

# Thoughts on the Future of Design

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## Abstract

**Background** Product design teams have been routinely conducting studies in design research since the late 1970s, when research became a more-accepted part of the design process. However, most of the research conducted falls into the category of what Richard Buchanan termed "clinical" research – focused on gathering information for a specific project being undertaken by a design team. This paper asserts that unless more encompassing forms of research are undertaken, the full potential of design to have a positive impact on our lives will not be realized. With a single goal of finalizing a project, designers typically forgo the collection and dissemination of knowledge that would advance the state of the design profession. The profession therefore tends to place its value on "what designers do" instead of "what designers know."

**Methods** This paper references past articles on the topic of design research and knowledge, and combines their thoughts with observations by the author of common practices in the design profession.

**Results** While this paper is not reporting on results of a specific study in design research, it strives to put the current state of design and research activities in perspective, with a call to leave design's past practices behind to expand and evolve our knowledge in design – by focusing on better understanding of people. It also suggests that the methods by which design teams are assembled, in an agency or corporate design department, can have limitations. An alternative model, being tested by some, calls for the formation of collectives of experts in design-related topics, putting together teams of the "most appropriate" people, not the "most available," as is often the situation in real-world practice.

**Conclusions** The methods developed and touted by designers since the late 1970s, now commonplace, call for research activities to take place at the outset of a project to guide design efforts. Research conducted in the majority of projects is process-based, meant to reach a goal as opposed to add to a wider knowledge base. This paper makes the case however that in order to advance the profession, to further unleash the power of design, a change in mindset must be implemented. More value needs to be placed on knowledge in design.

A challenge will be to shift design's focus from the product, the legacy of the industrial design profession, to understanding people. This would call for a significant change in design schools' curriculums.

**Keywords** Future of Design, Design Research, Design Process, Clinical Research, Applied Research, Basic Research

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## 1. The word "design"

The word "design" is universally misunderstood. People use the word to refer to a thing – a product, an article of clothing, a building or an environment. Or in reference to two-dimensional graphics, such as signage, instructional materials, or other printed items. Or to digital interfaces. It's a limited interpretation.

Even within the design profession we can hear different definitions. It's not a new problem. Richard Buchanan (1999) wrote "Unfortunately, our community has often foundered on the problem of definition. The literature is filled with contrasting and sometimes contradictory definitions of design, and efforts to define design have often led to acrimony." More recently this thought was reflected by John Maeda et. al. (2016) in the Design in Tech Report 2016 predictions for the coming five years: "The general word 'design' will come to mean less as we will start to qualify the specific kind of design we mean."

Design is not simply about the thing, it's about the result. Dictionary definitions support this thought by including references to intention. The subsequent Design in Tech Report 2017 (Maeda et. al. 2017) goes on to say "Design isn't just about beauty; it's about market relevance and meaningful results." Design is an attempt to reach a goal. The designed object is a medium, created in the hope of achieving something. Its failure or success, in the end, is gauged by its ability to accomplish that goal. It's not static, it includes a response.

The effect of a designed object can be physical or emotional, obvious or subtle, direct or indirect. A design enables or influences an action, or a reaction – it elicits some form of response. In view of this it's unfortunate that, in its most common usage, "design" refers only to the medium and not to its ultimate purpose. Design cannot be discussed holistically unless the people who use or encounter that design, and the effect it has on those involved, are placed in the discussion. It therefore deserves its wider interpretation.

The more encompassing definition is something that many professional designers find themselves explaining again and again. Design has power. Although design practitioners title themselves "designers," they are, when at their best, "enablers." It can be difficult to discuss, and difficult to prove. While the designed object is tangible, the effect often is not. The impact can be hard to quantify, making it a challenge to place exact values on design efforts. But the realization that designers are enablers can instantly place design and designers in a different light, one that puts them in a more valuable position. Designers may conceive the medium, but they actually create the effect.

Not all designers think of themselves in this context – some are content to focus on the object. Design education often can contribute to instilling this mindset in students. As a result, designers' descriptions of their work too often focus on the medium and not the effect. This narrow definition creates a limitation that is self-imposed. It perpetuates a definition of design that is constrained, and antiquated.

Is design about things or people? While designers profess to be focused on people and their needs, Google will show otherwise. A Google Images search for "industrial design" results in several hundred images of flashy design drawings. There is hardly a person to be found in those images, no people are seen using those products. Another search – enter "industrial design 1940s" and you'll see a similar result – lots of objects, but no people using those objects. Over a 70+ year span, little change can be evidenced by the images being made available. Then and now, there seems to be a focus on things, not the people who will be using those things. While a Google Images search doesn't paint a definitive picture of the profession, it does raise questions about how we, as designers, are portrayed – and how we portray ourselves.

