Introduction to Design Thinking

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Motivation and a little bit of history

Meaning of Design

According to Longman dictionary:

Design [process of planning]: the art or process of making a drawing of something to show **how you will make it** or **what it will look like**.

Ref: https://goo.gl/tmaJMS

Meaning of Design cont.

Design is how we communicate what an object does, or its function, through its shape or form.

Ref: https://goo.gl/bnuX8t

Meaning of Design cont.

Design is also the process we undertake to solve a problem.

Ref: https://goo.gl/bnuX8t

Meaning of Design cont.

- Take a baseball mitt. Study it for a bit, and it becomes obvious that your hand goes inside. That's form. The minute you have the mitt on, you understand it makes it easier to catch a baseball. That's function.

- It hurts to catch a baseball with your bare hand. A mitt is the solution to that problem.

Ref: https://goo.gl/bnuX8t

Design Thinking provides a process for design

History

- 1960s efforts to scientize design

- Horst Rittel's paper about wicked problems in mid 1960s

- Computer scientist and Nobel Prize laureate Herbert A. Simon was the first to mention design as a science or way of thinking in his 1969 book, Sciences of the Artificial

- In 1982, Nigel Cross discussed the nature of designers problem-solving in his seminal paper Designerly ways of knowing (not to be confused with his later series of articles and papers similarly titled "Designerly ways of knowing", published in the 2000s).

History cont.

- Peter Rowe, then Director of Urban Design Programs at Harvard, published his book Design Thinking in 1987, which focuses on the way the architectural designer approaches his task through the lens of the inquiry.

- In 1991 IDEO was formed and showcased its design process modelled on the work developed at the Stanford Design School.

- In 1992, the Head of Design at Carnegie Mellon University, Richard Buchanan, published his article, Wicked Problems in Design Thinking, which discussed the origins of Design Thinking. In the article, he discussed how the sciences developed over time from the Renaissance and formalised in the specialisations and processes they used, becoming more and more cut off from each other.

- Design Thinking is taught at the Stanford School of Design, or the d.school.

What kind of problems Design Thinking can solve?

As the name implies design problems or as Rittel called them: "wicked problems" (complex-multi dimensional problems in any field)

What is a wicked problem?

In his paper "Dilemmas in a general theory of planning" Rittel mentions 10 properties for problems that he calls wicked problems (as opposed to tame or benign problems).

Ref: https://goo.gl/PtcP13

What is a wicked problem? Cont.

1) There is no definitive formulation of a wicked problem
2) Wicked problems have no stopping rule
3) Solutions to wicked problems are not true-or-false, but good-or-bad
4) There is no immediate and no ultimate test of a solution to a wicked problem

What is a wicked problem? Cont.

5) Every solution to a wicked problem is a "one-shot operation"; because there is no opportunity to learn by trial-and-error, every attempt counts significantly

6) Wicked problems do not have an enumerable (or an exhaustively describable) set of potential solutions, nor is there a well-described set of permissible operations that may be incorporated into the plan

7) Every wicked problem is essentially unique

What is a wicked problem? Cont.

8) Every wicked problem can be considered to be a symptom of another problem

9) The existence of a discrepancy representing a wicked problem can be explained in numerous ways. The choice of explanation determines the nature of the problem's resolution

10) The planner has no right to be wrong

How Design Thinking works?

Design Thinking process

- Design Thinking has a (non-linear) process

- There are many different "process breakdowns" of Design Thinking

- The number of steps in these breakdowns varies between 3 to 7 steps

- Notice that despite differences the essence and core of all of these process breakdowns is the same

Core steps of all Design Thinking process breakdowns

- Empathy

- Defining the perceived problem

- It encourages collaborative, multi-disciplinary teamwork to leverage the skills, personalities and thinking styles of many in order to solve multifaceted problems.

- It initially employs divergent styles of thinking to explore as many possibilities, deferring judgment and creating an open ideations space to allow for the maximum number of ideas and points of view to surface.

- It later employs convergent styles of thinking to isolate potential solution streams, combining and refining insights and more mature ideas, which pave a path forward.

Core steps of all Design Thinking process breakdowns cont.

- It engages in early exploration of selected ideas, rapidly modeling potential solutions to encourage learning while doing, and allow for gaining additional insight into the viability of solutions before too much time or money has been spent

- Tests the prototypes which survive the processes further to remove any potential issues.

- Iterates through the various stages, revisiting empathetic frames of mind and then redefining the challenge as new knowledge and insight is gained along the way.

- It starts off chaotic and cloudy steamrolling towards points of clarity until a desirable, feasible and viable solution emerges.

