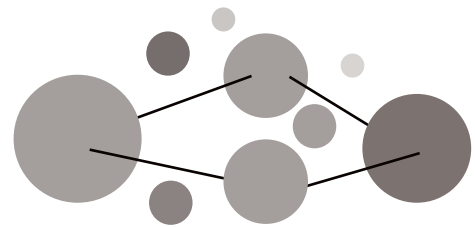


Design Theory

David Huber

“DESIGN COULD BE THE CRUCIAL ANVIL ON WHICH THE HUMAN ENVIRONMENT, IN ALL ITS DETAIL, IS SHAPED AND CONSTRUCTED FOR THE BETTERMENT AND DELIGHT OF ALL.” - John Heskett



What is design?

Such a simple question can lead an individual on a lifetime's journey to fully answer it. It is a question worth exploring because as humans, it is part of our unique abilities to create our world and realities. As the late John Heskett, a British design philosopher and historian said, “Design is the human capacity to shape and make our environments in ways that satisfy our needs and give meaning to our lives.”

More simply, design philosopher Donald Schön said that, “in the very broadest sense, designing is the process by which things are made.” (Schön)

With such profound and far reaching implications, it is perplexing why design has not been studied more closely. To recognize its distinction from other traditions, such as Art and Science, Erik Stolterman and Harold Nelson define design in their book *The Design Way*, as not only its own tradition, but “the first tradition.”

Design has often misunderstood as a midpoint between art and science. However, design is its own discipline, with “its own founding postulates and axioms, with its own approach to learning and inquiry” distinct from art and science. (Stolterman)

Design is often seen as problem solving. This too proves problematic and an insufficient definition as design does more than prevent or resolve problems. (Stolterman, Hatchuel)

Herbert Simon strived to define design and his view was nearly that of problem solving. However, for his predecessor, Donald Schön, “the model of design as rational decision seems to me to be incomplete” (Schön).

Simon saw design as a form of “bounded rationality.” The choosing of decisions amongst a group of reasonable options. However, Schön saw the generation of options as an integral part of design. This too was the perspective of Armand Hatchuel who saw design as a form of “expandable rationality.”

Much of design's grandeur lies in ability to create pleasurable realities that are neither necessary nor problem preventative, yet foster a reality in which many of us would not want to live without.

“QUESTIONS OF WHETHER DESIGN IS NECESSARY OR AFFORDABLE ARE QUITE BESIDE THE POINT: DESIGN IS INEVITABLE” -Douglas Martin

Foundations of design

Observing what makes design unique and distinct from other disciplines, Stolterman and Nelson distinguish four foundations:

1. Particulars
2. Service
3. Systemics
4. Wholeness

While science deals with that which is true and general, “we do not accept as a scientific truth a statement that is sometimes true and sometimes not,” (Nelson & Stolterman) design deals with that which is real and particular. An office chair for a startup, for example, is a real object made for a particular case. Every design can be seen in this way, as an “ultimate particular.”

Design is also inherently service oriented with clients, stakeholders, and users. While those who are being served by design do not dictate the design, they validate it. “A designer, therefore, ‘makes meaning’ for a client by empathetically drawing out his or her performed desires” (Nelson & Stolterman).

To do this well, adept designers are systemati thinkers. “Systemics is the fundamental basis for what can be seen as design logic and reasoning” (Nelson & Stolterman). All designs fit within an existing context and the extent to which designers can plan accordingly will influence the success and sustainability of their design.

The final foundation of design is more aesthetic in nature and manifested as an emergent whole. Just as something as complex as someone’s personality exists as a unified expression of an individual, so too must designs exist in a unified and holistic fashion.

