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Design

This is a repository for information about design. This is not a blog, or a collaborative wiki where people can discuss things about design. It contains only the *results* of those discussions, and the pearls of wisdom from blogs, and information culled from the literature and from the experiences of the contributors.

Overview

[About This Collection](#)

About this collection

A significant part of this web is presented as a [pattern language](#). This is done to help communicate procedural information on how to design.

Other topics in this web (like this one) are presented as conventional narratives - after all, not *everything* can be a pattern.

While the material in this web is not experimental in nature, it's presentation (in patterns) and integrative nature is. This is actually a research undertaking of [mine](#) - to begin to form a "body of knowledge" about designing that brings together as much of the work of others as possible, stitching it all into something complete and meaningful.

And since this web contains more than just courseware, there may be some missing links [like this one](#) and some pages that are in DRAFT form or have TODO items marked in them. This doesn't mean the courseware is incomplete in an academic sense. It just means that this web is constantly evolving.

Please note the license associated with this web (bottom of the page).

[Design roadmap](#): An overview of a generic, *detailed* design process, with links to specific content; a process-based table of contents for this collection. This process is best suited to projects expected to last several weeks or longer.

[Design in hours](#): A fast design process; not as detailed as the [design roadmap](#), but suitable for smaller projects expected to take hours or days or a few weeks.

Background material:

Search this web by tags appearing in individual pages:

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- An [introduction to the product development process](#).
- What is [engineering](#)?
- What is [engineering design](#)?
- [Sustainable design](#).
- [Diversity in design](#).
- Notes on [detailing a design](#).
- [Assorted design case studies](#).
- The basic learning loop: [observe reflect articulate](#).

Several [design-related bibliographies](#) are available.

A new list of [design competitions](#) that might be of interest to students.

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Definitions

Related Terms: Design, conceptual; Design, configuration; Design, engineering; Design theory, cognitive; Design theory, computational; Design science; [Designing](#)

Working Definition: A *design* is (a) the result of [designing](#). *Design* can also mean (b) the discipline (i.e. an area of study), © a body of knowledge, and (d) a practise (i.e. a practical undertaking in the real world).

The main definition used here - that a design is the result of designing - is interesting because it is *results-oriented*. So long as we can define what constitutes a design, any process that yields a design is

part of *designing*.

There are good reasons to be results-oriented:

Results are more concrete than processes. It is usually easier to visualize the result of a process than the process itself. This makes it easier to keep your “eye on the ball” and make sure you're moving toward a specific goal.

Process efficiency doesn't matter if goals aren't met. We design for a purpose and with intent. We have specific and concrete goals when we design. Keeping those goals central to all activity is more important than having a good process. The best process in the world is no good if it fails to meet goals. Achieving goals is often called effectiveness.

This begs the question, then, *What is a design?* Here are some characteristics of designs.

Designs are models. The thing being designed is not the design. Designs are only models of other things, that tell you /what/ the thing is (physically, materially, functionally, structurally) and the role(s) it will serve as an element of a larger [system](#).

Designs explain how a thing is to be implemented. A fully executed design not only describes a thing; it also describes how the thing can be realized/implemented/made, thereby giving direction to others who will be in charge of that implementation.

Designs are testable. For example, compared to building and testing a real aircraft, using the design to analytically test it is far safer and cheaper. We can show designs to clients and prospective users, and reach agreement with them that the thing designed is in fact what is needed (these are “tests” of the design too).

So, returning to the question of “what is designing,” we can say that any process that develops appropriate designs as described above is an instance of *designing*.

This brings up some very important features of designing that aren't immediately obvious otherwise.

There are many possible design processes. Defining *designing* as processes that lead to designs sets a necessary but not sufficient condition. This means there is more than one right answer to the question *What is designing?*

The “best” design process depends on context. Optimality is always defined relatively. The optimal design process in one situation will not necessarily be optimal in any other situation. Factors that influence optimality of design processes include:

- the general context (politics, regulation, culture, economics, etc.) (e.g., per [AEO11](#)),
- the available technologies that can be used to implement the design,
- the nature of the clients and users, and
- the nature of the design team (their expertise, their ability to collaborate, etc).

Nonetheless, a review of designing as it is conducted in many different industries, companies, cultures, and disciplines reveals certain key features that are always present. These features constitute the core of designing.

Samples

CDRN, 2006:“Design is the process of making proposals for change.”

[Ste92]: “...the division of labour between the system and the user.”

