

The Design Process

Part 1: The Design Process

1) Definition

Design process may be defined as **a problem specific iterative method**, engaged by a particular group of design collaborators, to explore, understand and search for a resolution to a problematic situation, as defined by a set of understood values, needs and constraints.

Due to the complexity of most real world design problems today, each **design process is unique**, constantly evolving, iterative and a collaborative team effort. Each problematic situation must be tackled uniquely and a new design process devised relative to that specific problem. There is always an optimal way to tackle each problem, relative to its context, task, and goals to be achieved, and the particular design team's personality and consciousness. Any iterative design process is always structured and has a definite goal in mind: a solution. Remember any problematic situation has as many answers as there are designers and collaborators, all uniquely different and potentially good.

2) The Major steps in any Iterative Design Process

- | | | |
|--------|-----------------------|---|
| step 1 | Ideation | how to identify and clarify a real-world problem |
| step 2 | Visualization | how to see and generate lots of possible ideas and solutions |
| step 3 | Prototyping | how to test out our ideas and evaluate which are most viable |
| step 4 | Implementation | how to produce, present and implement tangible solutions to real-world problems |

3) The Iterative design process framework

"Fail quickly and often." IDEO mantra

question - solve - test - reflect - refine (repeat time-and-time again)

Since the design process is a constantly iterative process and not linear or an instant flash of brilliance, it will look like an ever growing spiral. (Think a growing snowball rolling down hill or a old conch seashell with its spiraling chambers)

"Who in the hell ever did anything great by getting it right the first time?"

When your trying to create designs for the future your going to make mistakes."
John Taylor, Lead designer for GM's Camero team

4) Respect the constraints

"Here is one of the few effective keys to any design problem—the ability of the designer to recognize as many of the constraints as possible—his willingness and enthusiasm for working within these constraints. Constraints of price, of size, of strength, of balance, of surface, of time, and so forth. Each problem has its own peculiar list."

Charles Eames, Design Q+A

As the world around us dynamically changes each day, so do the conditions surrounding any design problem (culture, politics, economics, society, technology, clients, personalities, etc).

5) DANGER - The fallacy of originality

Design is self-discipline, not about self-expression and dependent on originality

Most young designers want to be original. What one will learn in time is that all one needs to do is deeply engage the problems and originality will take care of itself. You will find that expressive plane after an immense amount of self-discipline.

The paradox of Japanese Zenga calligraphy is that what looks like utter freedom comes from decades of holding the brush in certain ways and making the same strokes over and over again. The enso is normally a circular single strong and quick stroke, symbolizing the all, the void, the moment of enlightenment, suggestion of emptiness and completion. The same is true for you as a designer. It is only after analyzing and investigating the generative phenomena and issues of the specific environment, needs and materials, over and over again, that powerful insights and expression finally arise. You will soon realize that as your power of self-discipline increases so will your ability to make whatever you want with that structure. (It's very hard to explain to students that this paradox is real). As I observe the diversity arising from the individual responses to the same question, I am convinced that creative thinking has a logic and evolution of its own. Once a problem has been defined, if the path is left open, then independent, progressive conceptual ordering takes place; it may be called invention. We can expect the most originality then, by asking the right questions, and leaving open the issue "how." Originality is not novelty, but a rigorous path followed as a disciplined thinking pattern, in response to a sufficiently engaging problem. There are no instant rewards, there are some problems that can lead to rewards quickly, abut in most cases they occur very slowly.

Design is self-discipline, and takes endless hours of dedicated hard work

"Genius is 1% inspiration, and 99% perspiration."

Thomas Edison

6) Common Design Process faults

Following your pre-conceptions verses solving the problem

Blindly devoted to your first creations (originality fallacy)

Lack of self-confidence

Unwillingness to trust the process

Unwilling to collaborate with your team members

7) Five dysfunctions of a Collaborative Design Team

1. Absence of trust
Emotional level
2. Fear of conflict
3. Lack of passionate commitment
4. Failure to embrace accountability
Peer to peer responsibility
Not just following the leader
5. Failure to pay attention to results

Ask yourself...

Are we really a team?

Are we ready to do the heavy lifting?

Part 2: Two iterative design process case studies:

IDEO

(22 min, www.ideo.com)

In 1999, Ted Koppel of *ABC Nightline* wanted to allow its viewers to see how design really happens, and approached IDEO to show the public how the design process works.

IDEO, "the world's most celebrated design firm," has designed over 3,000 new products. David Kelley, co-founder of IDEO with his brother Tom, firmly believes that "we all have a creative side, and it can flourish, if you spawn a culture to encourage it, one that embraces risks and wild ideas and tolerates the occasional failure." Their success depends on both what they do and how they do it.