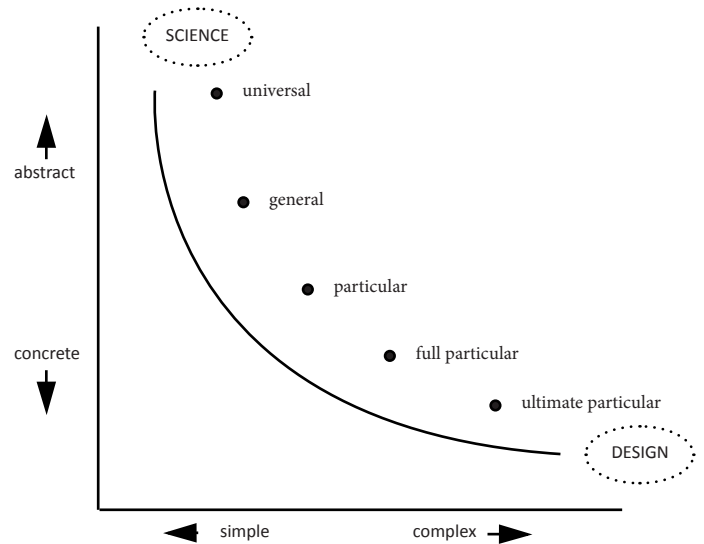


Figure 1.2 *The Design Way*

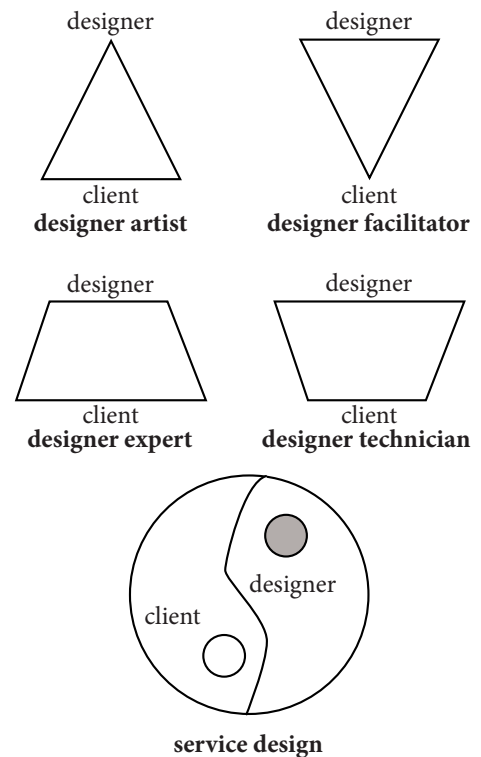


Figure 2.1 *The Design Way*



Who is a designer?

“EVERYBODY DESIGN SOMETIMES; NOBODY DESIGNS ALWAYS.” - Horst Rittel

If design can be defined as broadly as the way in which we create that-which-does-not-yet-exist, then how can we define what it means to be a designer or engage in a design process?

While it is true that nearly everyone has the capacity to do design, not everyone is a designer. Just as anyone can push keys and make sound on a piano, few hold the distinction of being a “pianist.”

“Men have no right to profess themselves architects hastily” said Vitruvius over 2,000 years ago. This leads us to a subjective conjecture. Professions often include certifications, such as Doctors, Lawyers, and even Architects need to pass certain exams to be able to practice. Design at large, and interaction design in particular, lack such distinctions and qualifications.

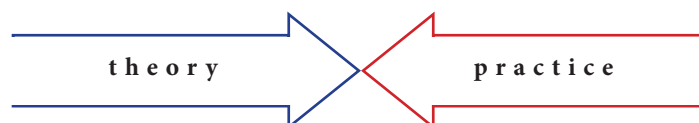
If design is simply our ability to create and shape our reality, then every person should be trained, experienced, and empowered with the ability to design. In this way, I hope to see more people identify as designers. To that end, propagating design is missing from its pedagogy. This might be in the context of what Nelson and Stolterman call “design culture.” Our design culture should strive to include that of knowledge transfer and inclusion.

However, with that being said, there are varying degrees of design inclinations, and not everyone should become professional designers. Everyone should have the opportunity to be familiar with and experienced in design methodologies especially as they pertain to changing their personal lives or proximate realities, but not everyone should engage in professional design projects that have extensive impact, such as public transit or academia.

“In design, character counts. A person’s character is shaped by his or her *daemon* - the essence of the “soul” with which one is born” (Nelson & Stolterman)

Those who sketch out their ideas, iterate on concepts, and strive to bring change to our world will always be seen as designers. Designers are an almost paradoxical balance of optimism, idealism, pragmatism, and perseverance.

Designers are those comfortable with the unknown, asking the right questions, and learning through doing.