Some popular Design Thinking frameworks

- Heart Head and Hand: This means the process is based on vision, need, emotion and feeling to begin with, continuing on to the cognitive processing for ideation and evaluation and then diving into practical creation by hand

- Deep-Dive: IDEO's first DT process. Consisting of understand, observe, visualize, evaluate and implement

- D.School's 5 stage process: Empathize, define, ideate, prototype and test

- IDEO's Design Thinking process: Inspire, ideate and implement

- …

D.Schools 5 stage non-linear process
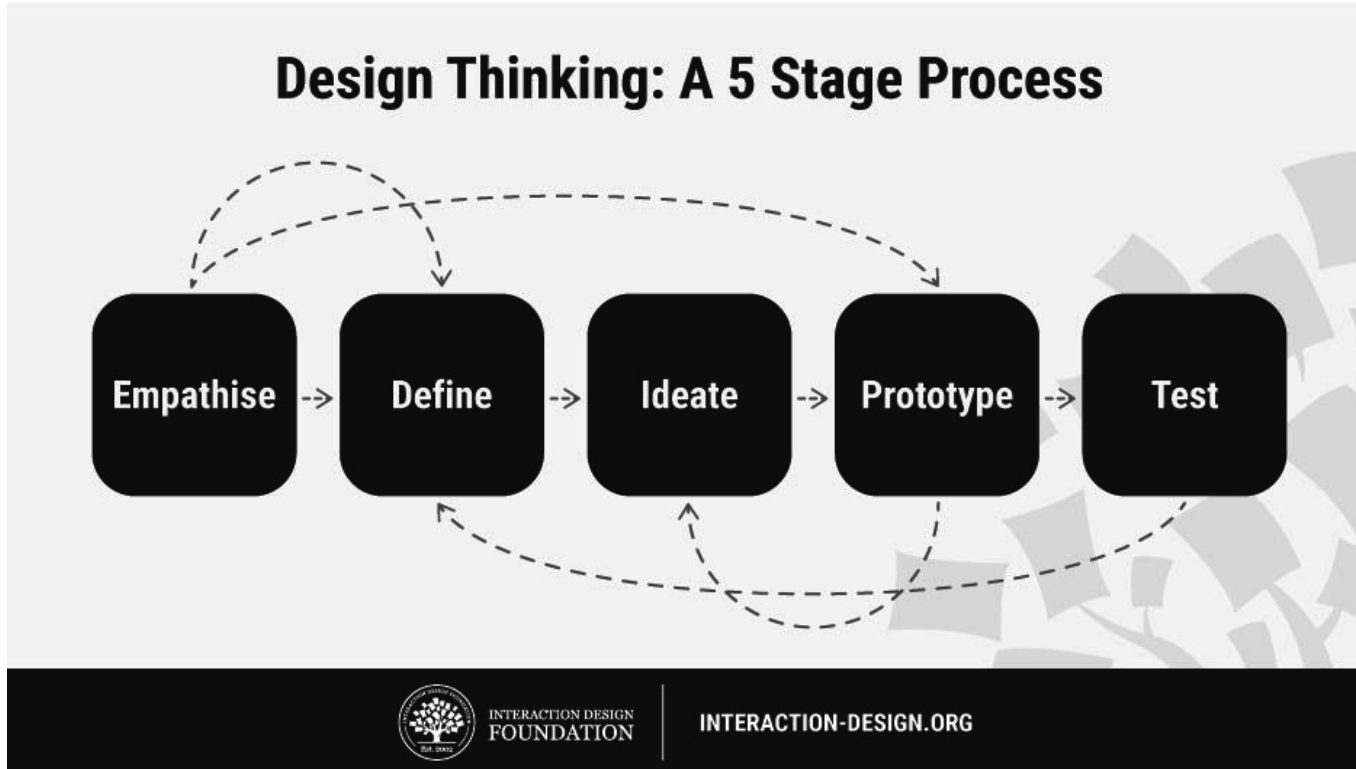
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Empathize

There are many different methods for empathizing with users:

- Body storming
- Interviews
- Ask how, what, why
- Assume a beginners mindset
- Photo and video-based user studies
- Photo and video-based journal studies
- Create journey maps
- ...

Define

Empathize phase results in tons of data. In this phase we try to make sense of them:

- Affinity Diagrams and Space Saturate and Group
- Empathy Map
- Personas
- Stories
- Define Your Point Of View (POV)
- Why-How Laddering
- How might we questions

Define cont.

Ideate

After definition of our problem we need to provide some ideas for solving it. In general we have two different types of ideation methods:

- Methods to come by new ideas (diverging)
- Methods to select some of the ideas (converging)

Ideate

Methods of ideation:

- Brainstorming
- Braindumping
- Brainwriting
- Brainwalk
- Worst possible idea
- Challenge assumptions
- Bodystorm
- Analogies
- SCAMPER
- …

Methods for selecting ideas:

- Four Categories Method
- Bingo Selection
- Idea Affinity Diagrams
- Now Wow How Matrix
- Six Thinking Hats
- …

Prototype

- Paper prototypes
- Physical prototypes
- LEGO
- User-Driven Prototypes
- Role-Playing
- Wizard of Oz Prototypes
- …

Test

- Live prototypes
- Pilots
- Testing with stakeholders and teammates
- ...

Conclusion

Design Thinking is an **iterative process** in which **we seek to understand the user**, **challenge assumptions**, and **redefine problems** in an attempt to **identify alternative strategies and solutions** that might not be instantly apparent with our initial level of understanding. At the same time, Design Thinking provides a **solution-based approach** to solving problems. It is a way of thinking and working as well as a collection of hands-on methods.

Ref: https://goo.gl/7oc3Sj