of their disciplines sufficiently to result in breakthrough innovation. It is a question of quantity versus quality, safety versus risk.

Fleming also discovered an interesting corollary: multi-disciplinary teams with broad and shallow expertise will also produce more ideas than teams with in-depth and focused expertise but, once again, the ideas will be less interesting. The most innovative interdisciplinary expe-rience involves participants with in-depth disciplinary training but the risk of failure is higher as well. Such teams are the optimal mix but their success requires careful design, planning and assessment, as I suggested earlier. In an educational setting, which should be less risk-averse than business, we have the opportunity to take chances with less-aligned teams comprised of students with in-depth disciplinary expertise, but these will require more work on the part of the faculty and department chairs. At the same time, however, it is important to remember that the nature and goals of the individual project should shape the composition of its participants: some projects may call for aligned disciplines, others may require a riskier mix.

One of the most challenging projects we have carried out at the Art Center was sponsored jointly by the Honda Motor Company, Ltd. and Quicksilver, Inc. called the "Honda/ROXY Adventure,". The companies asked students to design a vehicle interior and exterior as well as the purchase and ownership experience for the ROXY girl lifestyle in the year 2015. With so many media formats and design solutions called for, the Art Center put together a studio comprising of faculty and students from no less than five disciplines: Transportation Design, Environmental Design, Graphic Design, Advertising and, this was the experimental part, Illustration.

The challenge in such a mix of aligned and less-aligned disciplines is to insure that all the different design languages form a cohesive narrative rather than a tower of Babel. This requires advance planning, a commitment to collaboration and a lot of assessment of the project along the way, but even that does not ensure success. The Art Center has years of experience combining adjacent disciplines that more or less share similar assumptions and working environments but the first-time addition of illustrators made the project riskier, which was precisely our objective. Ann Field, Chair of the Illustration Department, believes that because her students are not as market-driven, "they're more free and experimental in the brainstorming process, less tethered to prescribed ways of doing things. They have no prejudice"[12]. As it turned out, the illustrators, who need to be highly original in their profession just to survive, brought a lot of unexpected ideas to the project and not just in the two-dimensional areas. One illustration student contributed a startling idea that the car designers had not thought of, namely the use of neoprene as part of the car's exterior in order to facilitate transporting surfboards. The transportation students, on the other hand, were pushed to experiment with more bold and unusual color schemes for the vehicles. These innovations would not have happened without the cross-pollination of two relatively unaligned disciplines.

[12] ANN FIELD, personal interview at the Art Center College of Design (March, 2006).

3. Storytelling

My final innovation strategy involves the narrative dimension of design, which has recently begun to receive attention in the professional and educational spheres[13] . Most famously, Yves Béhar, founder of Fuseproject and a graduate of the Art Center, offered the slogan, "Design brings stories to life." The key to narrative, Béhar points out, "is how people intuitively understand this story and complete it with their experience of the product"[14]. "Martha Stewart Living," one of the most recognizable and profitable brand identities in the world, at least until her recent legal difficulties, provides another example of the power of stories. Her Omnimedia company has created a variety of products, including books, television shows, fashion and housewares, all based on a compelling story of domestic elegance at the country estate, at once both nostalgic for a simpler era and aspirational about the present. As far back as1938, the De Beers diamond company created a powerful connection between their product and everlasting love, "a diamond is forever", a marketing coup in which diamond rings became the only appropriate gift for marriage engagements. These examples, and there are many more, remind us that designers are storytellers. And in our current transition from product-centered design to the design of human experiences, the narrative aspect of our practice is more important, and carries more responsibility, than ever before.

Béhar's observation that we respond to stories "intuitively" has been demonstrated in both the human and natural sciences: humans are homo fabulans, the species that tells stories. As the French critic Roland Barthes wrote, "narrative is present in every age, in every place, in every society . . . it is simply there, like life itself"[15]. The stories we tell and respond to create our collective and individual identities, confer meaning on our present lives, organize and make sense of our past in ways the past did not. They allow us to imagine the future and thus act to give it shape. And by stories I mean not just the great epics that have expressed the identity, hopes and fears of entire peoples, Homer, the Bible, The Tale of Genji, or Gilgamesh, but also the stories told today in powerful media like film and television, or the stories that sell a product by connecting the experience of everlasting love to De Beers diamonds, cultivated elegance to Mercedes Benz or a youthful and sexy lifestyle to Miller Lite beer. Today in the west we are no longer shaped by the great narratives of Homer and the Bible but almost everyone on the planet today can tell you the plotline of Star Wars or imagine the lifestyle evoked by Nike sportswear. For good or bad, popular culture and consumer culture carry the weight of writing our cultural scripts today. And this is where designers have a powerful influence on the human experience.

As any good marketer or politician knows, our collective and personal narratives do not always need to be true. Following "the facts" and "telling it the way it is" do not necessarily make the story persuasive, although an illusion of reality is one of the storyteller's most effective tools, think of our insatiable appetite for ***reality TV*** today. The power of stories lies in their ability to ***exceed*** reality, rewrite it, to give it a coherence that does not actually exist. And this comes from the way stories reveal the life we imagine living, the person we would like to be, the past as we wish it had been.