[Cha93]: “Engineering design[ing]] can be considered a problem solving activity where a design problem and its solutions co-evolve.”

[AS92]: “...design is the continuous processing of information between and within different design domains.”

[Fre92]: “It is common now to treat the design process as falling into four stages: Analysis of problem, Conceptual design, Embodiment, Detailing.”

[SB93]: “...the development of any complex system or course of action...without an existing plan.”

: “...a translation from one language to another...”

[BB94]: “The purpose of design is to produce knowledge about a designed object which can then be used to manufacture the object.”

[LW89a]: “...design can be seen as the transformation of functional requirements into a product which fulfils these requirements.”

[Cow93]: “Designing is: describing a new possibility, which is expected to allow the achievement of a preferred situation.”

Post to phd-design by Anthony Cahalan, 12 June 2008:

- SPECIFIC: Design is the research, analysis and creation of innovative products and services which shape the human experience.
- GENERIC: Design bridges the gap between the present and the future as a catalyst for improvement of the human condition.

Post to phd-design by Alun Price, 13 June 2008:

- “Design is the human power to conceive, plan, and realise products that serve human beings in the accomplishment of any individual or collective purpose.” (attributed to Richard Buchanan, Carnegie Mellon University.)
- Design involves the strategic development, planning and production of artefacts of visual and tactile communication. It deals with the effective and efficient communication of ideas, values, beliefs, attitudes, messages and information to specific audiences for specific purposes and with specific intentions.

Post to phd-design by Karen Fu, 13 June 2008:“Design is thoughtful living.”

Post to phd-design by Johann van der Merwe, 13 June 2008:“Design is a groundless field of knowledge (Wolfgang Jonas), and has to be re-designed, re-thought each time we make an attempt at

understanding a new situation.”

Post to phd-design by Johann van der Merwe, 13 June 2008:“Design is indeed a way of thinking, for the designer as a structured way of communication, and for the user as a way of understanding some other insight besides the ones (culturally, economically, politically) situationally available at any one time.”

Post to phd-design by Geoff Matthews, 13 June 2008:“Design is: 'the exploration for and specification of realizable possibilities for change in the material culture'.”

Post to phd-design by Bruce Currey, 13 June 2008:“Is it helpful in seeking a simple definition of design to consider design as the 'de' construction of the 'sign'? This may build upon everyone's ability to change the sign, to “shift... the relationship between the signifier and the signified”. (Ferdinand de Saussure (1966) Course in General Linguistics, trans W. Baskin. New York: McGraw-Hill. page 74).”

Post to phd-design by Johann van der Merwe, 14 June 2008:“Design is what comes of the network that needs to be built up, in context absolutely, and with the local environment as the other actors (including humans, but also objects/systems as non-human actors). Design for the nouveau riche is blatant consumerism, and is a one-way street of indulgence.”

- “If design is successful as a 'change agent' it is because the designer did what? Offered defined design parameters to the user? Or because the designer acted more like a facilitator working with the context (which means working with what people need for long term sustainability) of the network-in-action?”

Post to phd-design by Johann van der Merwe, 15 June 2008:“...design IS a reciprocal conversation (attributed to Ranulph Glanville).”

- “...design is not to be defined as anything, if by design we mean the thinking parts that make up the sociological whole, and not design as the manufacturing parts that are shifted around the globe to wherever the cheapest labour is to be found.”

Post to phd-design by Juris Milestone, 15 June 2008:“It may be useful to think of 'design' as a 'mobilizing metaphor' - here I borrow from Shore and Wright's book, anthropology of Policy and their discussion of language in governance and power. 'Mobilizing metaphors become the centre of a cluster of keywords whose meaning extend and shift while previous associations with other words are dropped. Their mobilizing effect lies in their capacity to connect with, and appropriate, the positive meanings and legitimacy derived from other key symbols...' (p.20)”

- “So the idea of design draws from a history of changing meanings (many of which come from outside the professions that lay official claim to the idea), and they'll continue to change, even though certain clusters of meaning will gain dominance and acceptance (at least momentarily!). Design currently is associated with positive elements of commerce (those that generally invoke a positive valence on “progress”), like “innovation”, “creativity”, “services”, “improving the human condition”, “development”, “planning”, “production”, “engineering”, “insight”, “thoughtful”, “synthesis”, “realization”, “wicked problems” (which presumably in their best case produce wicked solutions, or more wicked problems, or at least “learning”), “adaptive”, “functional”, “inter_multi_trans_meta_and so on”, and this list is already annoyingly long for an email, but painfully short of being an adequate list.”

