

week

06 .

Human Centered Design & Innovation

Designing for Human Experiences

Lecture Outline

Human Centered Design

- Designing for Experiencing [Sanders, 2002]
- Method Cards [IDEO]
- Thoughtless Acts [Fulton Suri & IDEO, 2000]

Design and Innovation

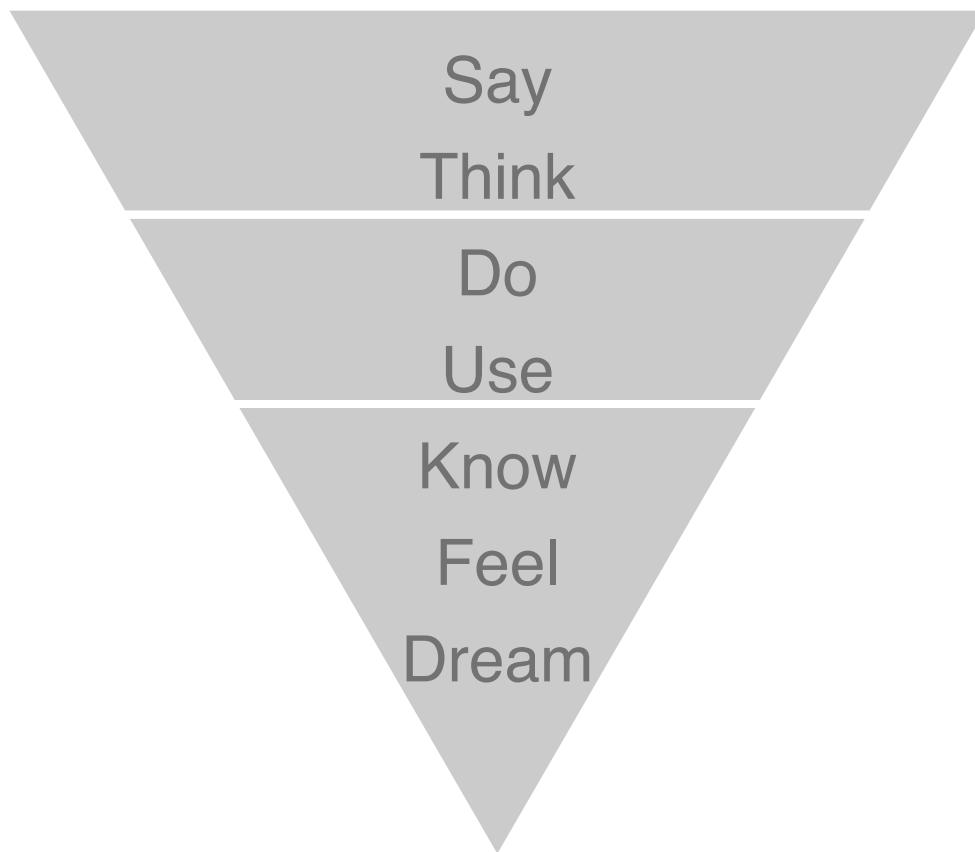
- Different forces that drive design
- Strangely Familiar: Design examples
- Avoiding “Cargo Cult Design”

