

ALA CENTER FOR THE FUTURE OF LIBRARIES

DESIGN THINKING

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FOREWORD

WHAT IF OUR DISCIPLINE MADE THE SHIFT FROM A SCIENCE approach (organizing our professional knowledge in the form of testable explanations and predictions about the world) toward a design approach (identifying problems and addressing them with human-centered solutions)? It is a subtle shift, but in many ways it is reflected in the ways that more and more of our organizations are moving, engaging with their communities, testing solutions, involving users in the evaluation of those solutions, and readapting to the greatest purpose and outcome for the information needed.

For the past several years, Dr. Rachel Ivy Clarke has been at the forefront of reimagining a library profession focused on design. Her work has shown how library leaders, past and present, have leveraged the tools of design. She has advocated for a more deliberate use of design as critical to advancing the profession, especially at a time when the artificial barriers and hierarchies between our institutions and communities are vanishing. In *Design Thinking*, Clarke succinctly demonstrates why libraries' futures should be both curious about and involved with the world's fascination with design.

Fighting off the idea that *design thinking* is just the latest buzz word in startup culture or education, Clarke grounds her approach in a recognition that design thinking is a way and process of thinking that has

been used throughout history, both in and out of libraries, as part of society's and culture's evolution. What has changed since the 1960s and has become more apparent in the last decade is the formalization of and focus on design thinking as a process that can be practiced, applied, and adapted across sectors. Through this progression, design thinking has become a popular tool for thinking and doing that is oriented toward human-centered problem solving. As Clarke summarizes, this process inevitably includes some forms of empathetic discovery, problem definition, idea generation, creation, and then evaluation, which can cycle problem solvers back into any one of the previous steps.

How does this process translate into librarianship? Here again, in “Design Thinking from the Field,” Clarke makes the case that our profession has evolved because library staff—intentionally or instinctively—leveraged a process like design thinking to better meet the needs of communities. From the creation of *Poole's Index* in the mid-1800s, to the introduction of the book wagon and modern outreach services in the early 1900s, to the creation and popularization of “tough topics” handouts in just this past decade, library workers have designed solutions for information problems. As design thinking has been formalized and entered the mainstream, more libraries have integrated the process into their designs of physical spaces, signage, and wayfinding; their outreach to specific populations; and even their improvements of the library catalog.

How do we move from the occasional integration of design to realizing more intentional roles as information and library designers? In “For the Future,” Clarke encourages readers to pursue three paths—understanding and applying elements from the larger context of design, moving from human-centered to values-centered design, and including design explicitly in library education and in workplace cultures. She

encourages libraries to go further with design, integrating critique and reflection as tools to maintain our responsibility to the communities that we serve. Looking at our profession (distinct from a trade or industry), Clarke recognizes that library design cannot simply be responsive to the passing popular wants of our communities—it must embrace our more timeless commitments to values. By bringing broader elements of design and making into our professional values, we make design more of our own. That acknowledgement and ownership of design will be solidified by integrating design principles into educational preparation for professionals and purposeful changes to our organizations (libraries, systems, agencies, and associations) to build solutions for the problems we all face.

Design thinking echoes many of the movements happening in libraries. And while it is a loaded term for some people, design thinking, as Clarke presents it here, is an approach that we can all appreciate and learn from.



UNDERSTANDING DESIGN THINKING

THE PHRASE *DESIGN THINKING* MAY SEEM LIKE A new buzzword that's all the rage in our current world. But despite recent popular applications, design thinking is not a new concept: it is a way of thinking as old as humans themselves. For as long as human beings have been making things, they have been designing. Everything from the earliest stone axes to today's iPhones are products of design; that is, a process of creation with the intent of solving problems.

Those who only see the end results of this process—the axe or the iPhone—may take these acts of creation for granted. Since we don't often see the work that goes into designing these products, we may think the design process is simple, easy, or is even a magical feat that only people born with certain talents can pull off. But just because we don't see the work of designing doesn't mean it's not there. All skilled professionals make their work look easy, from a basketball player gracefully sinking a basket to an actor seamlessly transitioning into an entirely different character. Even librarians make professional services like database-searching and

readers' advisory seem like magic to people not trained in those skills. Design also requires the same amount of hard work, training, and practice to achieve a level of proficiency where the results appear magical.

Although this kind of design work has been occurring throughout human history, it is only in the second half of the twentieth century that scholars have looked at *how* this “magical” work occurs—the methods, processes, and perspectives that designers undertake to create products. It is out of this movement that the phrase *design thinking* emerged.

