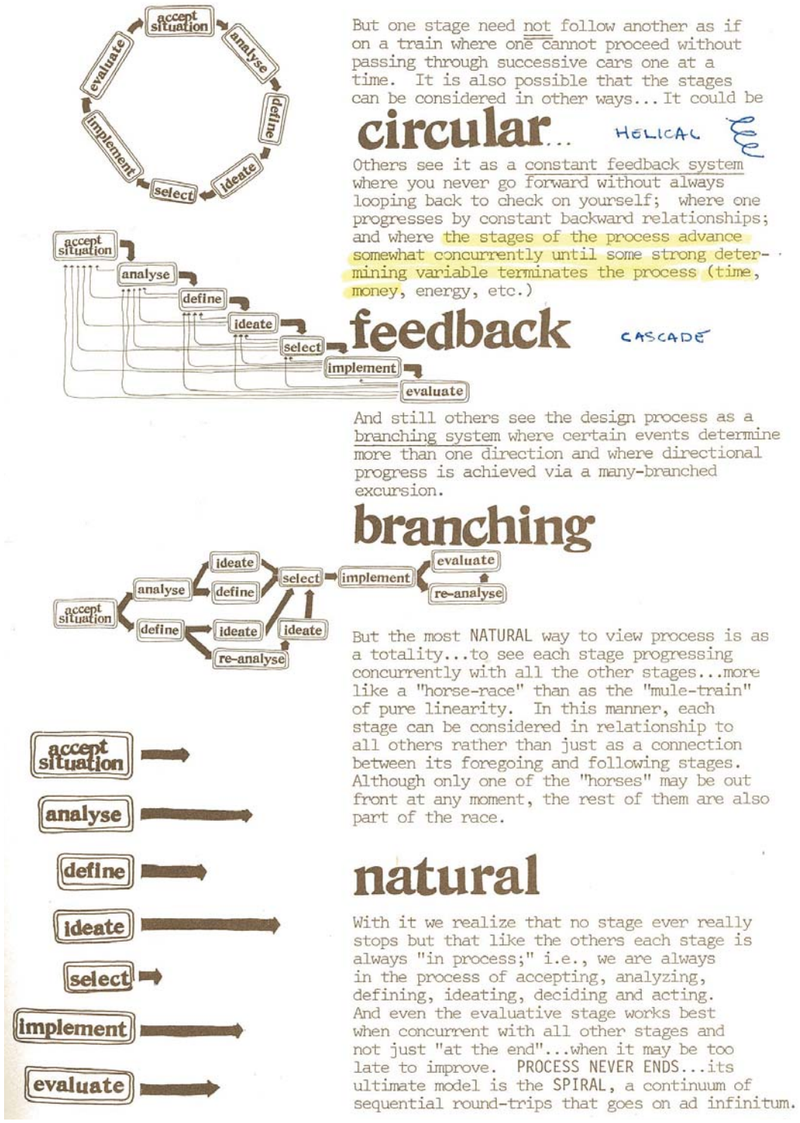
Northeastern University Boston, MA
MFA ID+V, Design Theory March 21, 2020

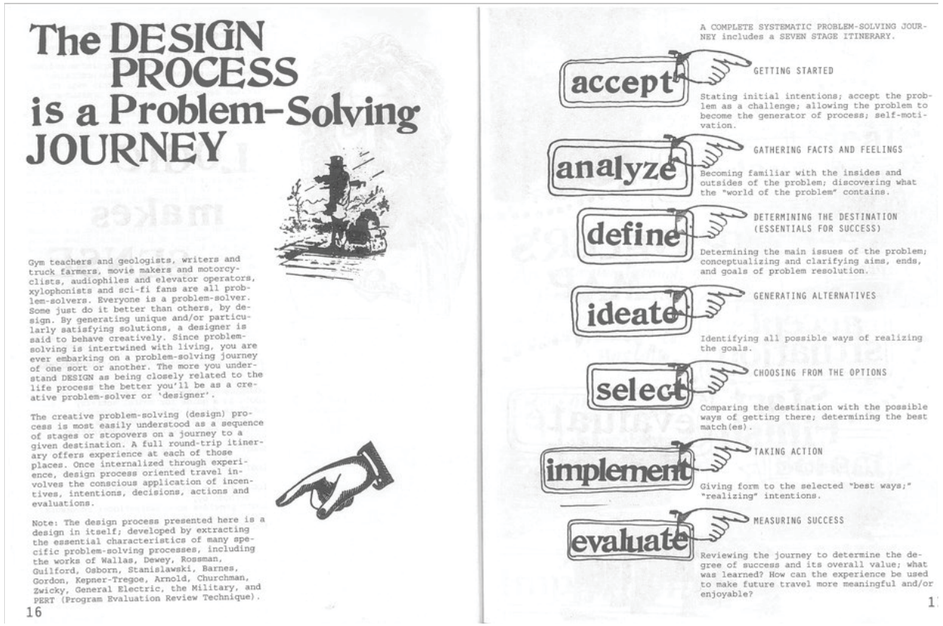
Models of the Space of Design (Work in progress)

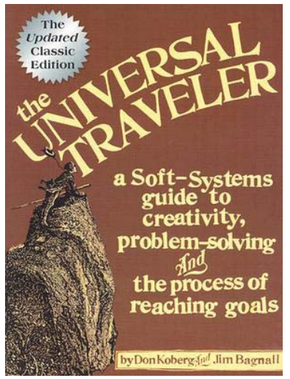
Hugh Dubberly
Dubberly Design Office

Presentation posted at
presentations.dubberly.com/space_of_design.pdf

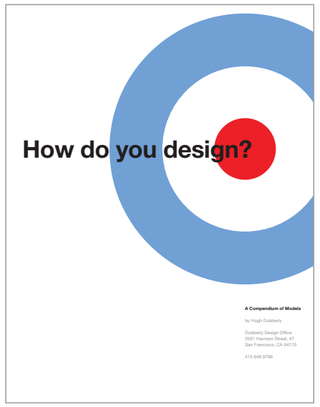
Models of the process of design are common.

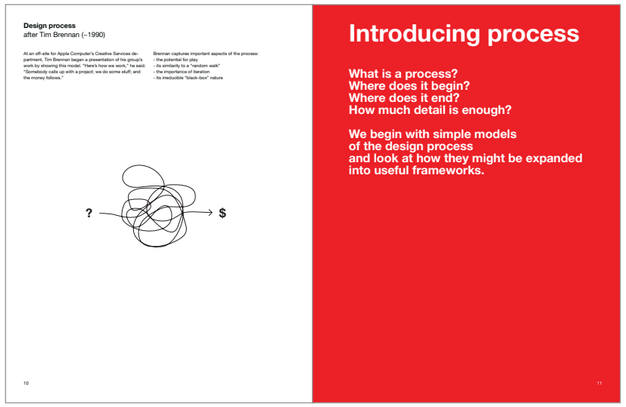


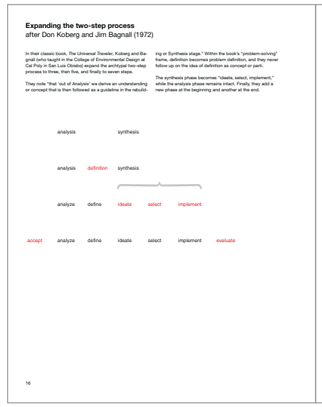


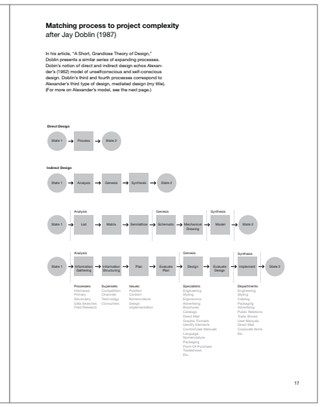


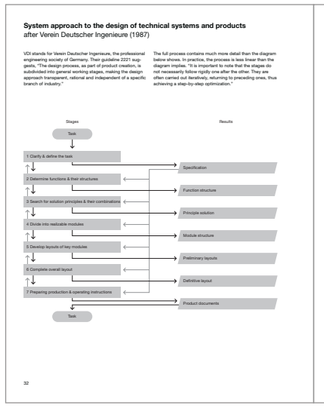
We have collected many of them into a compendium.

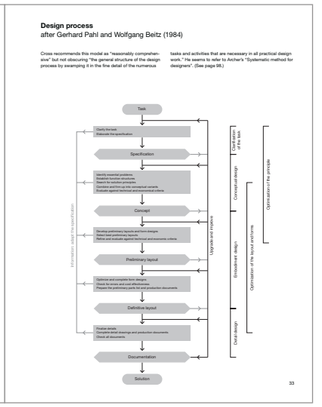


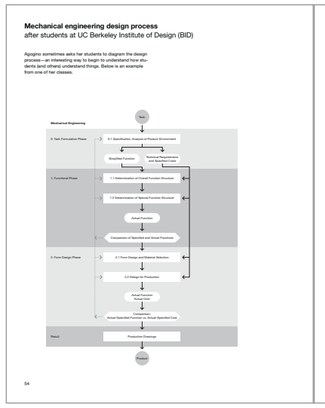


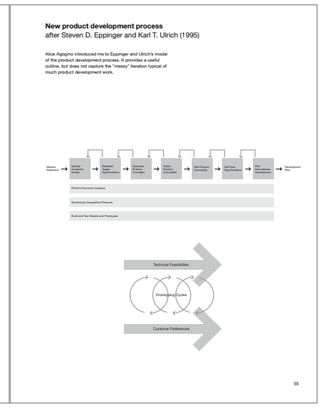


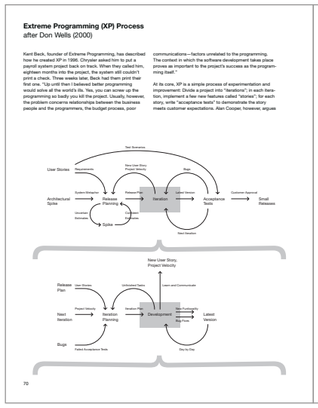


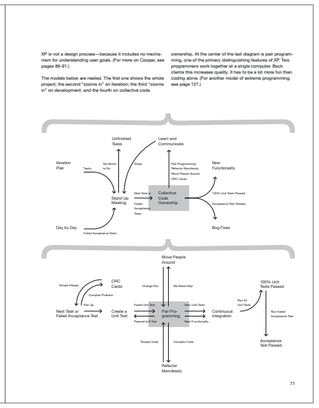


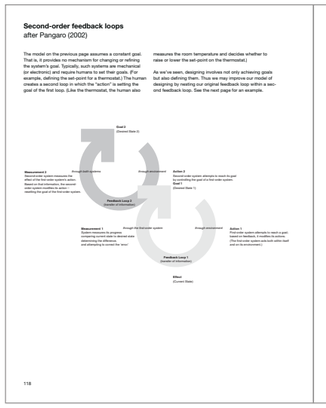


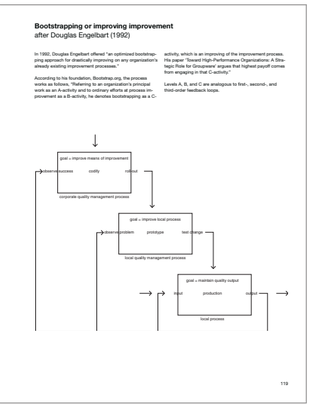












Much less common are models of the space of design — the dimensions in which design practice occurs.

What follows is a compendium of such models.

We hope to add to it as we find new ones.