Design for Experiencing

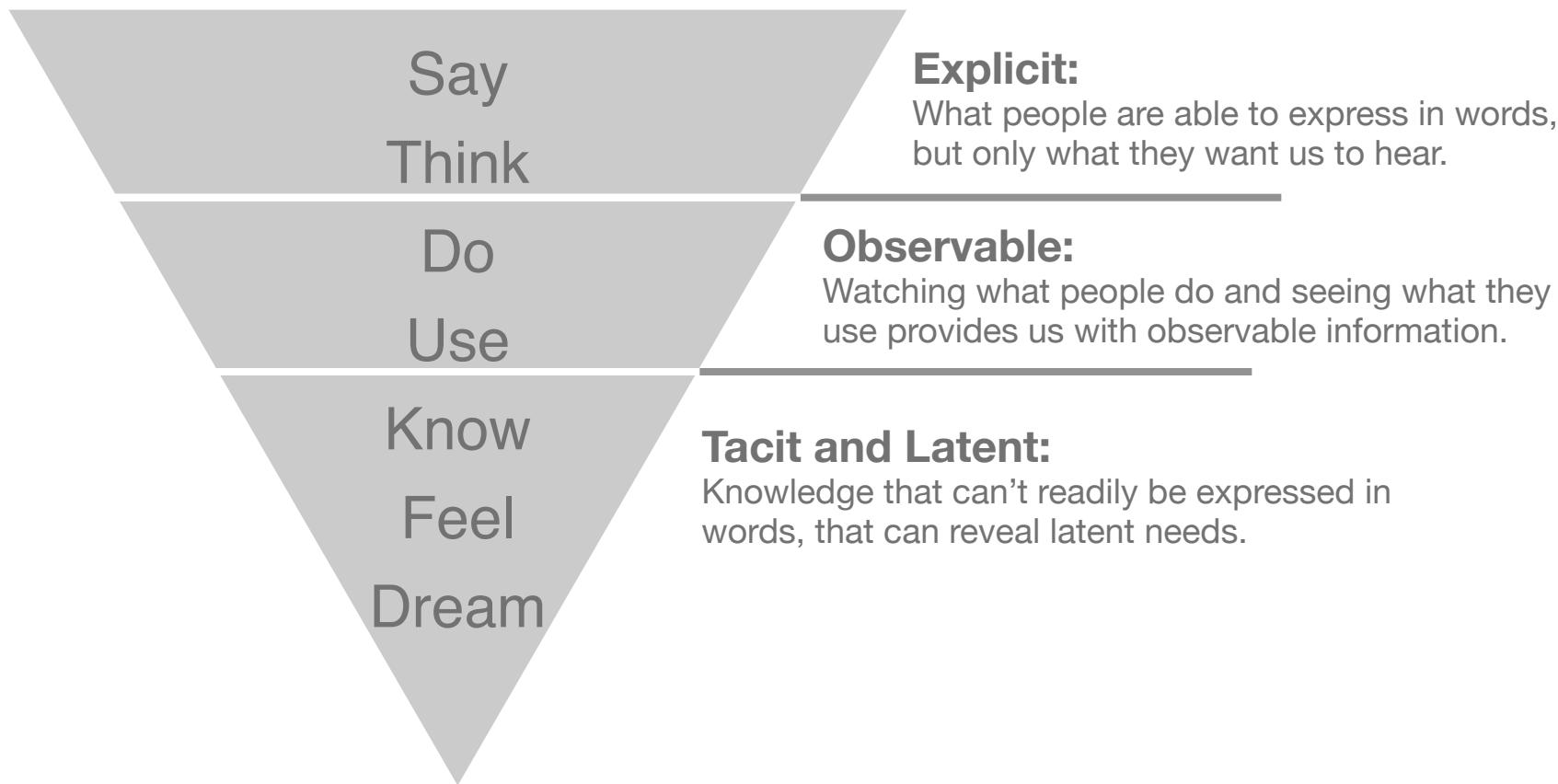
Sanders (2002)

Design people's experiences of things, actions, and places.
Experiencing is a constructive activity. Need to access people's experiences (past, current, and potential) as the source of inspiration and ideation for design.

Learn from What People...



Learn from What People...



Learn, Look, Ask, & Try

IDEO Method Cards

Tools for keeping people at the center of the design process.

IDEO Method Cards

Learn:

Analyze the information you've collected to identify patterns and insights.

Look:

Observe people to discover what they do rather than what they say they do.

Ask:

Enlist people's participation to elicit information relevant to your project.

Try:

Create simulations to help empathize with people and to evaluate proposed designs.

Learn: Affinity Diagrams

Learn Look Ask Try

Affinity Diagrams

HOW: Cluster design elements according to intuitive relationships such as similarity, dependence, proximity, etc.