IDEO's 5 step iterative design process

- 1) **Observation**

IDEO's multi-disciplinary design team (including cognitive psychologists, anthropologists, sociologists, etc) team up with the corporate clients to understand the problem. They get out and observe real people in real-life situations to find out what makes them tick. Ultimately, they come to understand the market, the client, the technology and perceived constraints of the problem (The constraints of time, cost, material, use, laws, culture, place, etc.)

2) **Brainstorming**

An intense, idea-generating session analyzing data gathered by observing people and real life situations. Strive to see old things in new ways, and see any task with fresh eyes. Each brainstorming session with its rapid production of original ideas, lasts for no more than an hour. (Example: the uses of a brick: single category verses lateral thinking in multiple categories)

The IDEO's rules of brainstorming are strict and are stenciled on their office walls:

Defer Judgment

Don't dismiss any ideas

Build on the Ideas of Others

No "buts," only "ands."

Encourage Wild Ideas

Embrace the most out-of-the-box notions because they can be the key to solutions.

Go for Quantity

Aim for as many new ideas as possible, 100 ideas in 60 minutes are good.

Be Visual

Draw and envision information

Stay focused on the Topic

Always keep the discussion on topic.

One conversation at a time

No interrupting, no dismissing, no disrespect.

3) **Rapid prototyping**

Always seek to develop new ways of seeing, understanding and communicating the work at hand. Great designers fail quickly and often. They quickly try new things, study them closely to learn from their shortcomings, and try again and again.

Mocking ups or working models helps everyone visualize possible solutions and speeds up the decision-making and innovation. When in doubt, mock up anything and everything. History demonstrates that it is impossible to generate a few good ideas without generating lots of bad ideas. Learn to "fail faster."

4) **Refining**

"What are we really trying to do? And Why?" At this stage IDEO carefully evaluates all the prototypes and narrows down the choices to a few possibilities. This is accomplished by: brainstorming, focus prototyping in a series of quick iterations to arrive at the optimal solution, engage the client and get agreement from all the stake holders. This is a phase filled with hard thinking and concentrated hard work. IDEO always goes far beyond the point where others stopped satisfied.

5) **Implementation**

Actually create, realize (build) and implement (sell) the new concept for commercialization.

Daniel Goldman, *Emotional Intelligence* (New York: Bantam, 2006)

Maya Lin , The Vietnam Memorial Competition (Maya Lin, 1981- 21 years old)

"Walking through this park-like area, the memorial appears as a rift in the earth, a long, polished, black stone wall, emerging from and receding into the earth. Approaching the memorial, the ground slopes gently downward and the low walls emerging on either side, growing out of the earth, extend and converge at a point below and ahead. Walking into this grassy site contained by the walls of the memorial we can barely make out the carved names upon the memorial's walls. These names, seemingly infinite in number, convey the sense of overwhelming numbers, while unifying these individuals into a whole.

The memorial is composed not as an unchanging monument, but as a moving composition to be understood as we move into and out of it. The passage itself is gradual; the descent to the origin slow, but it is at the origin that the memorial is to be fully understood. At the intersection of these walls, on the right side, is carved the date of the first death. It is followed by the names of those who died in the war, in chronological order. These names continue on this wall appearing to recede into the earth at the wall's end. The names resume on the left wall as the wall emerges from the earth, continuing back to the origin where the date of the last death is carved at the bottom of this wall. Thus the war's beginning and end meet; the war is 'complete,' coming full- circle, yet broken by the earth that bounds the angle's open side, and continued within the earth itself. As we turn to leave, we see these walls stretching into the distance, directing us to the Washington Monument, to the left, and the Lincoln Memorial, to the right, thus bringing the Vietnam Memorial into an historical context. We the living are brought to a concrete realization of these deaths.

Brought to a sharp awareness of such a loss, it is up to each individual to resolve or come to terms with this loss. For death, is in the end a personal and private matter, and the area contained with this memorial is a quiet place, meant for personal reflection and private reckoning. The black granite walls, each two hundred feet long, and ten feet below ground at their lowest point (gradually ascending toward ground level) effectively act as a sound barrier, yet are of such a height and length so as not to appear threatening or enclosing. The actual area is wide and shallow, allowing for a sense of privacy, and the sunlight from the memorial's southern exposure along with the grassy park surrounding and within its walls, contribute to the serenity of the area. Thus this memorial is for those who have died, and for us to remember them.

The memorial's origin is located approximately at the center of the site; its legs each extending two hundred feet towards the Washington Monument and the Lincoln Memorial. The walls, contained on one side by the earth, are ten feet below ground at

their point of origin, gradually lessening in height, until they finally recede totally into the earth, at their ends. The walls are to be made of a hard, polished black granite, with the names to be carved in a simple Trojan letter. The memorial's construction involves recontouring the area within the wall's boundaries, so as to provide for an easily accessible descent, but as much of the site as possible should be left untouched. The area should remain as a park, for all to enjoy."