Typically models of a domain are of three types:

Timelines

- Lists of events from the domain's history
- Links between events suggesting influences

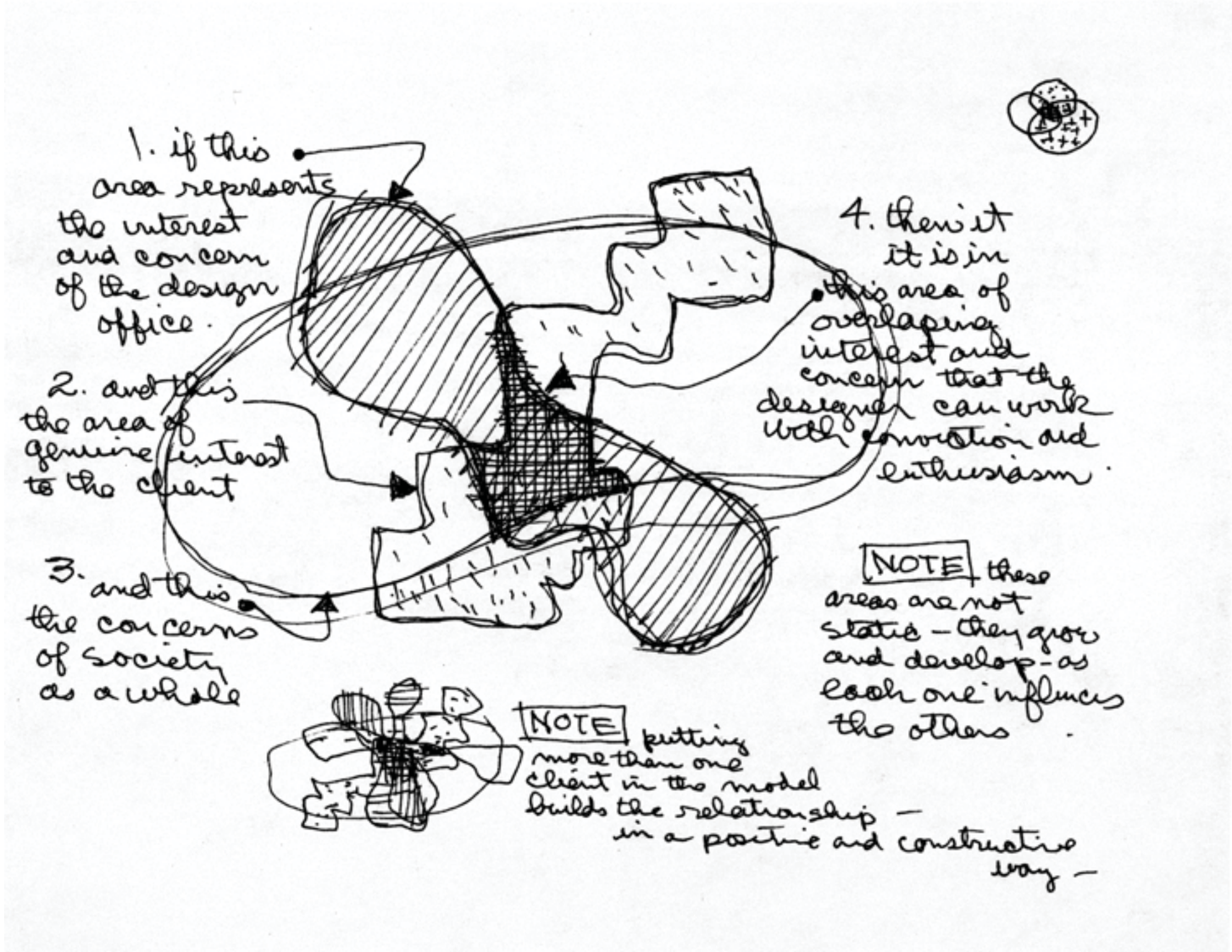
Taxonomies

- Lists of sub-domains
- Trees branching into categories and subcategories and so on

Spaces

- Venn diagrams indicating overlapping categories
- Matrices defining the dimensions of a space of possibilities or area of potential

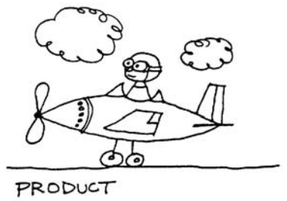
Diagram for "What is Design?" exhibit, Charles Eames, 1969

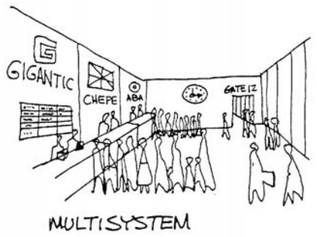


https://www.eamesoffice.com/blog/why-did-charles-and-ray-eames-make-models/

Matrix of Design Types, Jay Doblin, 1987
from “A Short, Grandiose Theory of Design”

	Products Messages	**Unisystems**	**Multisystems**
Appearance	Christmas ornament Medal Trophy	Restaurant Worlds fair South Street Seaport Disneyland	Market
Performance	Crowbar Paper clip	Infrastructure Government Military project	Market





https://doblin.com/dist/images/uploads/A-Short-Grandiose-Theory-of-Design-J.-Doblin.pdf

Space of design + examples — crossing Charles Morris with Jay Doblin

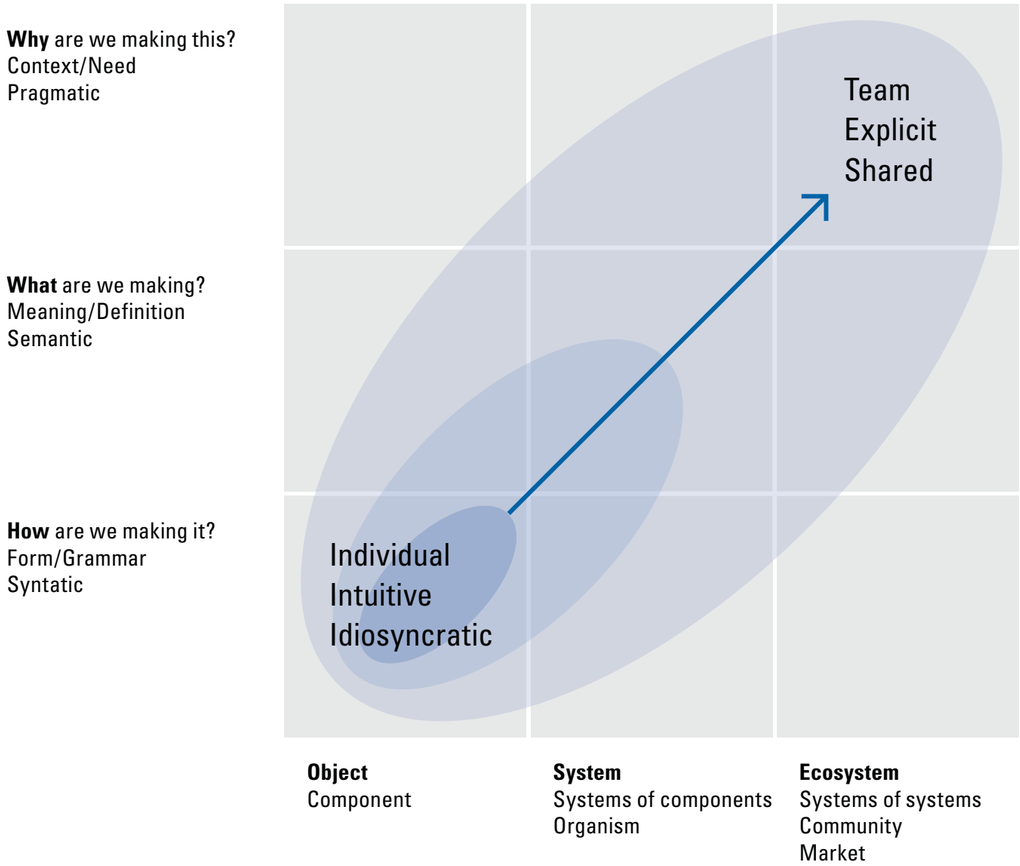
Hugh Dubberly, 2010

	Object Component	**System** Systems of components Organism	**Ecosystem** Systems of systems Community Market
Why are we making this? Context/Need Pragmatic	Event + methods of attracting an audience	Website business/user/ technology models	Developer community and its drivers
What are we making? Meaning/Definition Semantic	Poster headline + imagery	Website information architecture + content + CMS	APIs—rules for communicating between systems
How are we making it? Form/Grammar Syntatic	Poster typography + layout	Website style sheet (CSS)	Cross media coordination of identity system

http://www.dubberly.com/wp-content/uploads/2013/06/Dubberly_Space-of-design.pdf

Direction of change in design practice — after Morris + Doblin

Hugh Dubberly, 2010



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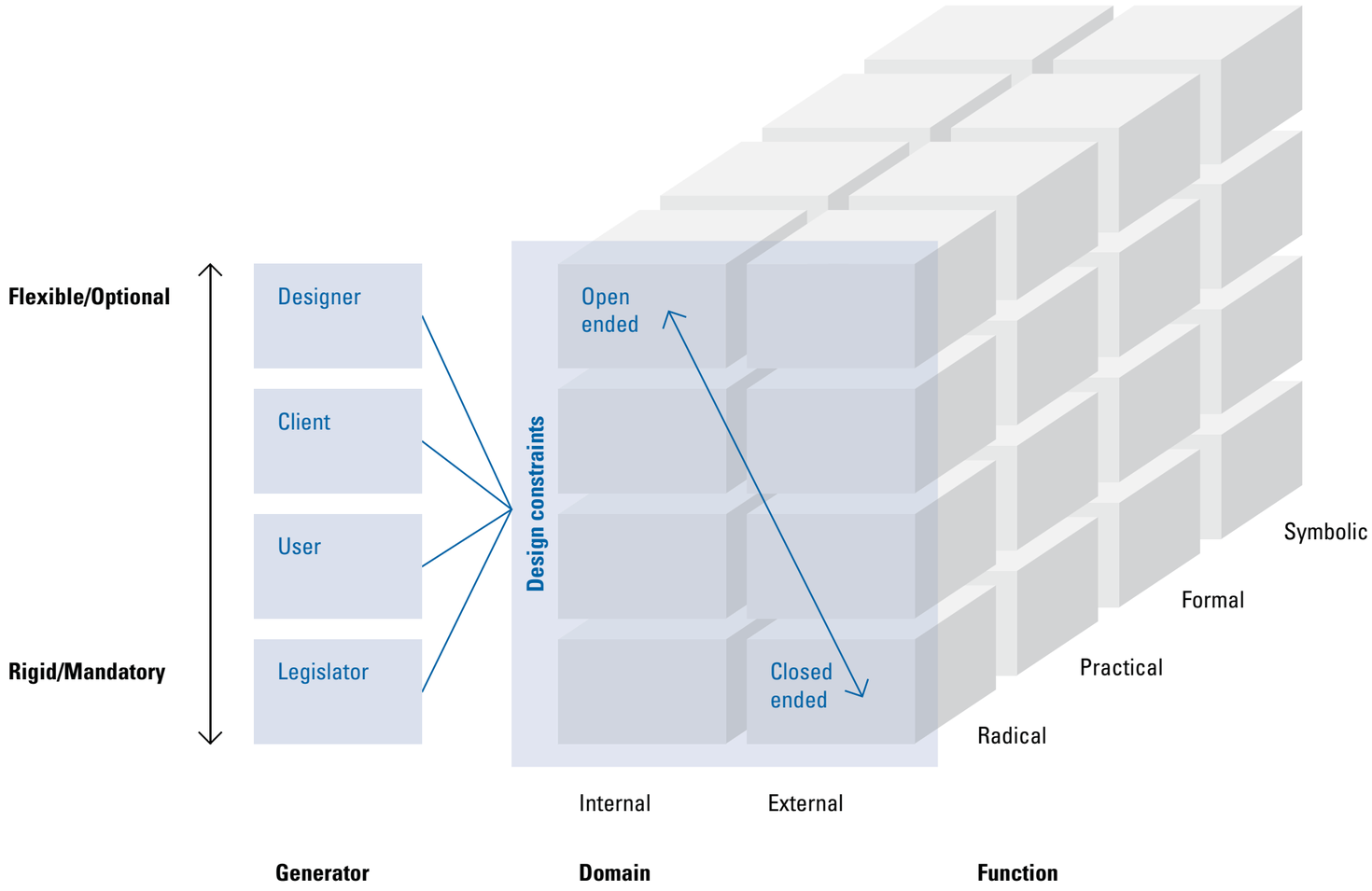
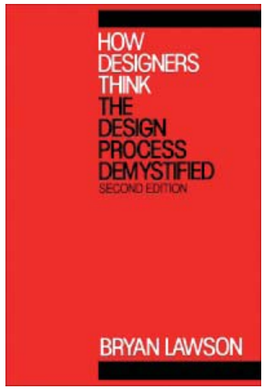
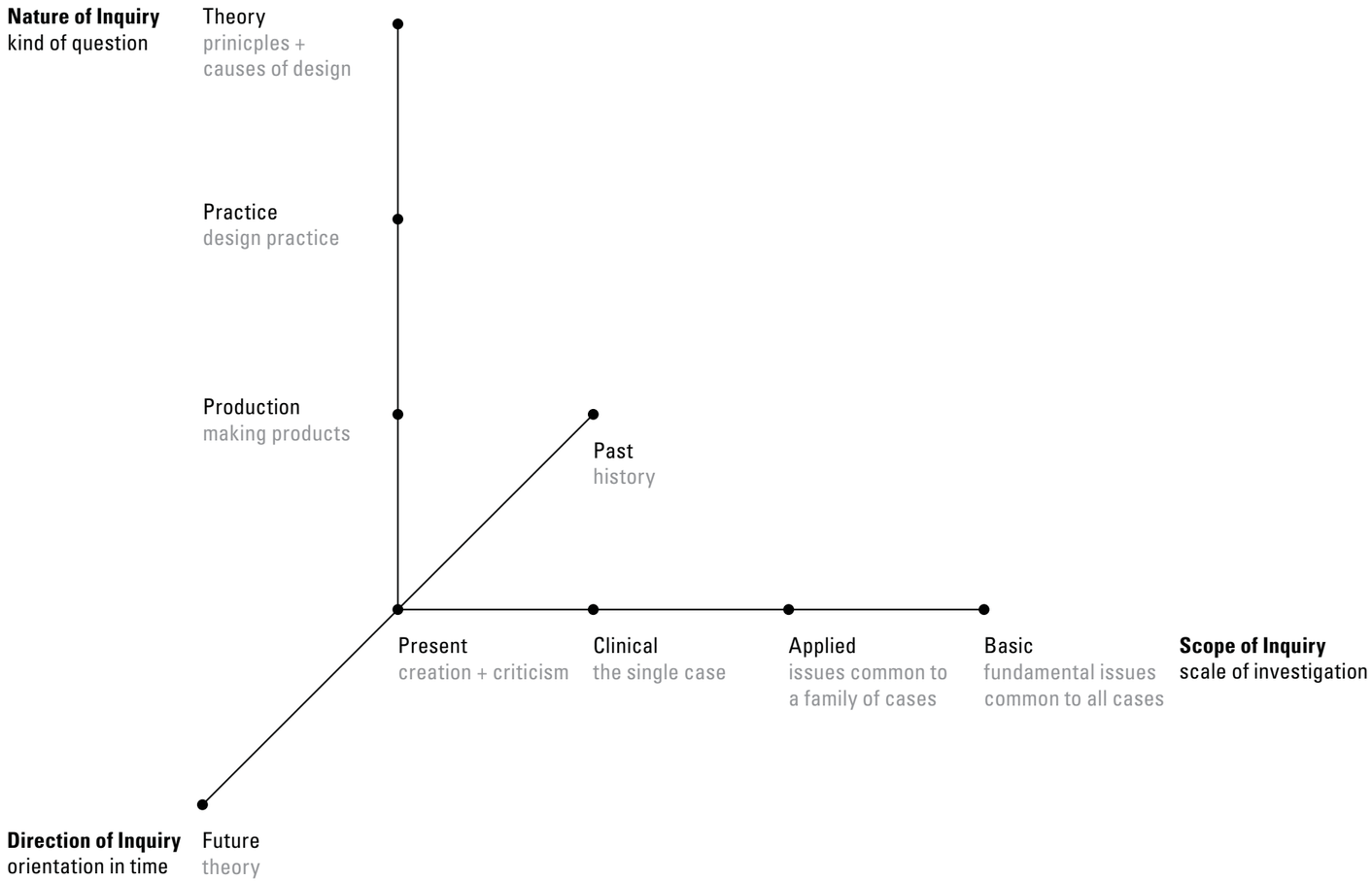
Model of the space of design constraints, Brian Lawson, 1990