A BRIEF HISTORY

The phrase *design thinking* originated in the 1960s. Herbert Simon first proposed that design constitutes a unique way of thinking that is different from traditional scientific ways of thinking,¹ but L. Bruce Archer is generally recognized as the first person to use the phrase *design thinking* to describe this alternative mindset.² Archer and numerous other researchers and theorists, including Bryan Lawson,³ Peter G. Rowe,⁴ and Nigel Cross,⁵ spent a great deal of time studying designers across various settings—architecture, fashion design, graphic design, engineering, software development, and more—to understand both the thought processes and actions that underlie design work. Thus “design thinking” refers equally to what designers are *thinking* while they work in addition to what they are *doing* while they work. Many of these scholars were

1. Herbert Simon, *The Sciences of the Artificial* (Cambridge, MA: MIT Press, 1969).

2. L. Bruce Archer, *Systematic Method for Designers* (Council of Industrial Design, H.M.S.O., 1965).

3. Bryan Lawson, *How Designers Think: The Design Process Demystified* (London: Architectural, 1980).

4. Peter G. Rowe, *Design Thinking* (Cambridge, MA: MIT Press, 1987).

5. Nigel Cross, “Designerly Ways of Knowing,” *Design Studies* 3, no. 4 (1982): 221–27; Nigel Cross, *Design Thinking: Understanding How Designers Think and Work* (Oxford: Berg, 2011).

especially interested in understanding not just how designers create, but how they create good, innovative designs. Again and again, they found that designers work—and think about their work—in unique ways.

As with most jobs, working designers engage in this creative mindset and process automatically—design thinking is not something they consider while they’re working, it’s just what they do. But the scholarship that surfaced the concept of design thinking has enabled designers to become more intentional about their design processes, and to purposefully apply elements of designerly ways of working and thinking. One famous example is IDEO. Founded in 1991, IDEO began as a traditional design firm focused on designing consumer products like toothbrushes and chairs.⁶ One thing that set IDEO apart from other design firms, however, was its intentional focus on the process of design: what were designers doing and why? This led to new mindsets, like the idea that users’ reactions to design products could never be predicted, no matter how much user research the designers had conducted; and it also led to new processes, like using rapid, disposable prototypes to test and modify ideas quickly in response to user feedback. IDEO demonstrated its new approach by designing a new grocery market shopping cart in a 1999 episode of *Nightline*. This exposed a whole new non-design audience to the principles and processes of design thinking. David Kelley, one of IDEO’s founders, found it challenging to explain this new design approach to people, so he drew on the phrase *design thinking* to explain it.⁷ Although the phrase already existed, it is arguably Kelley’s use of the term that brought the term into popular culture.

6. Tim Brown and Jocelyn Wyatt, “Design Thinking for Social Innovation,” *Stanford Social Innovation Review*, Winter 2010, https://ssir.org/articles/entry/design_thinking_for_social_innovation.

7. Tim Brown, *Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation* (New York: Harper Business, 2009).

Design thinking has gone on to be used in a variety of settings outside of traditional design work. By 2001, IDEO was increasingly engaging in projects that were outside the scope of traditional product design. Instead of designing more ergonomic chairs or more efficient shopping carts, IDEO found itself tackling less tangible outcomes, such as restructuring the organization of a health care foundation, helping a 100-year-old manufacturing company better understand its clients, and creating alternative school learning environments beyond traditional classrooms. This type of work took IDEO from designing consumer products to “designing consumer experiences”⁸ and demonstrated that design products extend beyond tangible, physical things. Other organizations have recognized this shift in design from a focus on the looks and usability of physical products to intangible experiences. Businesses such as Proctor and Gamble, Kaiser Permanente, and Costco have applied design thinking to their strategic planning, business models, and organizational structures and processes. Prominent books like Tim Brown and Barry Katz’s *Change by Design: How Design Thinking Transforms Organizations and Inspires Innovation* (2009) and Roger Martin’s *The Design of Business: Why Design Thinking Is the Next Competitive Advantage* (2009) have argued for the application of design thinking in corporate environments, especially in management and leadership. Those organizations that have embraced design thinking and methods have been shown to do better financially than their less design-conscious competitors. In addition to corporations, design thinking is increasingly being applied to work toward the greater social good in settings like health care, charitable foundations, social innovation start-ups, national governments, and elementary schools. Education is needed to

8. Brown and Wyatt, “Design Thinking for Social Innovation.”

support these wider applications of design thinking, and this need has inspired programs like Stanford University's Hasso Plattner Institute of Design. Founded by David Kelley and affectionately referred to as the "d.school," the Plattner Institute helped to popularize some of IDEO's design thinking approaches. Other schools and universities are now including design thinking as a pedagogical focus, either through formal degree programs in design thinking, such as the one at Radford University, or by pervasive application throughout the curriculum, such as at Smith College. In the contemporary world, design thinking no longer denotes just the aesthetics or usability of a physical product—it's a worldwide movement rooted in a creative mindset.