WHY: This method is a useful way to identify connections between issues and reveal innovation opportunities.

Clustering the elements related to transporting the family helped the IDEO team to discover some significant opportunities for stroller design.

IDEO www.ideo.com



Learn: Error Analysis

Learn

Look

Ask

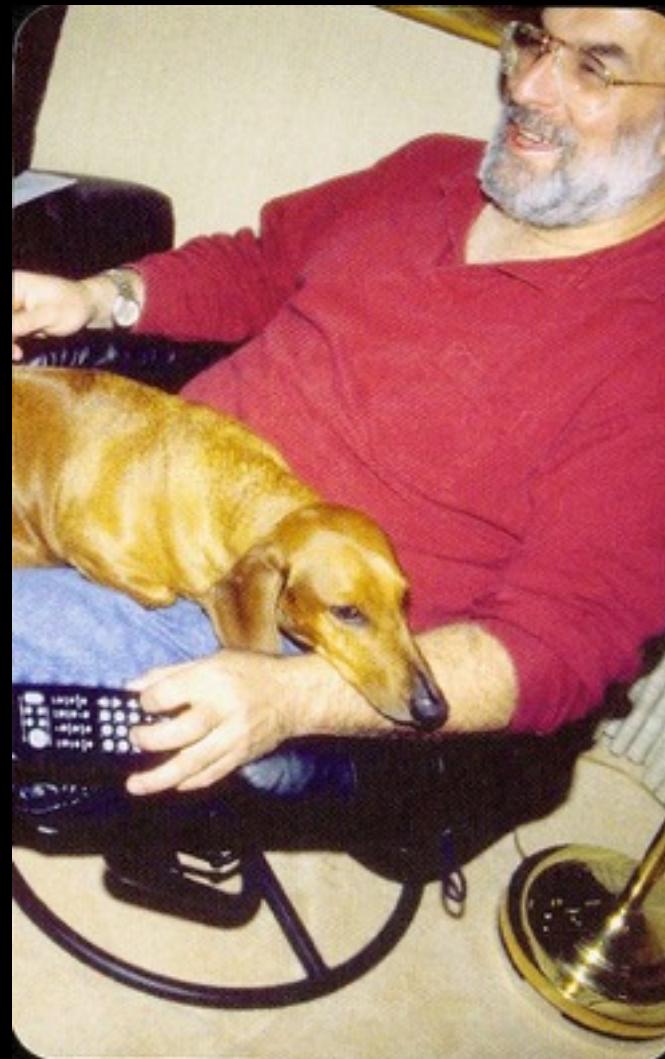
Try

Error Analysis

HOW: List all the things that can go wrong when using a product and determine the various possible causes.

WHY: This is a good way to understand how design features mitigate or contribute to inevitable human errors and other failures.

The IDEO team used error analysis on a remote-control concept in order to maximize the functionality of each button's size, shape, and texture.



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Look: A Day in the Life

Learn

Look

Ask

Try

A Day in the Life

HOW: Catalog the activities and contexts that users experience throughout an entire day.

WHY: This is a useful way to reveal unanticipated issues inherent in the routines and circumstances people experience daily.

IDEO asked potential wearers of a drug-delivery patch to document their daily behaviors including those that might affect the function of the patch – getting wet, snagging on clothing, etc.



Look: Personal Inventory

Learn

Look

Ask

Try

Personal Inventory

HOW: Document the things that people identify as important to them as a way of cataloging evidence of their lifestyles.

WHY: This method is useful for revealing people's activities, perceptions, and values as well as patterns among them.

For a project to design a handheld electronic device, the IDEO team asked people to show and describe the personal objects they handle and encounter every day.