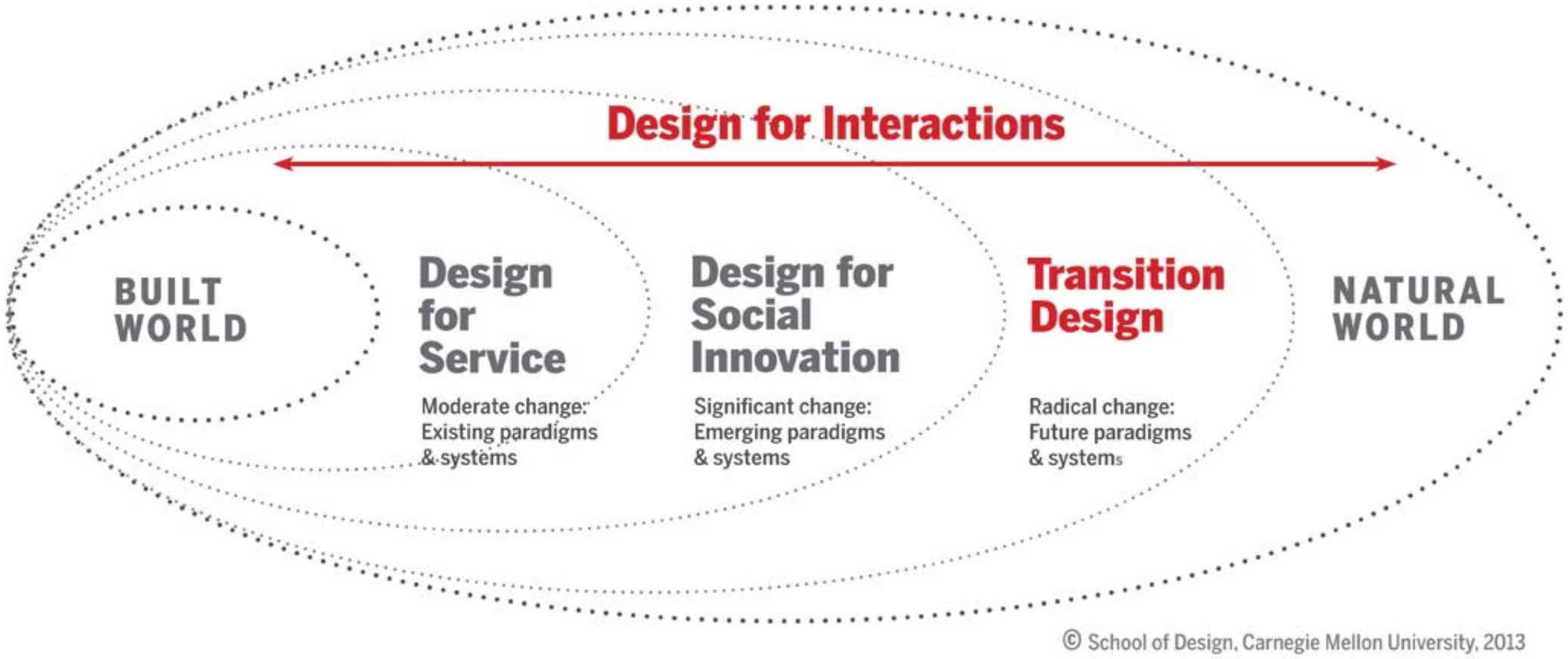


The matrix of inquiry, Richard Buchanan, 2005



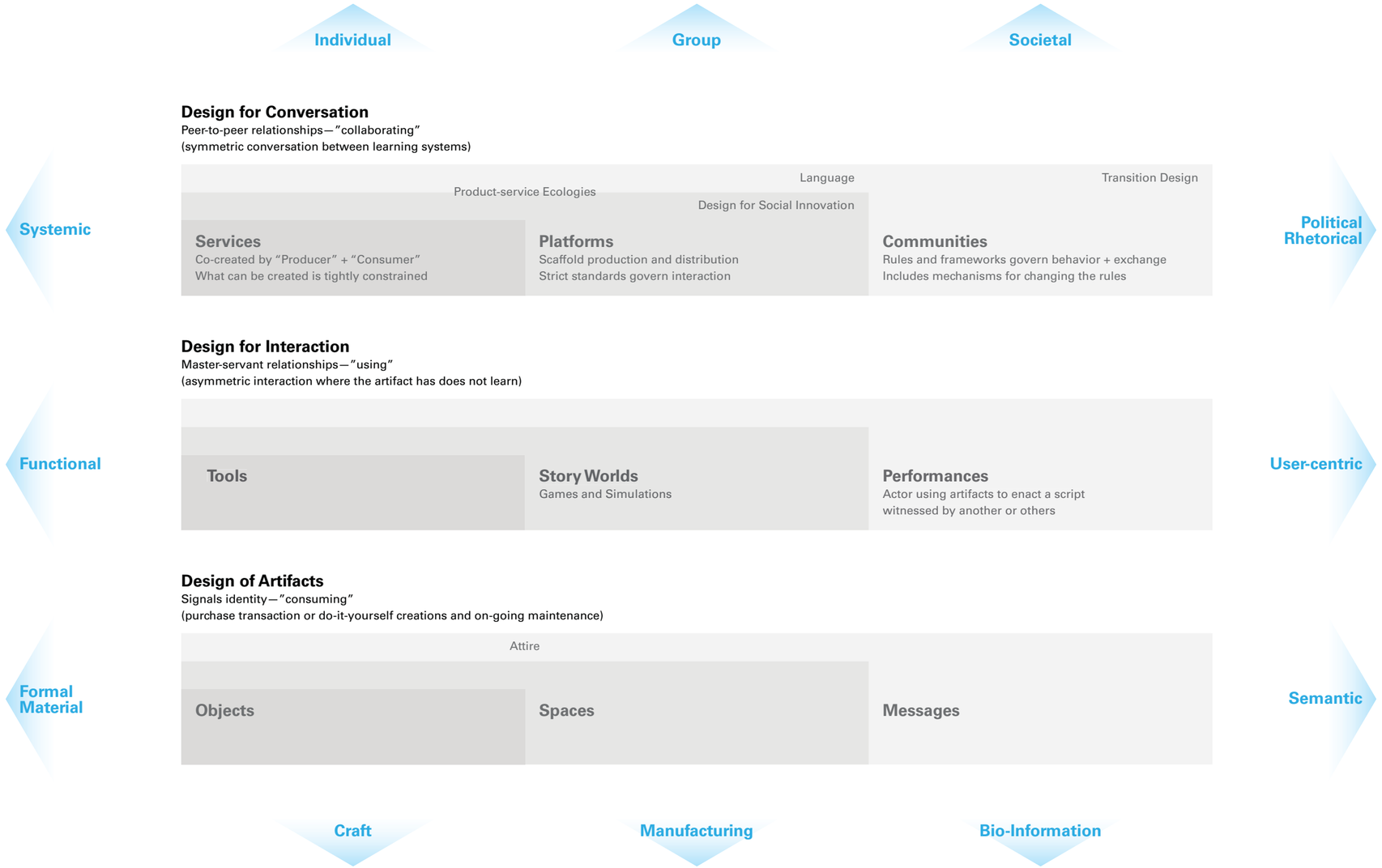
http://www.dubberly.com/wp-content/uploads/2013/06/Dubberly_Space-of-design.pdf

Design for interactions, Terry Irwin, 2013



https://design.cmu.edu/sites/default/files/users/user10/CircleDiagram_TransitionDesign.png

Space of design + Lenses on design, Hugh Dubberly, 2014



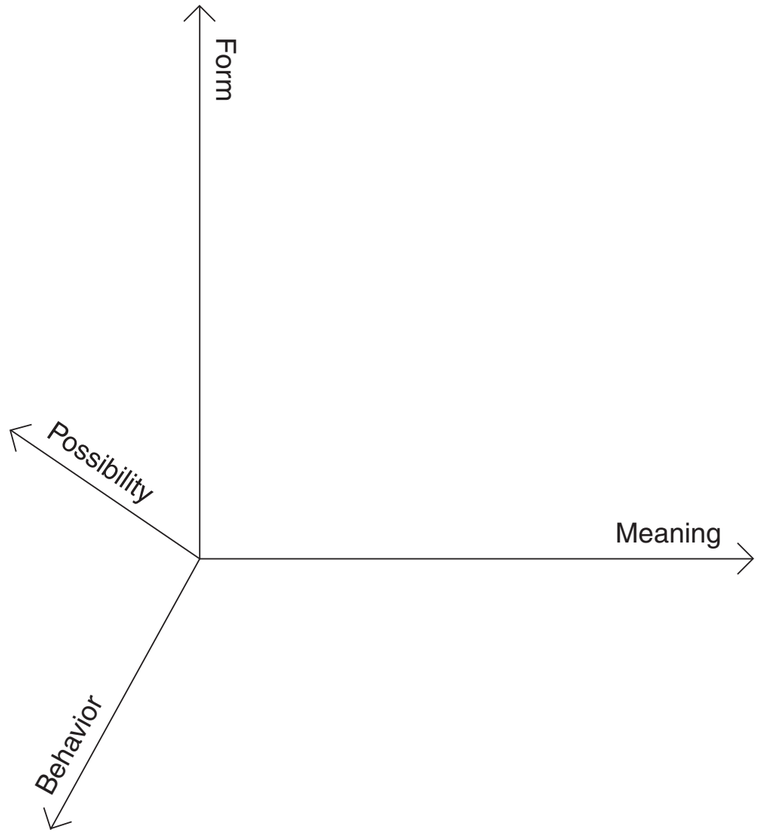
http://presentations.dubberly.com/Space_of_Design.pdf

The space of design conversations, Hugh Dubberly, 2014

	First-order Design: **Design of Completed Artifacts,** **e.g., objects, buildings, and messages** **i.e., traditional product design, architecture,** **and graphic design**		**Second-order Design:** **Design for the Incomplete—for the Emergence of Evolving Systems or Situations for Conversation,** **e.g., languages, platforms, and product-service ecologies** **i.e., interaction design and service design**	
	Design conversation about the situation at hand	**Design conversation about the process of designing being used**	**Design conversation about the situation at hand**	**Design conversation about the process of designing being used**
Meta Conversation to maintain the conversation	Is the conversation on track? Do the others understand me? Do we agree? Do we have the right frame? Shall we continue? Why are we doing this? our goals Are we making things better? no harm	Is the process working? Do the participants understand the process? Do they agree to it? Do we need a different process? How can we improve our process? What can we learn from what we've already done?	In addition to first-order questions: What systems affect this one? What systems does this one affect? How is the system maintained? By whom? Is this system still needed? Should it be re-thought?	In addition to first-order questions: What are the rules for modifying the rules?
The Conversation Itself (per se)	What is the context? Who are the constituents? What do they value? What are their specific goals? How shall we frame the situation?	What process are we using? Where are we in the process? Who is involved? What are their roles? Do the participants have sufficient variety? Do we need others?	In addition to first-order questions: What items are fixed? variable? What rules govern variation? What disturbances are likely? How does the system counter them?	In addition to first-order questions: Who can modify "fixed" items? Who can modify the rules? How does the system "learn"?
The Sub-strata of the Conversation	What do we share? - "Space" of the conversation? - Experiences - Languages - Artifacts (Boundary Objects)	What variety do participants have? - Special knowledge or skills - Familiarity with the situation - Experience with similar situations - Experience with designing	In addition to first-order questions: What data should be collected? How does the system react to data? What data should be exposed? How is data collected? Where is it stored? How is it kept secure?	In addition to first-order questions: How does the system represent knowledge?