Why do stories so profoundly shape and influence our lived reality? Why is ***homo fabulans*** at the core of our being? One of the most interesting answers comes from recent work by neuroscientists who have begun to demonstrate

[13] DANIEL H. PINK includes "story" as one of the "six senses" of his new paradigm in A Whole New Mind, 98-124.
[14] YVES BÉHAR, quoted in JADE CHANG, "All About Yves," Metropolis (June, 2006), 145.
[15] ROLAND BARTHES, "Introduction to the Structural Analysis of Narratives," in Image, Music, Text (Hill and Wang, 1977).

that narrative is "hard-wired" in the brain. To prove this claim, their studies focus on people who have lost their ability to tell stories because of a physical injury or disease. Many suffer from "dysnarrative", a state of narrative impairment from damage in different regions of the brain. For example, people suffering from bilateral brain damage tell "arrested narratives." Their stories make perfect sense up to the point of their injury, but then their narrative ability stops. They are unable to finish the story. Another example involves injury to the frontal cortexes, resulting in what are called "denarrated lives." These patients are found to be "unable to provide an account of their experiences, words, and actions"[16]. Some of you may know the story of Phineas Gage, a railroad worker from America in the mid-nineteenth century[17]. One day Gage was preparing an explosion that would allow the tracks to continue through a huge rock. He was using a tamping iron, a steel rod about an inch in diameter and six feet long, to stuff dynamite into a crevice. An accidental spark created an explosion that sent the tamping iron right through his brain, in through the jaw and out the top of his head. Gage was knocked unconscious and the tamping iron landed forty feet away. Miraculously, he survived the accident but he was a completely changed man, no longer the Phineas Gage he had been before. The stories that gave meaning to his life were fractured and he became an unruly dissolute, wandering the east coast, unable to hold down a job, a man in search of himself. Gage died in San Francisco almost twenty years later. You can go see his skull, by the way, with a big hole in it, at the Harvard Medical Library.

So storytelling is deeply rooted in our history and hard-wired in our brains. We need stories almost as an addiction. This means that today, at a time when culture values design more than ever before, designers are in a position to tell powerful and influential stories. From this point of view, there are four key elements of narratives that contribute to innovation in the design process.

First, narratives are interactive. In literature, we know that readers are not merely passive in reading a story; they actively re-write stories in their own interest, according to their own interpretation. More and more, we see a similar exchange in corporate and product branding. Tired of being assaulted by corporate branding stories, consumers have started to re-brand products, to re-tell the story. Chrysler's PT cruiser was originally marketed as a nostalgia car appealing to white suburban consumers. But it has since been re-branded with a different story by urban black Americans. The re-branding of the Tommy Hilfiger clothing line from "country club" lifestyle to hip hop culture is another example. Branding and marketing people can learn from narrative to listen to the way stories are re-told by consumers. And designers can create products that encourage users to tell their own stories in their experience of the product.

Second, narrative is experiential. Stories shape our experiences because they happen over time, in a sequence. When Phineas Gage lost his capacity for stories, life itself became chaotic and unstructured. This idea influences many new forms of design research: instead of studying the use and marketability of a product, new design researchers study the lifestyle, aspirations and needs of a particular demographic group. Their findings include the creation of future scenarios, stories and personas that represent the group. Only at the end of the research is a product or service determined. This is experience design and it shows how we are changing from a product-centered to a human-centered practice.

Third, narrative is the condition of memory. We remember stories better than separate elements because narrative structure is so deeply embedded in our history and in our brains. An advertising campaign that tells a story or a product that suggests a narrative experience will have a much more powerful appeal and will be remembered longer. And of course stories about the past often re-write that past to make it more attractive than it actually was, "Martha Stewart Living" being a good example of this strategy. Marketing campaigns, products and services that can fold their stories into the established narratives of the past will have a competitive advantage.

Fourth, stories are often aspirational: they express our hopes and dreams. In our stories we are able to imagine ourselves better than the way we are, as individuals and members of groups. We can only conceive of change or growth by telling a different story first and then living up to it, by converting our imagination into reality. Once again, the great epic narratives that have shaped a culture's identity are not only reflections of actual life but also imaginations of a better life. This means that the stories designers send into the marketplace can challenge consumers: not just respond to our aspirations but give us higher aspirations by telling stories of a better future. Through stories, design shapes our lifestyles, how we interact, our emotional attachments, the identities we aspire to, even our past. Thoughtful, responsible designers are beginning to realize that more and more people want to increase their quality of life rather than their quantity of things. Products and services that emphasize a richness of experience, empathy for the human condition, quality of life, feeling connected rather than alienated, will find success in today's marketplace. And to do this, designers need to tell stories that matter.

[16] KAY YOUNG, "The Neurology of Narrative," SubStance-Issue 94/95, vol. 30, nos. 1&2 (2001), 72-84.
[17] The story of Phineas Gage is told in ANTONIO DAMASIO, Descartes' Error: Emotion, Reason and the Human Brain (Putnam, 1994).

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