A search of websites of industrial designers similarly shows a celebration of objects, people-less photos of products they designed, with little or no mention of the impact those products actually had on the person using the product, or on the company or organization for which the design project was undertaken.

A narrow definition of design that places the spotlight on the object, not the effect, has consequences. A design project is typically initiated by a request, or a "design brief," the assignment given to a design team. The requests are often written by someone outside of the design profession, which means they may be based on a limited understanding and appreciation of design's capabilities. The assignments designers receive may simply reflect the way they position their contribution. These limited requests can add to the problem, prolonging the relegation of design to its more constrained definition.

That situation can be altered with a proactive response, a challenge to the request. As an example, I frequently consult with companies on the development of medical devices. They are conceived with the goal of being easy to use, along with many other attributes. When possible we consider the entire patient experience, all touch points, from first exposure, to packaging, instructional materials, the device itself, and final disposal. The phrasing of the assignment can make a dramatic difference. When creating the packaging, we can either "design a package," or we can explore ways to "improve compliance, helping people to take their medication, with the package as the medium." The first request focuses on the thing, the package itself. The latter request focuses on the effect, a more valuable goal that can allow design to more purposefully affect our lives. Realizing the power of design typically calls for, at the outset of a project, re-framing the project's definition and goal. That redefinition will change the things we investigate, the discussions we have within the team, the ideas we come up with, and the way we evaluate and edit those ideas. Design requests can lead to innovative solutions, but only when the requests themselves are visionary.

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## 2. The form–function dilemma

A narrow definition of design may be deeply embedded in design culture. In the 1930s architect Louis Sullivan (1930) created the controversial mantra "form follows function" –

since then a phrase that has been recited endlessly in the world of product design. While it has proponents and detractors, few point out that the phrase itself is inherently misleading. "Form follows function" disregards the fact that shapes affect us. Form, in fact, is a function. The phrase however, taken out of its original context, implies that form is an independent entity, not an aspect of the medium intended to produce a result.<sup>1)</sup>

Aesthetics, as well as the ability for a three-dimensional form to visually communicate, has an effect, as does every other aspect of design. Form has a purpose, we create it for a reason. This is not a new idea, humans have been doing it for thousands of years, whether for pleasure or for some further purpose. We can clearly see the effect of aesthetics in recent investigations in neuroscience. Certain shapes, as well as colors, set off automatic triggers in our brains.

Douglas Van Praet (2014), in his book "Unconscious Branding," writes that our reactions to these triggers can run deep within us. Differentiating the roles of our brain's limbic system (the emotional brain), with the neocortex (the rational brain): "The limbic system assigns values to objects, events and experiences by attaching emotion, relating them to past memories... This part of the brain is unconscious and involuntary." While associations with shapes may vary with the individual, some can be cultural, and some universal. "Releaser shapes" automatically trigger the release of the progesterone hormone in females. Characterized by infants, human or otherwise, the shape is generally denoted by big eyes, an oversized head, short legs or feet, a fat little body. Puppies qualify – as do products such as a Mini-Cooper. "Cute" in nature has a purpose – we're more likely to pay attention, to take care of it. Praet refers to design-related studies in neuroscience that explore our responses to this and other visual triggers.

1) To be fair to Louis Sullivan, he used the phrase while discussing design in nature: "Whether it be the sweeping eagle in his flight, or the open apple-blossom, the toiling workhorse, the blithe swan, the branching oak, the winding stream at its base, the drifting clouds, over all the coursing sun, form ever follows function, and this is the law." The misunderstanding comes from interpretations by practitioners who don't place it in this context, and refer to it as if one is battling the other. Nature, of course, thinks otherwise.

We can also see the effect of three-dimensional cues provided by our products, shapes that inform us where to hold it, open it, press it, or convey whatever cue may be appropriate. Shapes can invite people to touch them, or warn people away. Form and function are not independent, one affects the other. Therefore one cannot "not follow" the other in sequence – they are intertwined.

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### 3. People research

If the word "design" is confining, "design research" can also be a misleading term. We're not studying a design, we're exploring ways to optimize the effect. To do this, in reality we're conducting "people research" – with the intent of understanding the effect design can have on us.