Dubberly Design Office I Paul Pangaro I Ranulph Glanville I November 16, 2014

Four orders of design, Richard Buchanan, circa 1997 (interpreted)



http://www.dubberly.com/wp-content/uploads/2008/06/ddo_article_cooper.pdf

Four orders of design, Richard Buchanan, 2015

Fields of Design Problems

Arts of Design Thinking	Communication Symbols	Construction Things	Interaction Action	Integration Thought
Inventing Symbols	Symbols: Words & Images			
Judging Things		Physical Objects		
Connecting Action			Activities, Services, Processes	
Integrating Thought				Systems, Organizations, Environments

https://www.sciencedirect.com/science/article/pii/S2405872615000039

Four fields framework, Staphanie Tharp and Bruce Tharp, 2019 (as interpreted by John Cain) from *Discursive Design: Critical, Speculative, and Alternative Things*

Commercial Design
Its dominant context, industrial design, assumes commerce and transaction / buyer-seller, growth mindsets and more.

Responsible Design
Considers the marginalized, those outside the normative bounds of ‘commercial’ design.

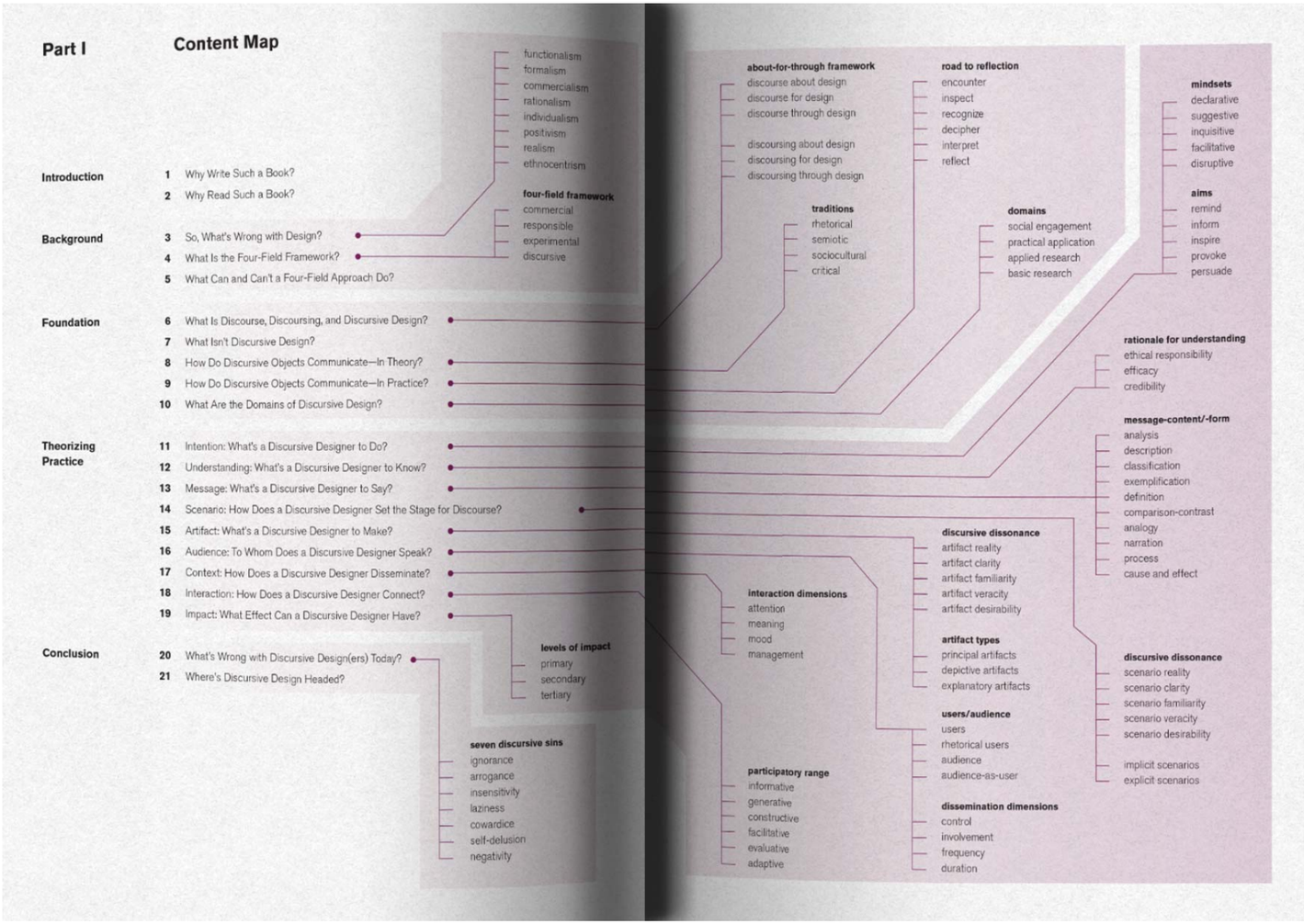
Experimental Design
Explores; does not assume a ‘solution’; make-to-think, make-to-know.

Discursive Design
Covers speculative design and “futuring”, is likely political in that sense.

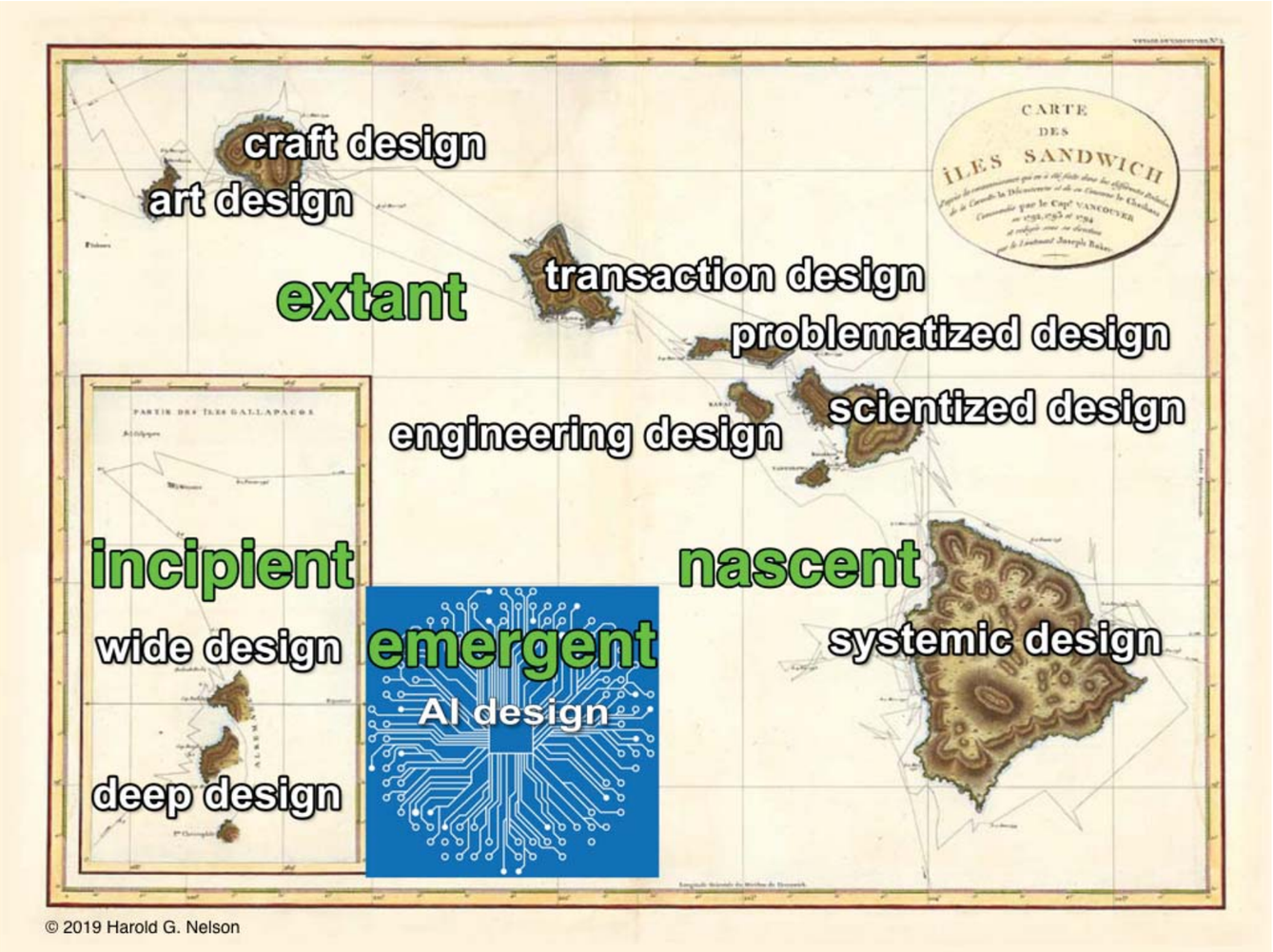
Discursive designing: nine facets, Staphanie + Bruce Tharp, 2019
from *Discursive Design: Critical, Speculative, and Alternative Things*

- Intention
- Understanding
- Message
- Scenario
- Artifact
- Audience
- Context
- Interaction
- Impact

Discursive designing: nine facets, Staphanie + Bruce Tharp, 2019
from *Discursive Design: Critical, Speculative, and Alternative Things*

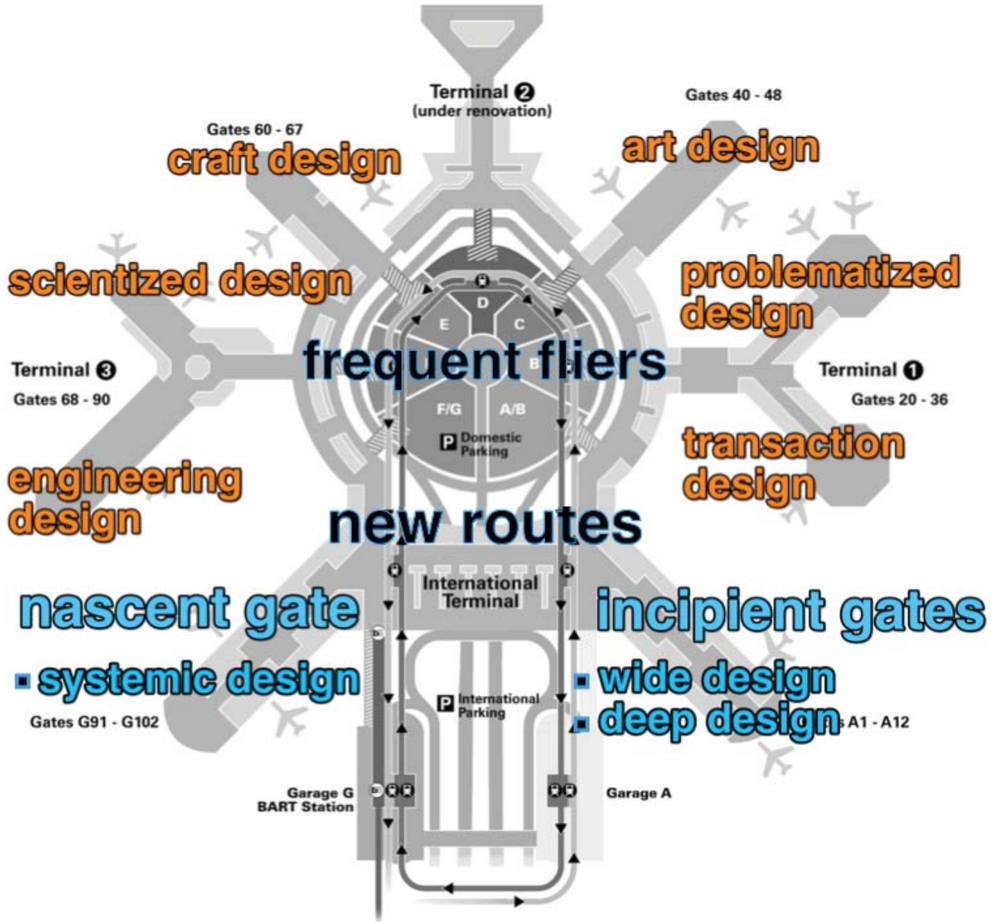


Design archipelago, Harold Nelson, 2019



http://accidentalvagrant.blogspot.com/2019/12/design-mind-slides-from-presentation.html