Look: Behavioral Mapping

Learn **Look** Ask Try

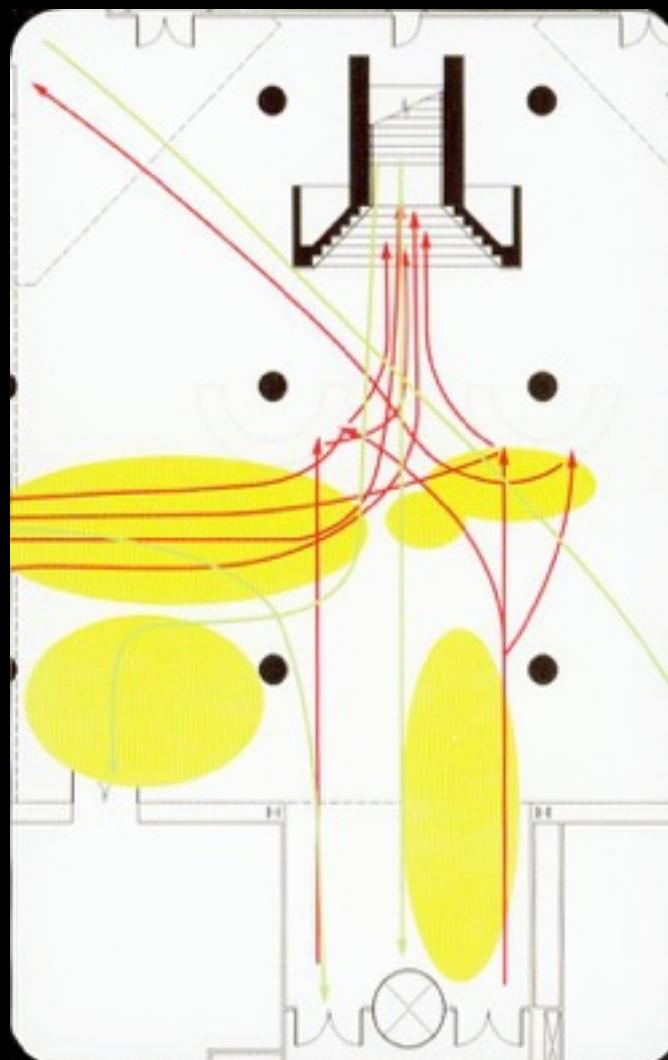
Behavioral Mapping

HOW: Track the positions and movements of people within a space over time.

WHY: Recording the pathways and traffic patterns of occupants of a space helps to define zones of different spatial behaviors.

Tracking the paths of visitors helped designers to identify the traffic spots and the vacant, underused areas of a museum lobby.

IDEO www.ideo.com



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Ask: Unfocus Group

Learn

Look

Ask

Try

Unfocus Group

HOW: Assemble a diverse group of individuals in a workshop to use a stimulating range of materials and create things that are relevant to your project.

WHY: Encourages rich, creative, and divergent contributions from potential users, releases inhibitions, and opens up new thinking.

An IDEO team invited a foot-fetishist, an artist, a body-worker, a podiatrist and others to work together to explore and build concepts for a new range of fashion sandals.



Ask: Extreme User Interviews

Learn

Look

Ask

Try

Extreme User Interviews

HOW: Identify individuals who are extremely familiar or completely unfamiliar with the product and ask them to evaluate their experience using it.

WHY: These individuals are often able to highlight key issues of the design problem and provide insights for design improvements.

By understanding the role and mindset of the youngest family member, the IDEO team uncovered new product design opportunities for household cleaning.



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Try: Empathy Tools

Learn

Look

Ask

Try

Empathy Tools

HOW: Use tools like clouded glasses and weighted gloves to experience processes as though you yourself have the abilities of different users.

WHY: This is an easy way to prompt an empathic understanding for users with disabilities or special conditions.

IDEO designers wore gloves to help them evaluate the suitability of cords and buttons for a home-health monitor designed for people with reduced dexterity and tactile sensation.