While the difference between "design research" and "people research" may seem subtle, it can lead to significant changes in the way we approach our research. And it can affect our approach to design education. Historically industrial design school curriculums placed emphasis on drawing skills, aesthetics, model making and manufacturing processes. The

practice emanated from a desire, in the industrial age, to produce usable products. This was at a time when production capabilities were limited, and when companies owned their own manufacturing plants and machinery. Designers were trained to produce the best possible products from that manufacturing equipment. The world has changed significantly since then. Today many design schools, in the US and worldwide, claim that their programs are less about past practices in design, and more "about people." Yet few that I have encountered require classes in psychology, or ergonomics. They offer little or no training in biomechanics or physiology, and little or no training in anthropology, social sciences, or related topics. The understanding of people comes through the lens of products – a "products first" approach, not a "people first" approach. If it were the latter, the curriculums would be quite different, mandating various human-centered areas of study.<sup>2)</sup>

It's unfortunate if the world is changing at a faster pace than the design profession, especially since it's a profession that promises change for the companies and organizations it serves. Designers don't hold a monopoly on design. If design is about people, then the profession that understands people will be (and should be) in charge. Professionals in non-design fields may have a better knowledge and understanding of how people function and behave, and therefore may be in a position to simply tell designers what to do. To maintain control of design, designers need to know more about people. But given its history, will this approach run counter to the culture of the design profession? And will change in design come fast enough? Evolution takes time, change can occur slowly, and the design profession may be an example. A dramatic transformation of the field is overdue.

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#### 4. The emergence of design research

In the modern era of mass production and consumption, the industrial design profession has been addressing research since at least the 1950s, and more prominently since the 1970s. But despite the notoriety of industrial designer Henry Dreyfuss' 1955 book *Designing for People*, it was not typical for design teams to be in contact with the people for which they were designing (Dreyfuss, 1955). In the consumer products sector this was the marketing department's responsibility. A designer's role often was simply to make products look good – design was applied, not integrated. In the product development sequence, design would often be the last step in the process, the product was already conceived, studied for market viability, and engineered. The designer would create a surface, and in a marketing driven world, often with the intent of making the product look better than it actually was. Research by designers, when it did occur, was typically reduced to looking up anthropometric measurements in hope that the product would fit the person. In many cases "research" meant referring to Dreyfuss' work.

By the 1980s the idea of design research, to be conducted at the outset of a project, was more widely being proposed to companies as a wiser alternative to simply "applying design" at the end of a project. The large majority of projects being undertaken, then and now, called not for the invention of new products, but for improvements to products that already

2) A parallel situation exists with many tech companies, whose approach to innovation occurs with a "tech-first" approach, without adequate understanding of how or why people would adopt their tech-based product or solution. In CB Insights' "The Top 20 Reasons Startups Fail," the number one reason was "no market need."

existed – next year's version of this year's product. The processes developed in the design profession were meant to streamline that project. Designers touted their process as a way to create better products. The process would start with some form of contact with the people who would be using the product (interviews or observations), then the creation of concepts (drawings and mockups), development of the most promising ideas (models or prototypes), validation (prototypes and simulation of use), and finalization (final specifications prior to manufacturing.)

With an emphasis on perfecting the process, knowledge in design fell by the wayside. Project activities were structured with the goal of shortening the time it takes to bring a product to market. Value was, then as it is now, placed on what designers do, and not on what designers know. Schedules and budgets were minimized. Designers' reimbursements are reflective of that mindset, basing their fees on the time they spend implementing the process, not on the value it produces.

Buchanan (2001) addressed knowledge in design by identifying three forms of design research: clinical, applied and basic. Clinical research pertains to research conducted for a specific project. Applied research has wider application, assimilating findings from a number of research studies in a specific category that leads to hypotheses that can inform design. Buchanan considers applied research to be vital in adding to knowledge in the field of design, an "attempt to gather from many individual cases a hypothesis or several hypotheses that may explain how the design of a class of products takes place." Basic research, a rare occurrence, pertains to fundamental knowledge in design.

The majority of design research has been clinical. There has been considerably less effort dedicated to applied research and little to basic research. The result? After decades of design research, we still do not know much about design. We are worse off because of it, as evidenced by many of the products, both consumer and professional, that we encounter and struggle with daily. It would be invaluable, for instance, to know more about how design affects behavior, or how to design for people who need to react under stress, or to design products with a better understanding of the instinctive differences in values that males and females place on products. Knowledge-based design remains to be a significant opportunity for the profession.

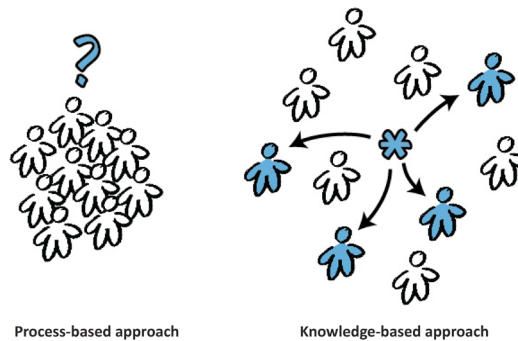
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## 5. Rethinking the culture

Universities are in the best position to explore the power of design through human-centered research. Little research is taking place in industry – and if any research is taking place at the applied or basic level, it's secretive. Under pressure to produce an ongoing stream of results, working designers have little room for experimentation. Project timelines and budgets require that projects move from point A to point B in a straight line, with little or no time for making contributions to an overall knowledge base.