Design departure gates, Harold Nelson, 2019



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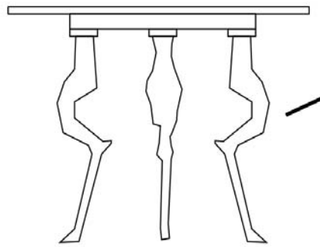
Aristotle's Four Causes, 350 BCE

Material Cause:
Wood

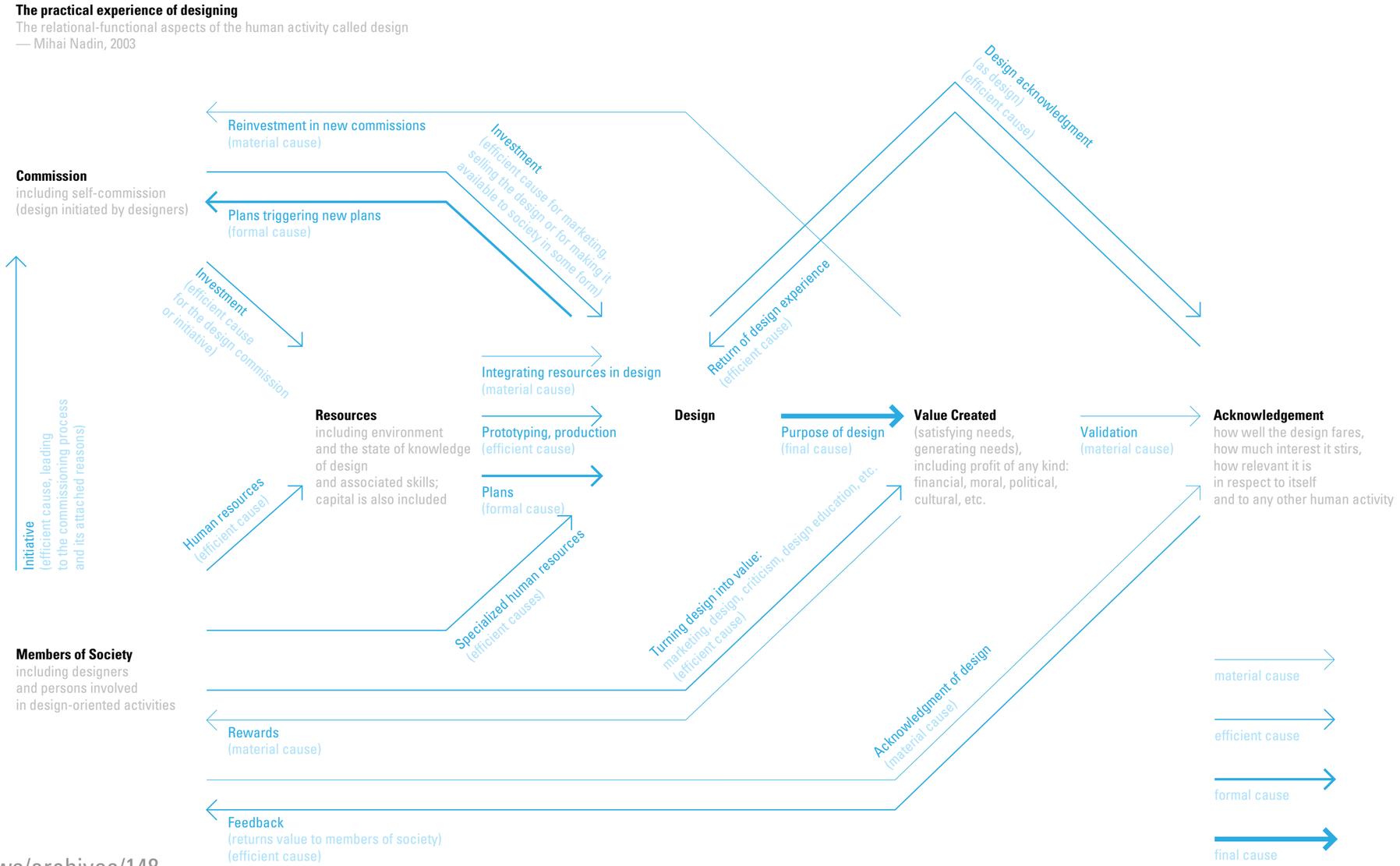
Final Cause:
Dining



Formal Cause:
Design

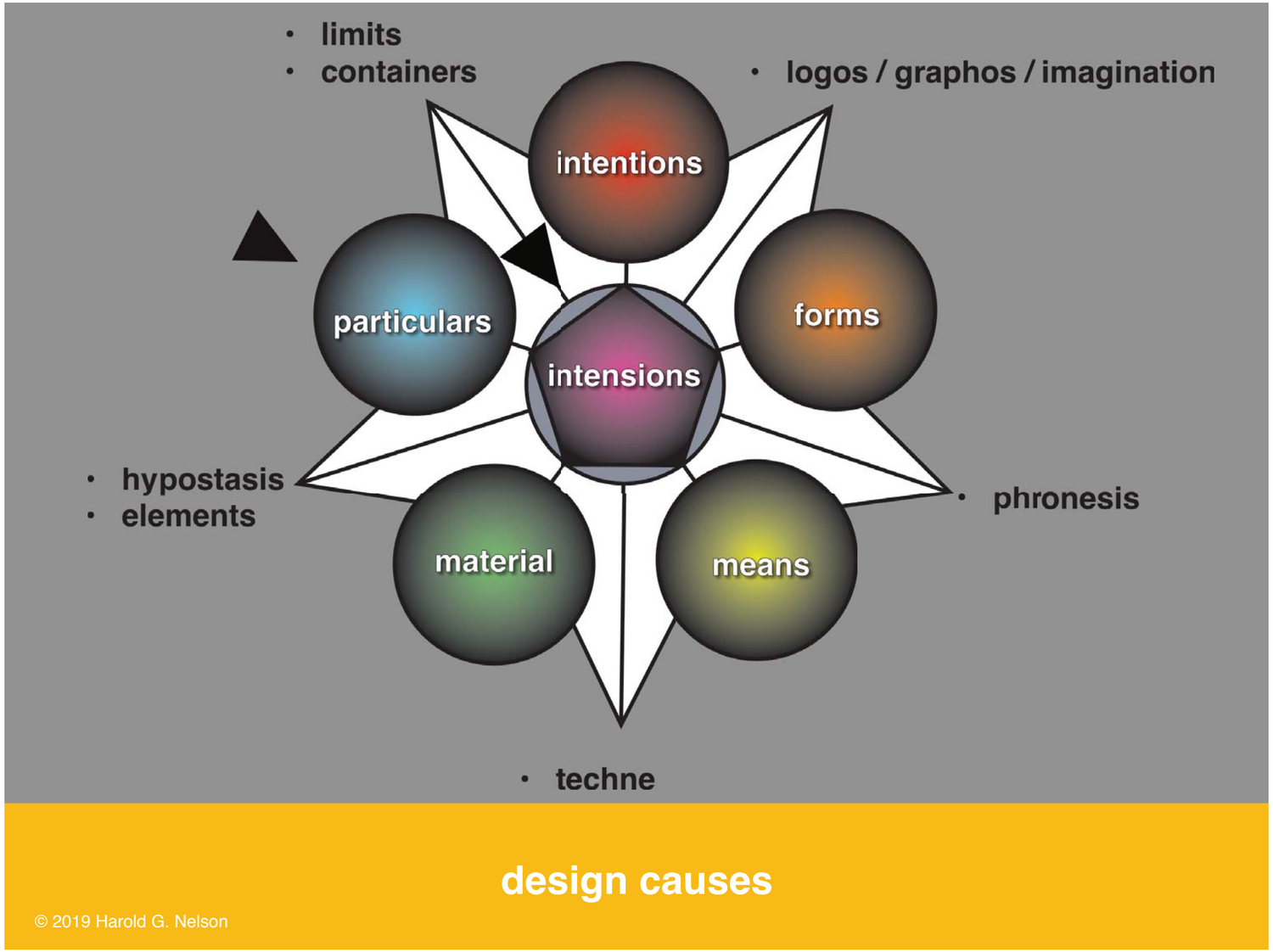
Efficient Cause:
Carpentry

The practical experiences of designing, Mihai Nadin, 2003

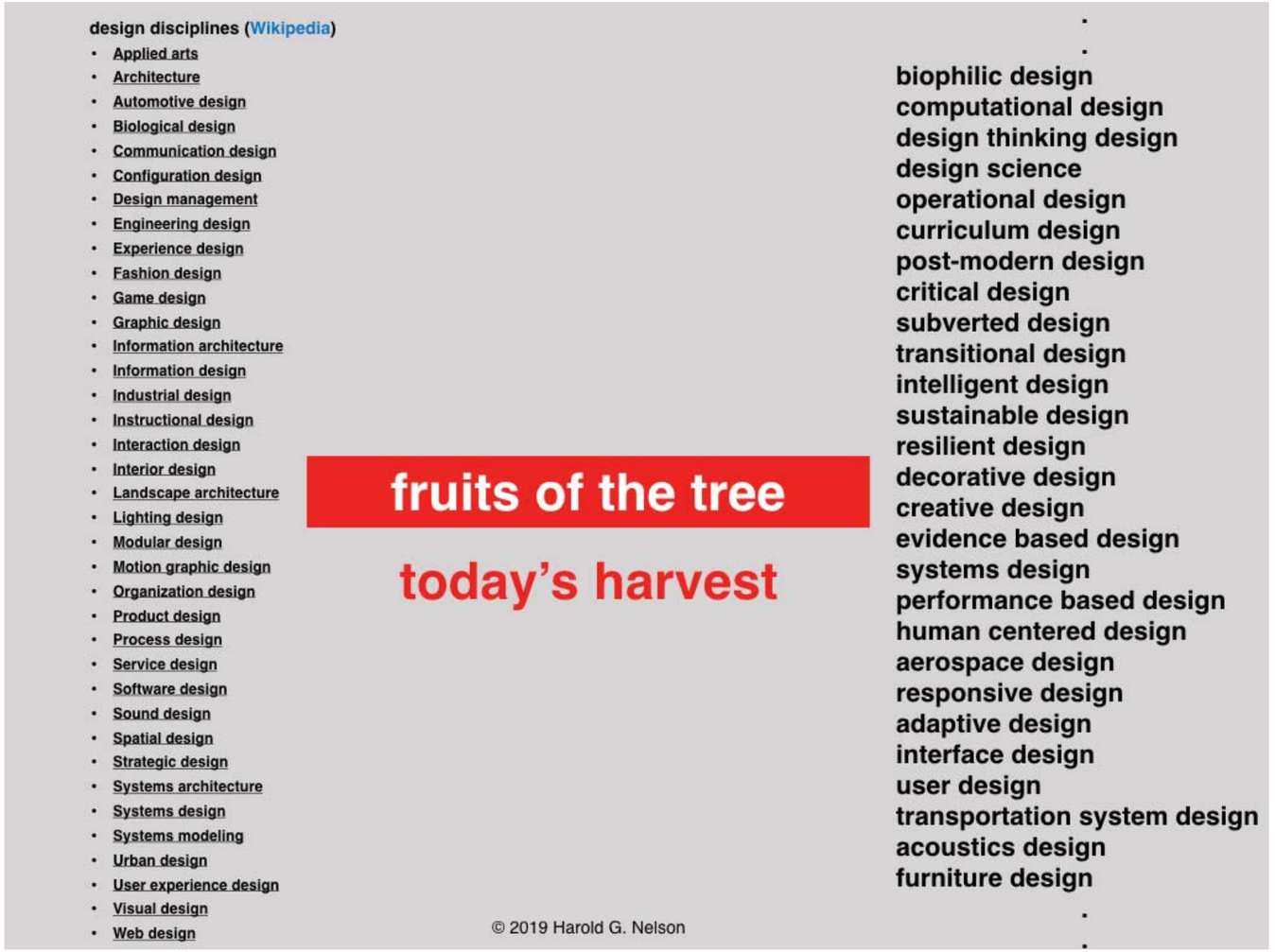


https://www.nadin.ws/archives/148

Design causes, Harold Nelson, 2019



List of design types, Harold Nelson, 2019



http://accidentalvagrant.blogspot.com/2019/12/design-mind-slides-from-presentation.html

Multicultural inqury, Harold Nelson, 2019

what is **true**? (scientific research)
what is **real**? (systems science research)