How designers operate

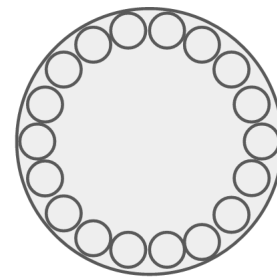
To understand design, it's helpful to study the process of designing. Part of the reason problem solving does not fully describe design is that in practice, designers are constantly fluctuating between solution conjectures, and problem framing.

Donald Schön termed this “figural complexity” and is the process designers go through when recognizing the parts and the whole simultaneously. Like a painter, musician, or film maker, designers strive for wholeness in their designs. Integrity in the way the parts compliment and are cohesive as a whole.

In *The Nature of Design Practice*, Erik Stolterman says successful designers can handle complex situations using a designerly way of thinking and acting. The notion of design complexity is infinite and limitless and something designers must always grapple with. (Stolterman) This requires designers to be comfortable with risk and recognize that there is no guarantor of design. This is unlike science, where things are true or false. Designers are forced to use their best judgement to make decisions.

A designer’s ability to make good design judgements is a reflection of their design knowledge and experience. Experienced designers are able to move quickly from analysis to action, often making a decision that might appear as cursory to an outsider, but is based on years of subtle intuition honing and refinement. (Cross)

At some point, the designer makes up his mind, “how this happens is beyond reasoning” said Horst Rittel in *The Reasoning of Designers*. Recognizing this unique facet of design endows designers with a sense of “epistemic freedom” (Rittel). Epistemology is the study of how we know what we know and designers have the liberty to deviate from reason and logic.



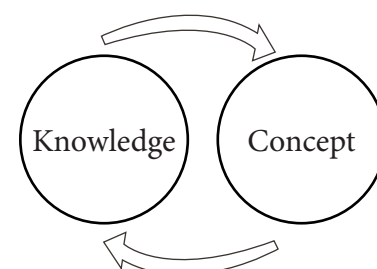
figural complexity

Nigel Cross studied expertise in design and found that more experienced designers took action over analysis. Expert designers used more generative reasoning and less deductive reasoning to make quicker decisions. Expert designers also move rapidly to early solution conjectures, and use these conjectures as a way of exploring and defining problem-and-solution together. (Cross)

This is similar to what Donald Schön refers to as “figural complexity,” where addition or subtraction of one element changes the functional meanings of other elements with the result that the proposal must be considered different as a whole.

For example, to add “finishing touches” to a design, might challenge the foundational elements of the design itself and send designers back to the drawing board.

A similar view of design is C-K Theory, developed by Armand Hatchuel. This includes an iterative process of bouncing between the “Concept space” and “Knowledge space” as these two divisions represent what we know and how that influences what we are trying to create.



In *Theory Construction in Design Research*, Ken Friedman reasons that designers must know why things work and why. He defines design as:

1. a process
2. goal oriented
3. solving problems, meeting needs, improving situations, or creating something new or useful

Friedman demonstrates that designers need a holistic understanding of the problem space they're working in. He cites the common reasons for design failure as a "lack of method and absence of systematic and comprehensive understanding." (Friedman) This harkens back to the foundations of design.

Designers work to bring multiple elements together in a holistic way, creating unity in a new emergent whole. Elliot Eisner said, "the bringing together of different elements into a whole involves artistry." (Eisner) Design has been called an art and a science and requires a keen eye for detail and composition, what Elliot Eisner would call: "Connoisseurship".

"If connoisseurship is the art of appreciation, criticism is the art of disclosure." - Elliot Eisner

Critique often has a negative connotation in our society. However, Eliot Eisner, innovative educator and philosopher, states that, "If connoisseurship is the art of appreciation, criticism is the art of disclosure."

Therefore, designers engage in not only the act of creation, but also articulating critique, helping others to see subtle discernments.

Designers are collaborators. The concept of a lone genius is often a misleading myth. The extent to which a designer can orchestrate the minds of many will exponentially expand the success of their work.

Whether it's usability testing, or participatory design, the more we can seek out the best feedback and engagement from others in the projects we're committed to, the better work we create.

These feedback loops are critical for designers and learners at large. Whether it's double loop learning or reflection in action (Schön), the best designers are constantly challenging and improving not only their current designs, but also their practice.