- “I think Bourdieu's “field of practice” and Foucault's “discourses” are very appropriate here. It is the “politics of discursive practices” (Grillo), and who has the power to define, that becomes most important. The notion of the “democratization of design” also becomes interesting here. Does the definition accepted by the masses bear upon the “real” definition of design? Ultimately, perhaps, the power of the idea of design rests in it's ability to escape definition. Rather, it's mission is to coalesce elements of many different positive notions or ideas, or discourses, into a technology of organization and change. Shore and Wright speak of “discourses as configurations of ideas which provide the threads from which ideologies are woven”. So then what are the ideologies being woven by or through the idea of design?”

Post by Michal Popowsky to phd-design, 16 June 2008:“To my students, I present the field of design as either a semiotic polysystemic field or - an another perspective - as a political polysystemic field.”

Post by Johann van der Merwe to phd-design, 17 June 2008:“‘Modern’ design is ... people (who have taught themselves how to deal with four dimensional thinking processes) designing for people (who teach themselves other things, most of which designers can situationally use to ... ‘design’).”

Post to phd-design by Eduardo Corte Real, 19 June 2008:“Eliminating pictures or drawings from a definition of Design is a horrible non-tribute to History and certainly will move design to a holistic epistemological limbo filled with all the conceptual uselessness you may imagine (you must read this sentence as you were John Cleese being the Holly Grail?s Sorcerer describing the terrible white rabbit).”

Post to phd-design by Gunnar Swanson, 19 June 2008:“As Eduardo points out, one primary sense of the word design is drawing—but in the sense of a plan rather than in the sense of an object that is its own end. (The English word “design” dates back to the 14C. It comes from Middle English to outline or indicate which came from the Anglo-French and Medieval Latin for to designate which in turn came from the Latin for to mark out.) Other core meanings center on conception, intention, arrangement, graphic representation/communication, and pattern and ornament.”

- “The word's current use in my small corner of the world is a byproduct of modern production. It has implications of the planning of an object that is separate from (but informed by/about) the production of the object. Graphic design was a coinage that generally coincided with the separation of design (i.e., the planning of form) from the printing process. In the same sense, product design as an occupation came about with mass production allowing the separation of design from making (except for the making of plans or prototypes.)”
- “This use of the term implies an assumption of a physical object but the dematerialization of publications and products make that a problem so the immaterial aspects seem to be coming to the fore. Faced both with immateriality and an interest in expanding our influence, many of those of us in this tradition have tended to concentrate on the variety of mental skills that relate to our previous object creation. A concentration on planning people's experiences has become central for many of us in these design areas.”
- “Some remaining aspects that define design include useful outcome and intentionality. There is still some concentration on realization – beyond just concept. The idea of strategic aspects, iterative method, systems thinking, complex or abstract goals seems to distinguish what might be called big D Design from small d design.”

Post to phd-design by Terry Love, 20 June 2008:“In all the hundreds of fields of design that I know

about, the noun 'design' refers to a specification or plan for making something or doing something. The only exceptions are some parts of the art and design sub-field who confuse 'a design' with the final artifact. Gunnar's post (below) clarifies this point well. This focus on 'a design' is especially useful because it also provides a means to differentiate 'design' from 'art' as activities. I would like to hear from anyone who can think of a version of 'a design' that is not a specification or plan for making something or doing something."

Dan Saffer: "Design is the human power to conceive, plan, and realize products that serve human beings in the accomplishment of any individual or collective purpose." (Attributed to Richard Buchanan)

Post to phd-design by Norm Sheehan, 23 June 2008: "an adaption of Bachelard ... bird is to nest as design is to life."

Post to phd-design by Glenn Johnson, 23 June 2008: "design is the opposite of everything else a designer doesn't do to earn a living."

Post to phd-design by Jean Schneider, 24 June 2008: "Design is an attitude." (Attributed to L. Moholy-Nagy.)

[NS03]: "Design is an act of world creation."

Post to "Designing The Future", 11 Aug 2008: "My definition of good design is hope made visible. Which means, you want to do something that is responsive to people's needs, ambitions, and dreams, but you also want to do something that makes things happen." Attributed to Brian Collins, president of the New York-based design firm COLLINS.

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[concept](#), [process](#), [theory](#)

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