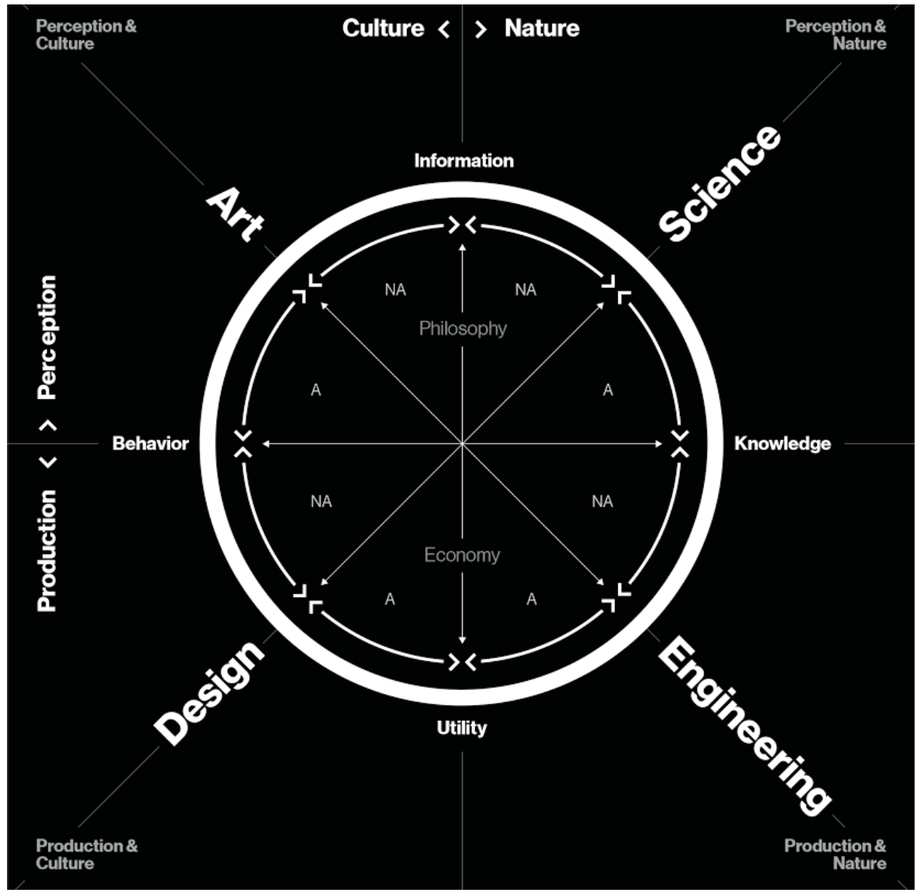
what is **good**? (humanities inquiry)
what is **right**? (humanities inquiry)
what is **aesthetic**? (arts inquiry)

what would be **ideal**? (design inquiry)
what would be **prudent**? (design inquiry)
what would be **desirable**? (design inquiry)
what ought to be **made real**? (design inquiry)

multicultural inquiry

http://accidentalvagrant.blogspot.com/2019/12/design-mind-slides-from-presentation.html

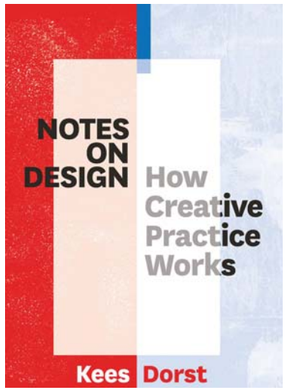
Krebs cycle of creativity, Neri Oxman + Joi Ito, 2016



https://jods.mitpress.mit.edu/pub/designandscience

Logic of creation, Kees Dorst, 2017
from *Notes on Design: How Creative Practice Works*

Reasoning	**WHAT** (elements)	+	**HOW** *(patterns of relationships)*	⟶	**OUTCOME** *(observed phenomenon)*
Deduction	**WHAT**	+	**HOW** *(model)*	⟶	**???** *(prediction)*
Induction	**WHAT**	+	**???** *(hypothesis)*	⟶	**OUTCOME**
Normal abduction	**???**	+	**HOW**	⟶	**OUTCOME** *(the desired ?)*
Design abduction	**???**	+	**???**	⟶	**OUTCOME**



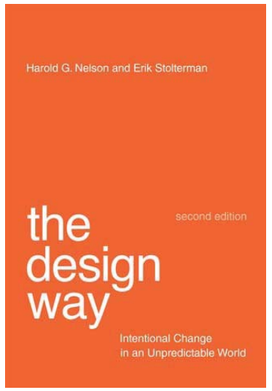
Hierarchy of change, Harold Nelson + Erik Stolterman, 2012
from *The Design Way: Intentional Change in an Upredictable World*

change is **difference**

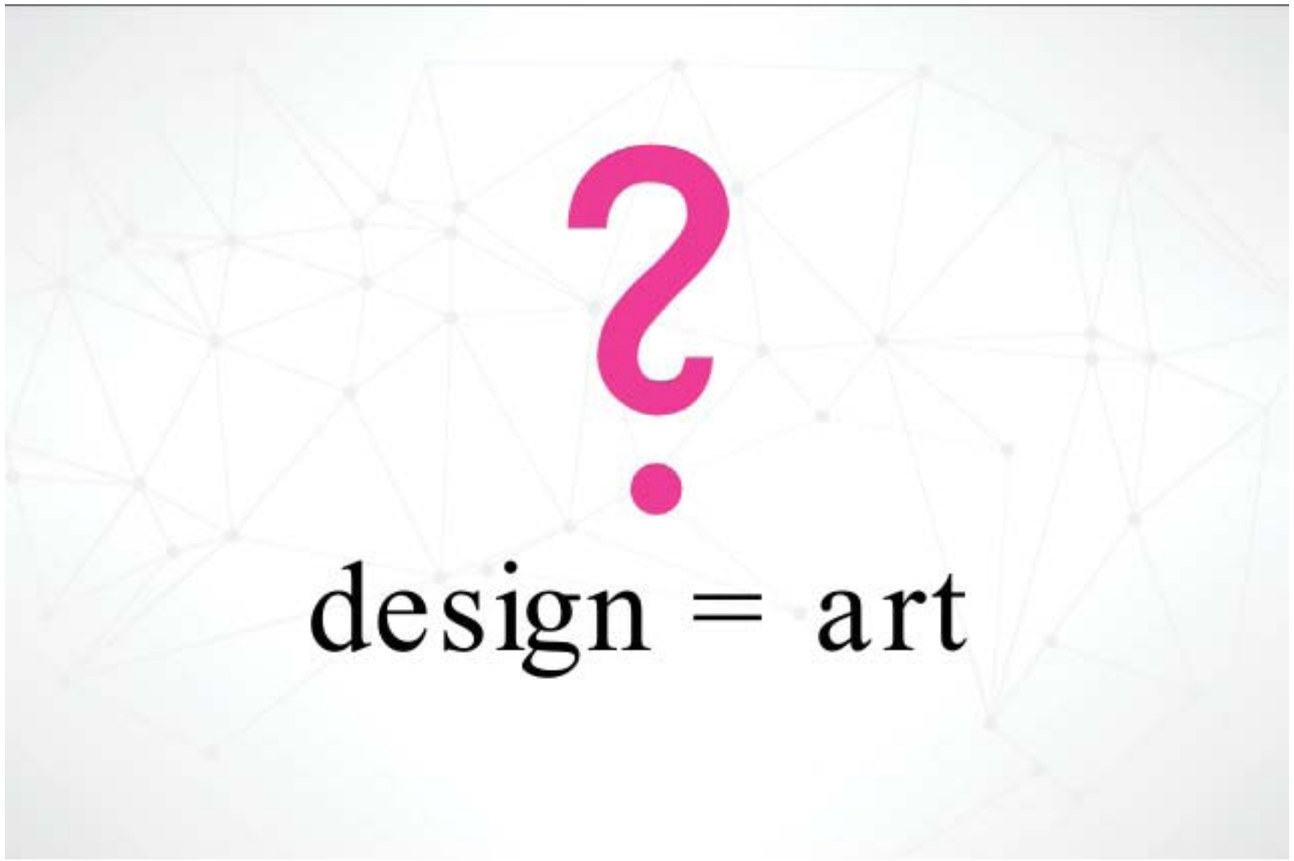
change of *difference* is **process**

change of *process* is **evolution**

change of *evolution* is **design**

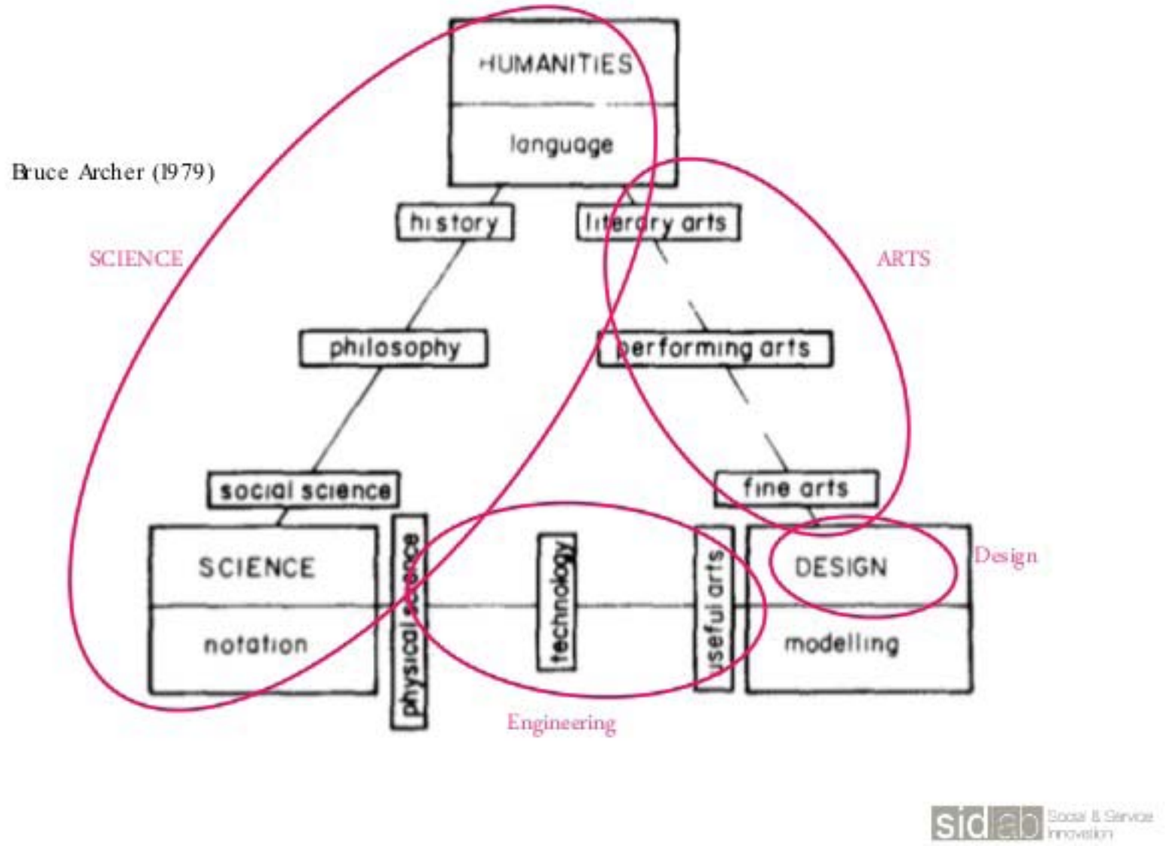


Design Thinking, Jy Lee, 2015



https://www.slideshare.net/jylee_sidlab/dt2015-class02

Design Thinking, Jy Lee, 2015



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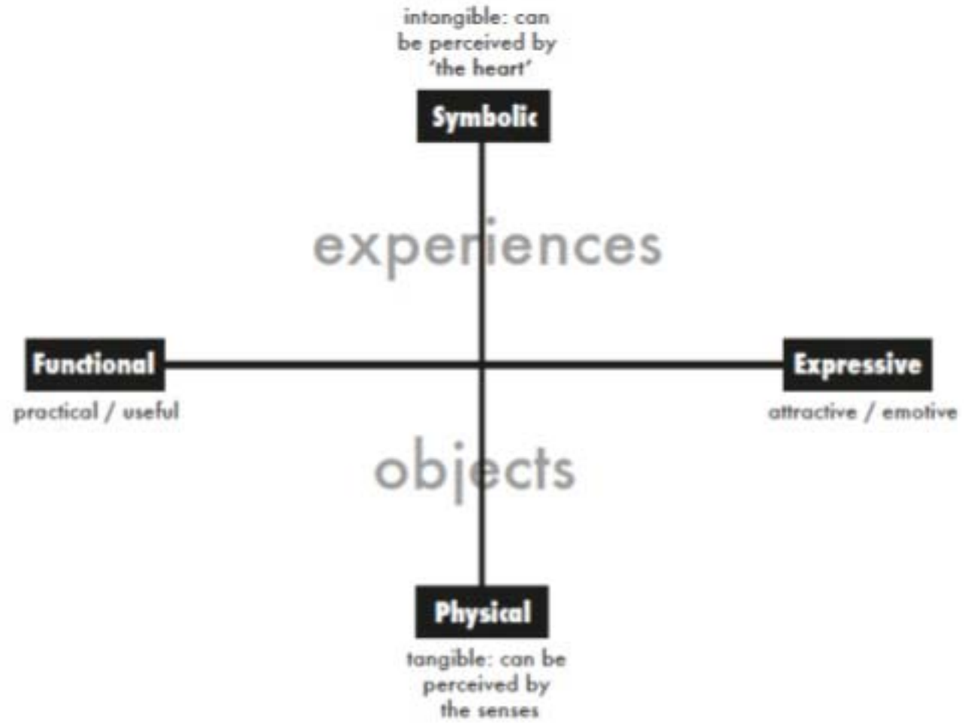