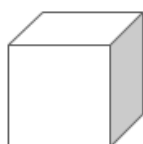
It can be hard to swallow, but in design, there is no given process, no given problem, and no given solution. Each situation is distinct and solicits a fittingly unique approach. Good designers never accept a brief at face value. They dig deeper into the underlying frameworks, structures, and desires. (Stolerman)

As we learned in class, we should continue to design the design of our designs...

Sketching



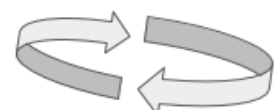
Prototyping



Testing



Iterating



My Design Philosophy

“IT SEEMS FAIRLY COMMONPLACE THAT THE WAY DESIGNERS CONCEIVE OF THE NATURE AND PURPOSE OF DESIGN WILL AFFECT THEIR PRACTICE.” -Per Galle

It can be reassuring to know that designers are unique. That each design process will be reflection of those involved and the culmination of their life experiences. This can also be daunting.

The second day of Design Theory class, we were all instructed to collaborate in drawing a face with someone sitting next to us then evaluate our styles: collaborative, fun, spontaneous etc. Then, to select opposite adjectives and embrace the personality to do the exercise again. Dramatically different results.

This simple exercise demonstrates that our designs will be a reflection of not only who we are, but what mood we're in. Therefore for me, it's important to cultivate a wise and compassionate mind in order to create meaningful designs.

Values in design

My desires are to eventually be a designer that is recognized and called upon to engage in social, political, and environmental paradigms. Inherent in this desire, are the values of justice, equality, and sustainability.

Underexplored

I think what is missing from *The Design Way* is a chapter on visual literacy in the Fundamentals Section. Designers need to be visually literate and connoisseurs of balance, perspective, proportion, emphasis, color, texture, motion, tone, shape, visual weight, and typography.

Democracy

As stated earlier, because design is a unique and fundamental capacity to shape our reality, it should be broadly distributed, practiced, and understood. Many philosophers in the field have also drawn a connection between politics as a design activity. In addition to being engaged with by many, design should also be seen as a means for political change.

Leadership

Designers are often visionaries. Design is about seeing and refining a path of possibility- creating preferred realities. In this way, design and leadership can be seen as the same thing. Great designers should also see themselves as leaders. (Stolterman)

Ethics

Design is powerful. Weaponry, prison panopticons, planned obsolescence are all examples of what could be seen as deadly, inhumane, or unsustainable manifestations of design. As those who are creating the future realities, designers in particular need to be adept at assessing unintended negative consequences of their work.

Balance

Designers should strive to balance the ideal, real and true in their designs.

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John Dewey

Born in Vermont in 1859, became a prolific philosopher on a surprisingly broad range of topics including education, psychology, pragmatism, aesthetics, epistemology, humanism, and social and political activism. While being an early influence on the design community, little is written by him directly on design.



Donal Schon

Born in Boston in 1930, went to Yale and then did Master and Doctorate at Harvard, focusing on theories of inquiry. Long time student of John Dewey. Proficient and avid practitioner of piano and clarinet.



Ken Friedman

Born in Connecticut in 1948, has done research in the philosophy of science, the philosophy of design, and doctoral education in design. Serves on several boards and advisories.



John Heskett

Born in England in 1937 served as Chair Professor of Design at the School of Design, Hong Kong Polytechnic University, after serving fifteen years as Professor of Design at the Institute of Design, Illinois Institute of Technology in Chicago.



Armand Hatchuel

French designer educator and Professor at Mines ParisTech. Research areas in Design Theory and models for Design science.



Horst Rittel

Born in Berlin, 1930 - 1990, a design theorist and university professor. He is best known for coining the term wicked problem., but his influence on design theory and practice was much larger. From 1958 to 1963, he was Professor of Design Methodology at the Ulm School of Design in Germany



Elliot Eisner

Born in Chicago, 1933 - 2014, was a professor of Art and Education at the Stanford Graduate School of Education. He was active in several fields including arts education, curriculum reform, and qualitative research. Proponent of arts education for youth.



Erik Stolterman

Professor of Informatics and Chair of Informatics at the School of Informatics and Computing, Indiana University, Bloomington. He is also professor at the Institute of Design at Umeå University. Stolterman is co-Editor-in-Chief for the ACM Interactions magazine. Stolterman's main work is within interaction design, philosophy and theory of design, information technology and society, information systems design, and philosophy of technology.

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