THE DESIGN THINKING MINDSET

The phrase *design thinking* is used to describe two different but overlapping concepts:

1. A unique way of looking at the world, and
2. A process of activities and methods that reflect and support that worldview.

The worldview or mindset helps you carry out the process, and the process helps people discover and harness the mindset. Let's talk first about the overarching themes of the design thinking mindset, and then dive into how they are applied in the design thinking process.

Design thinking is a unique way of thinking about the world. The fundamental difference between design thinking and other mindsets is its focus on *problem solving*. It might seem at first that other worldviews also focus on problem solving. For instance, it might seem that scientific ways of thinking, such as the scientific method, target problem solving:

for example, how scientific discoveries can help solve the problem of air pollution. However, science is focused on observing and understanding with the intent of making predictions about the natural world. Science helps us understand that we have a problem with air pollution and that the problem is likely to get worse over time. Such scientific findings can contribute to problem solving, perhaps by inspiring smog regulations for vehicles. But this problem solving is a secondary outcome when compared to the attainment of predictive knowledge. Design, on the other hand, intentionally targets problem solving. The mindset of design thinking always has problem solving at its heart.

What kinds of problems does design thinking solve? Design thinking can be used to address any problem that needs a creative solution. Although traditional applications of design may have focused on aesthetic or usability problems, design is not limited to solving problems about how to make a product more visually appealing or a service easier to navigate. In fact, design is especially well-suited to solving what are known as “wicked problems”; these are unique, interconnected, and poorly defined problems that cannot be definitively described. Horst Rittel and Melvin Webber, the generators of the idea of wicked problems, suggest ten characteristics that identify a problem as “wicked” (see figure 1).

Reducing air pollution is a great example of a wicked problem. Although the term *air pollution* may have a specific connotation, it’s actually not one single problem, since air pollution may stem from a variety of sources. There are various ways of addressing the problem of air pollution, ranging from government-imposed regulations, to consumer education, to the development of new technologies that support low- or non-emissions vehicles. None of these proposed solutions are correct or incorrect, but some may be better or worse depending on the context in which they are set. There is no complete, articulated set of steps that will always work to solve the problem of air pollution, and

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FIGURE 1

Rittel and Webber's ten characteristics of wicked problems (1973)

1	There is no definitive problem or known solution.
2	The problem has no stopping rule.
3	There are no true or false solutions to the problem, only good or bad solutions.
4	No scientific test exists for a solution.
5	Each solution is a "one shot" effort (that is, every solution attempt changes the problem).
6	There is no complete list of acceptable moves.
7	The problem is unique.
8	The solution is a symptom of another problem.
9	There is more than one explanation or framing for the problem.
10	The designer is liable for the actions they take in attempting a solution.

any step we take to work towards a solution will add new elements and characteristics that change the problem and reveal additional problems. Because these "wicked problems" cannot be solved through traditional scientific means and may only have better or worse resolutions rather than a single "correct" answer, creative approaches like design are necessary. Design is often relied upon to tackle wicked problems that have failed to be solved via more traditional research approaches.

If wicked problems are so hard to define and articulate, how can we even begin to approach them? In addition to problem solving, design also relies on *problem finding* and *problem framing*. First, we have to understand what the problem really is. Is the problem really air pollution, or is air pollution merely a symptom of another problem? Designers use investigative research and other methods and techniques to identify the

real problem that needs to be addressed. Many designers claim that it is just as important—if not more important—to identify and define a problem than it is to solve it, since any suggested solution stems from the definition of the problem. Designers also define problems by adding boundaries and constraints. In the air pollution example, there might be set boundaries of scope, such as geographic region. Or there might be constraints in terms of resources like knowledge or money. Designers also reframe problems—that is, they look at them from another angle or point of view. Research about how designers work found that the ability to reframe or refit problems was common across fields like industrial product design, software and technology development, and architecture. Reframing can be as simple as looking at air pollution from an individual perspective (i.e., what a single person can do in their daily life to help reduce air pollution) rather than an organizational perspective.

If the goal of design thinking is to solve problems, then the outcome is the *creation* of some kind of solution. Often we assume that these creations will be physical products like chairs, toothbrushes, smartphones, and buildings. But design is not just about physical products. Creations can also be digital, like websites, apps, or software; or even intangible intellectual constructs like curricula, policies, procedures, and processes. Experiences are also designed to address problems, which is why we find so much overlap between design thinking and the user experience (UX) field. Anything created by people to solve problems is design.

Even though design can create intangible solutions, these are almost always represented and communicated in some tangible form. Policies are recorded in documents; user experiences may be described with photographs, maps, signage, videos, and so on. Making ideas tangible and concrete helps the creative process and facilitates communication.⁹

9. Hasso Plattner, Christoph Meinel, and Larry Leifer, *Design Thinking: Understand, Improve, Apply* (Heidelberg: Springer, 2011).