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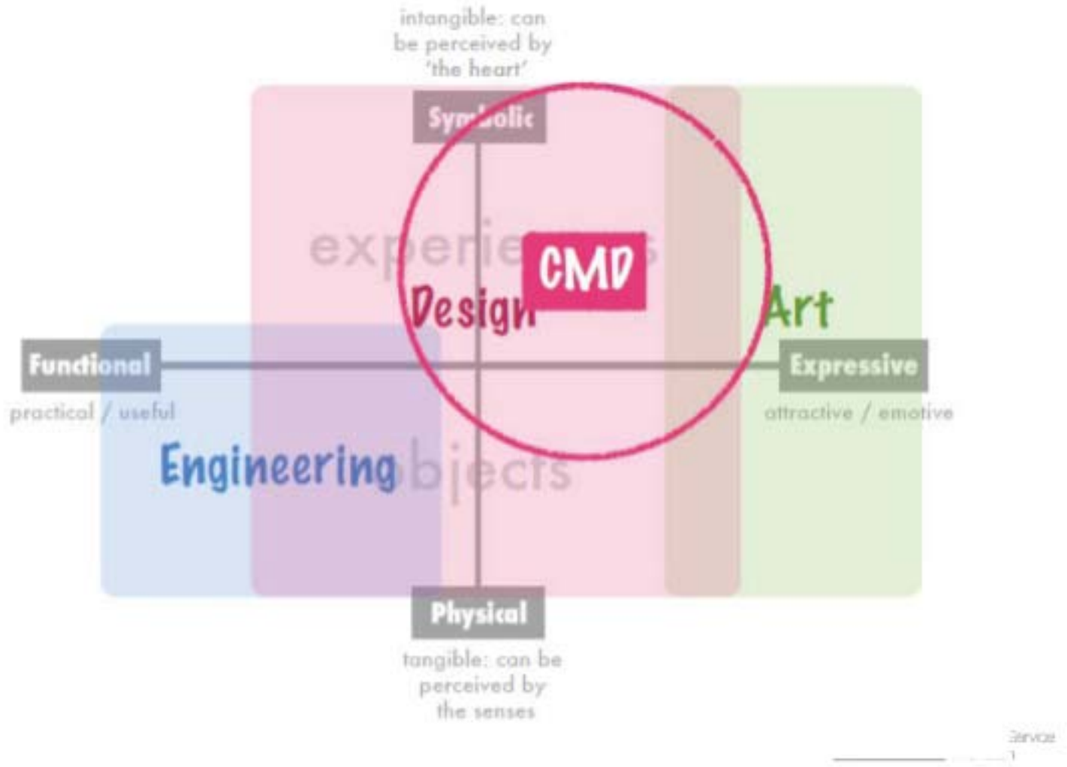

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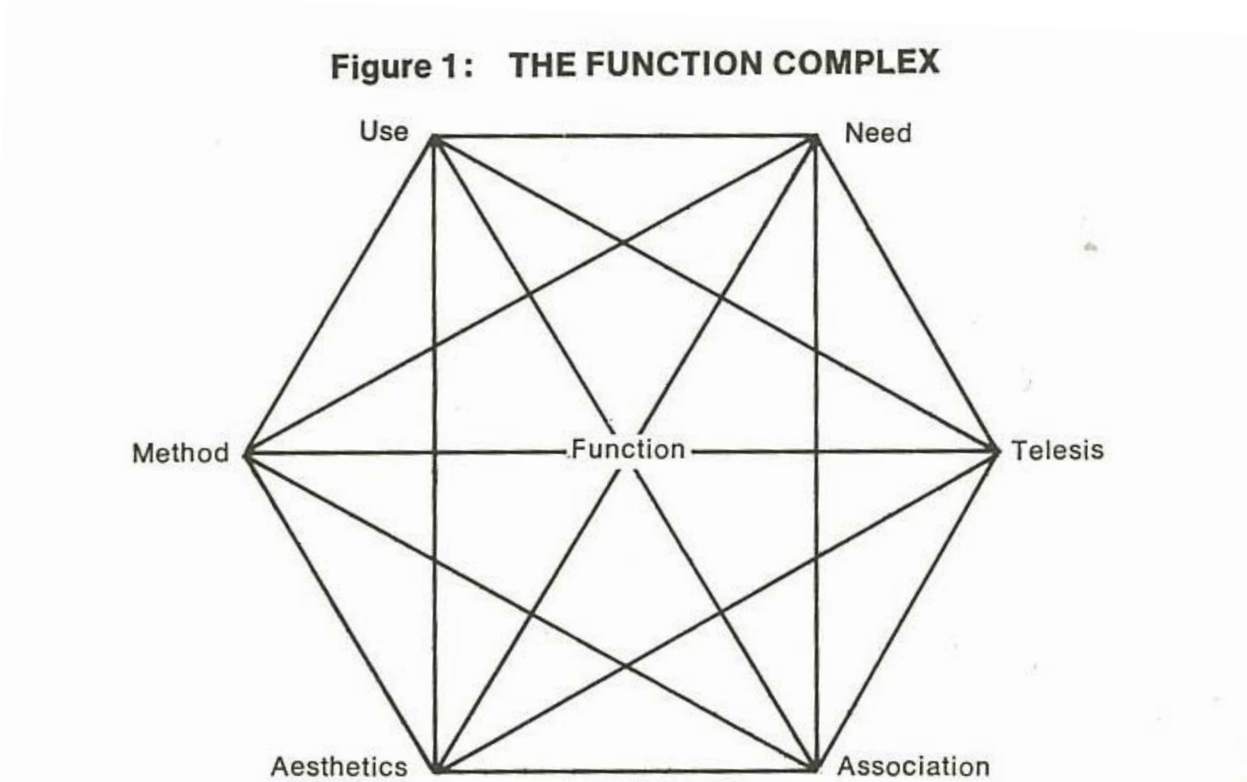
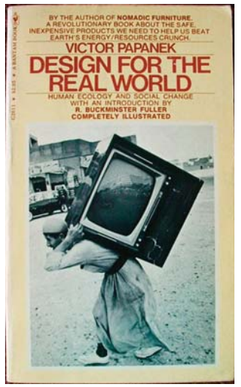
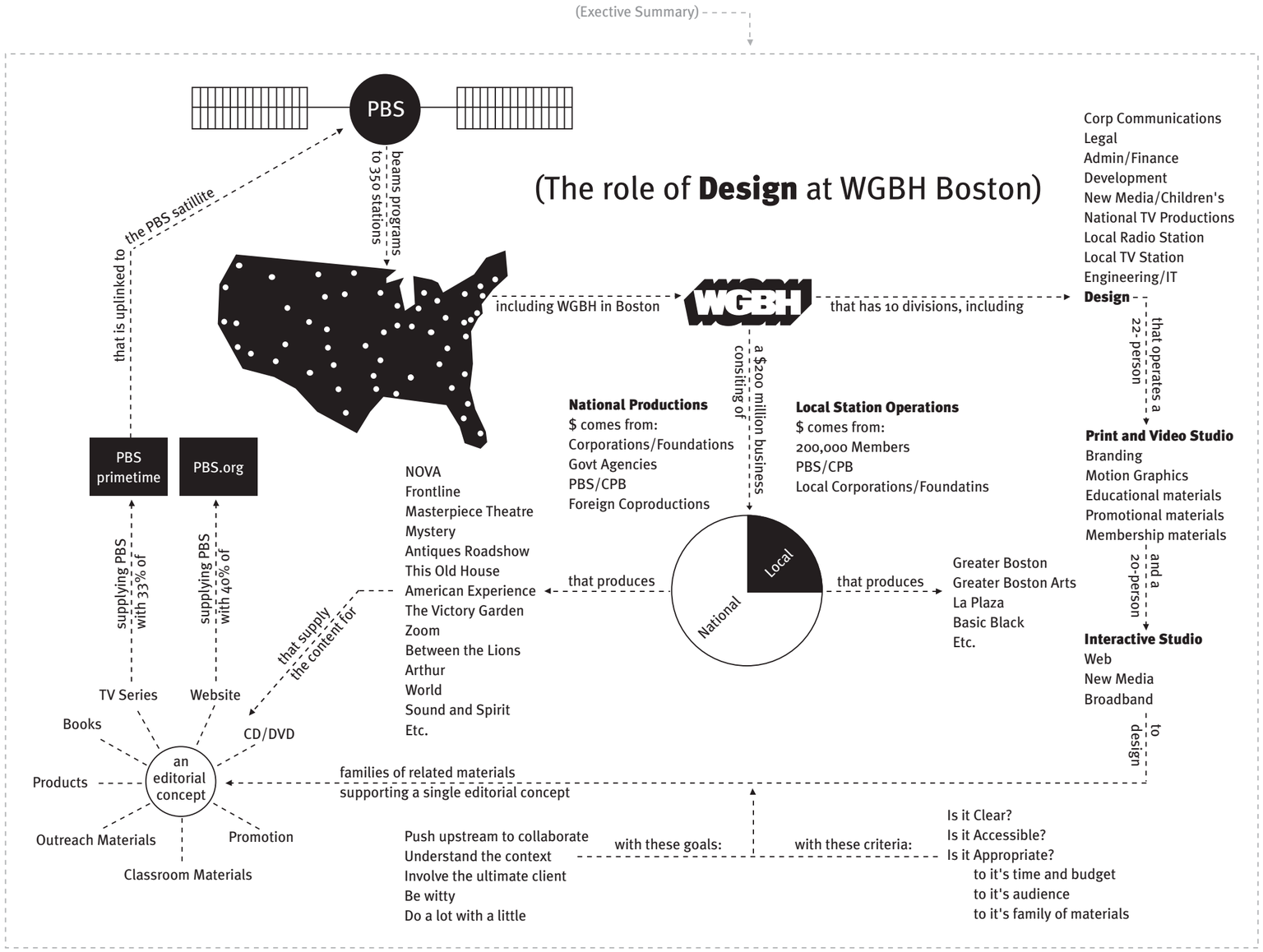
The function complex, Victor Papanek, 1971
from *Design for the Real World*

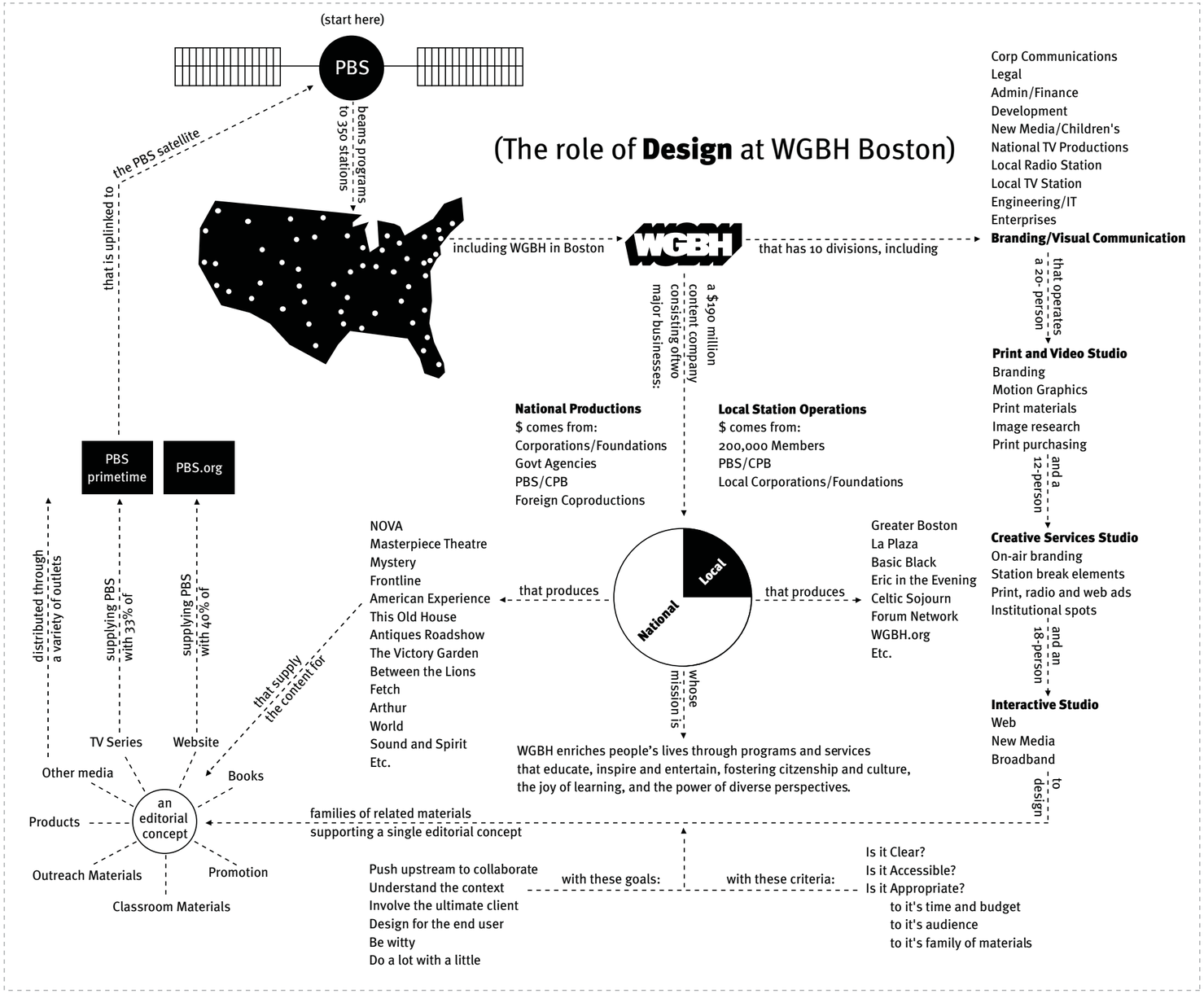




The role of Design at WGBH Boston, Chris Pullman, 2002



The role of Design at WGBH Boston, Chris Pullman, 2006



10 lessons I learned (or at least had confirmed) at WGBH, Chris Pullman, 2008

1. Work on things that matter
2. Work with people you like and respect
3. Be nice
4. Have high standards
5. Have a sense of humor
6. Design is not the narrow application of formal skills, it's a way of thinking
7. Variety is the spice of life
8. Institutions have a character, just like people do
9. We're all in the "understanding business"
10. You are what you eat