In the profession's process-based approach, expertise becomes less valued. More experienced designers "graduate" by being assigned managerial positions – which means that the most experienced designers, those most likely to advance the profession, stop designing. Newer designers take over design responsibilities.

A design department or agency contains an array of designers with varying degrees of experience and interests. A complaint I often hear from people enlisting design groups is that they did not receive the level of design work that they had hoped. A design manager's responsibility is to keep all people on their staff as billable as possible. Projects are commonly populated not by the most appropriate designers, but by the most available. A process-based approach lends itself to this situation, because with pre-described tasks to be performed in order to carry out the process, virtually anyone can be placed in any position (Figure 1).



**Figure 1** In current practice members of the design team are selected from a fixed group of people, often selecting the most available people from the group to populate the team and carry out the process. Collectives follow a knowledge-based model, drawing from a wide network the most appropriate people to form the team.

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## 6. Collectives may be an answer

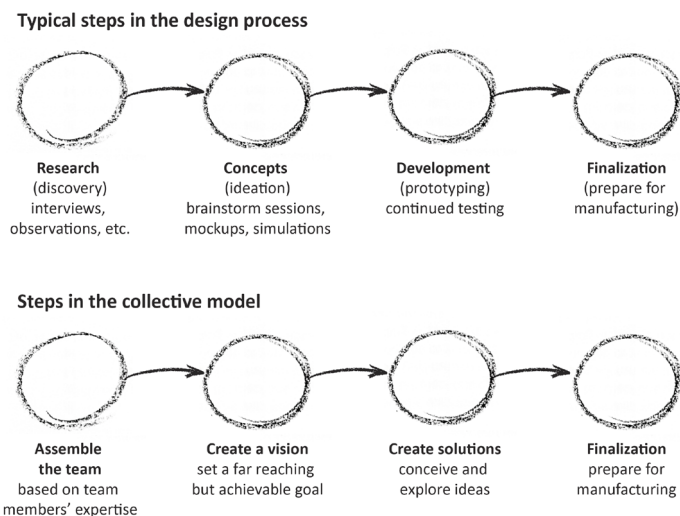
A collective offers an alternative to that situation. It's an idea promising to free designers' time, allowing more opportunities to conduct independent research, and to ultimately boost our knowledge and expertise in design (Figure 2).

Unlike a traditional design agency, a collective is not a fixed group of people, it's a network. The network is composed of experts in design and related professions, people passionate about their individual areas of expertise. Teams are assembled from the network as appropriate for the project. Individuals are chosen, and identified at the outset (as opposed to enlisting a design department or agency without being informed who specifically will be on the team.)

The ready availability of video conferencing, maker spaces and other design services negate the need for elaborate (and expensive) studios. Projects are cost effective, since overhead costs are minimal, with higher level output. Members in the network also work independently, not exclusively within the collective. With low overhead, fees paid to the

individual design team members can be higher, a factor that allows team members to free their time to further pursue his or her area of interest.

The steps are different from that of a traditional phase-by-phase design process. To start, a team with considerable expertise and passion for their topic is carefully drawn from the collective's network (sometimes adding members to the network as appropriate). That team then creates a vision for the project, setting a far reaching but achievable goal. Solutions are conceived and explored. As a last step, the solutions are edited and finalized.



**Figure 2** While design processes may vary in their outline and terminology they typically follow the pattern shown here. The collective model differs somewhat, in that it begins by identifying and assembling the most appropriate team members for the project, experts in their field. Those team members then set a vision for the project, defining its goals.

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## 7. The need for applied and basic design research

Design-led innovation has become a frontier for many companies. As they realize the potential of design, many are investing heavily, establishing in-house design and innovation centers, customer experience departments, and executive-level positions in design and innovation. In addition to being financially rewarding, design-led innovation promises to improve our lives. To fulfill that promise it's imperative that we know more about design. To do that we need to embark on research undertaken at the applied and basic levels.

Design can be tremendously impactful, but realizing its power requires that we understand people, not things. We need to embrace design's past, but also be willing to leave that past behind. Changing design from a focus on things to a focus on people entails a significant change in culture for the profession. And while the beginnings of that change are underway, we have a long way to go.

To advance the design profession we not only need to conduct design research, we need to



disseminate the knowledge gained. Journal articles can be effective, but can have limited circulation, which means the impact can be less than desired. It's not enough to make design research studies available to the profession – we need to make designers want to acquire the knowledge that results. In a process-based profession, there may be no incentive to do so – design activities are routine. But in knowledge-based profession, which can be more lucrative and have more impact on the world, compiling and sharing information becomes crucial. The ability of the profession to forego its legacy and devote itself to the latter approach, gaining a more complete understanding of design's potential, will determine the future of design.

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