Dimensions of design practice

[to come]

Sabine Junginger, 2009

Possible relationships between a design function and the larger organization that it supports

Separate	Peripheral	Central	Integrated
Design as external resource	Design as part of the organization	Design at the core of the organization	Design integral to all aspects of the organization
Design thinking and methods have no continuous presence in the organization.	Design thinking and methods practiced somewhere within the organization.	Design thinking and methods are highly visible and take a central position.	Design thinking and methods are being applied at an organization's top level as means to inquire into a wide range of organizational problems with the aim to develop integrated solutions.
They are add-ons, limited to traditional problems: form, communication, function.	They apply to specific products and services.	They unify products and services across an organization; apply to corporate design and brand strategy.	

Junginger, S. Design in the organization: Parts and wholes. Design Research Journal, 2, 9 (2009)

http://www.dubberly.com/wp-content/uploads/2012/04/Junginger_model.png

Design Triples

Vitruvius

- solidity, commodity, delight

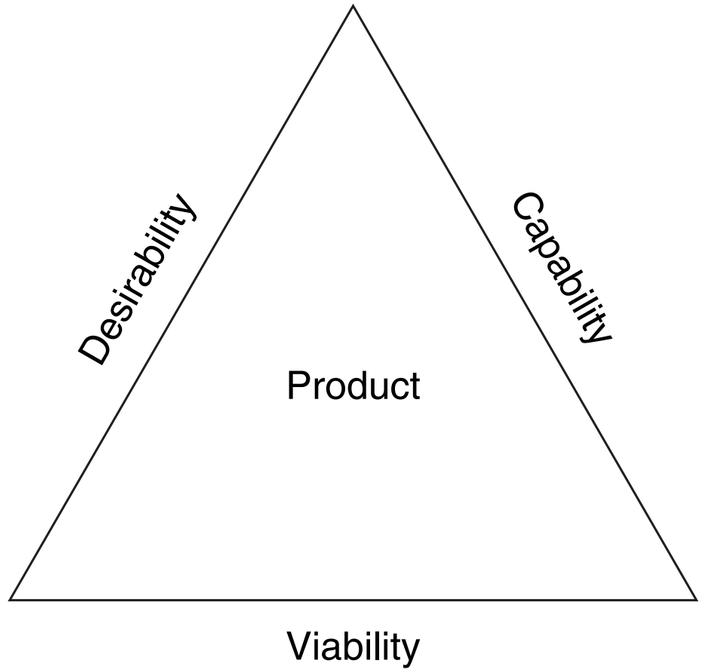
ISO 9241

- efficiency, effectiveness, satisfaction

Cooper

- hot, simple, deep

and of course: fast, cheap, good



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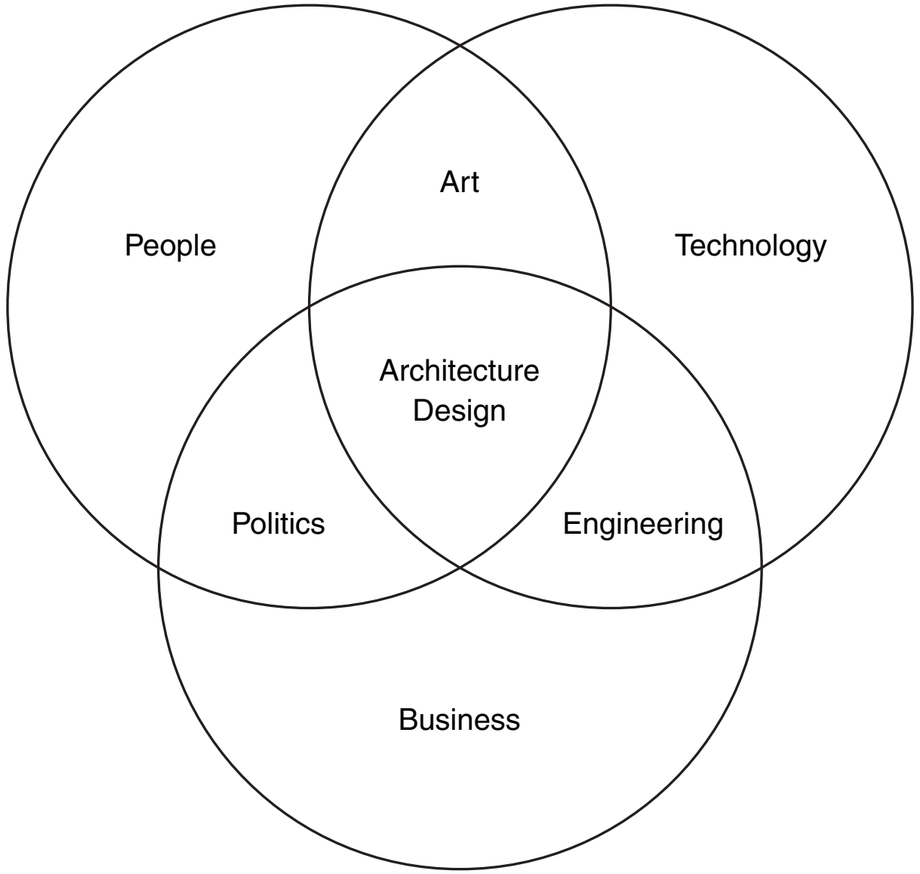
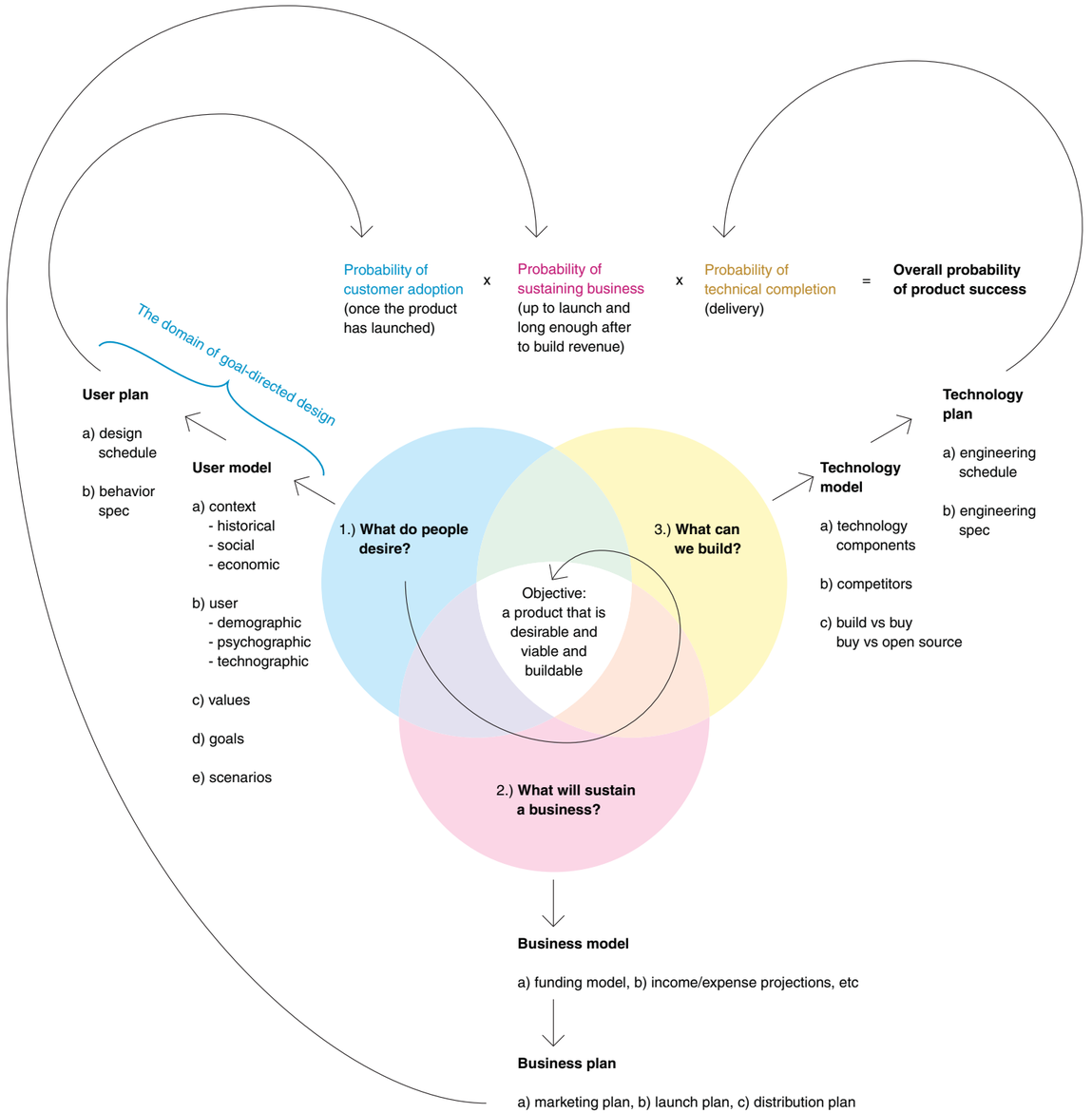


http://www.dubberly.com/wp-content/uploads/2008/06/ddo_article_cooper.pdf

Novell emphasized technology and gave little attention to desirability. This made it vulnerable to competition.

Apple emphasized desirability but has made many business blunders. Never-the-less, it is sustained by the loyalty its attention to users creates.

Microsoft is one of the best run businesses ever, but it has not been able to create highly desirable products. This provides an opening for competitors.



http://www.dubberly.com/wp-content/uploads/2008/06/ddo_article_cooper.pdf

10 Principles of Good Design, Dieter Rams, 1970's

1. Good design is innovative
2. Good design makes a product useful
3. Good design is aesthetic
4. Good design makes a product understandable
5. Good design is unobtrusive
6. Good design is honest
7. Good design is long lasting
8. Good design is thorough down to the last detail
9. Good design is environmentally friendly
10. Good design is as little design as possible

Levels of systems, Kenneth Boulding, 1956

1. the level of **Frameworks**	Only the geography and anatomy of the subject is described and analyzed; a kind of system of static relations [Most architecture and graphic design systems are of this type.]
2. the level of **Clockworks**	Machines that are determined
3. the level of **Thermostats**	The level of control in mechanical and cybernetical [sic] systems
4. the level of the **Cell**	As an open and self-maintaining system, having a through-put that transforms unpredicted inputs into outputs [what Maturana, Varela, and Uribe later called an “autopoetic” system]
5. the **Genetic** and **Societal** level	Of plants and accumulated cells
6. the level of the **Animal**	Specialized receptors, a nervous system, and an “image”
7. the **Human** level	All of the previous six—plus self-consciousness. The system knows that it knows, and knows that it dies
8. the level of the **Social Organism**	The unit at this level is a role, rather than a state; messages with content and meaning exist, and value systems are developed
9. the level of **Transcendental** Systems	The “ultimates” and “absolutes” and the “inescapables” with systematic structure

—Kenneth Boulding [14]

Classification of systems, Stafford Beer, 1959

SYSTEMS	*Simple*	*Complex*	*Exceedingly complex*
Deterministic	Window catch	Electronic digital computer	EMPTY
	Billiards	Planetary system	
	Machine-shop lay-out	Automation	
Probabilistic	Penny tossing	Stockholding	The economy
	Jellyfish movements	Conditioned reflexes	The brain
	Statistical quality control	Industrial profitability	THE COMPANY

Figure 6.3. Beer's classification of systems. Source: S. Beer, *Cybernetics and Management* (London: English Universities Press, 1959), 18.

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