Try: Bodystorming

Learn

Look

Ask

Try

Bodystorming

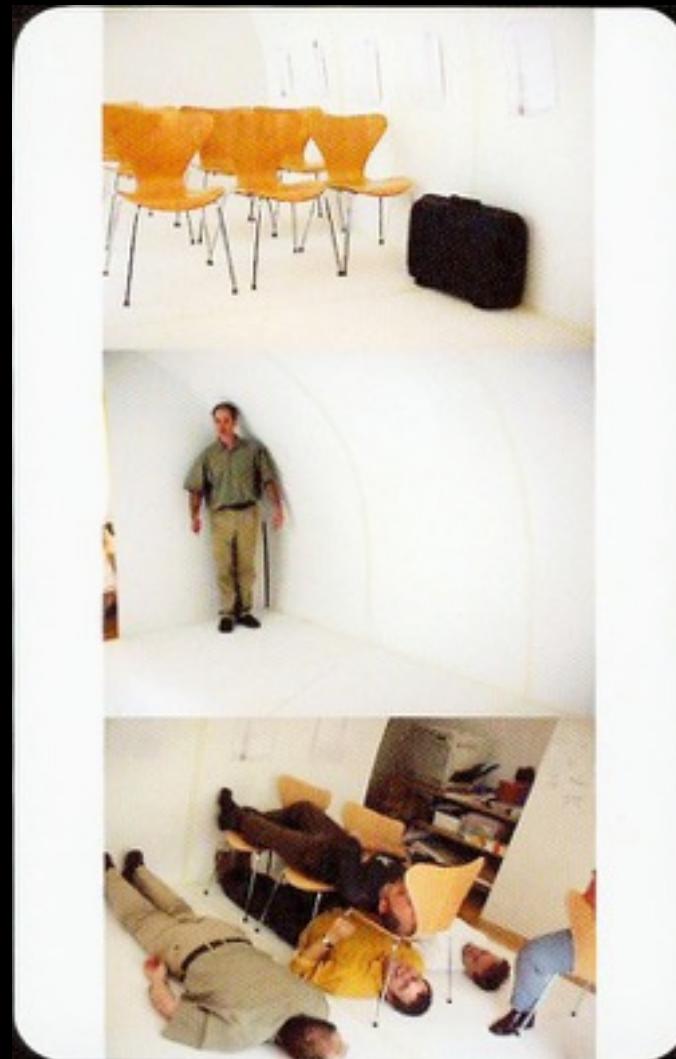
HOW: Set up a scenario and act out roles, with or without props, focusing on the intuitive responses prompted by the physical enactment.

WHY: This method helps to quickly generate and test many context- and behavior-based concepts.

Bodystorming various ways of sleeping in airplanes helped the IDEO design team to generate a wide variety of concepts for an airplane interior.

IDEO

www.ideo.com



Experience Prototyping

Why Experience Prototyping?

More and more we find ourselves designing **complex** and **dynamic interactions** with hardware and software, spaces, and services.

The designer needs to focus on "**exploring by doing**" and actively experiencing the subtle differences between various design solutions.

Experience Prototyping

Multidisciplinary Team

Multiple disciplines are needed to solve the design problems of today
— e.g. interaction design, industrial design, designers of environments, human factors specialists, mechanical and electrical engineers.

A powerful asset to have tools and techniques which create a **shared experience**, providing a foundation for a **common point of view**.

Thoughtless Acts

Fulton Suri & IDEO (2000)

All those intuitive ways we adapt, exploit, and react to things in our environment; things we do without really thinking.

Thoughtless Acts

Reacting? Tactile and visual encouragement to stay on track?



Thoughtless Acts

Reacting? Avoiding surfaces. Barely conscious adjustments in paths chosen?



Thoughtless Acts

Reacting? How many ways to keep hands free on the go?



Thoughtless Acts

Reacting? For comfort and relief, our feet seek a variety of surfaces.



Thoughtless Acts

Reacting? Items are safe and remembered within our personal space.



Thoughtless Acts

Responding? Remembering or pointing to your place after interruptions.



Thoughtless Acts

Responding? Easy way to carry the elements or a reminder of an intentional pairing of tools?



Thoughtless Acts

Responding? Door rail swing, unconscious stretch, better balance?



Thoughtless Acts

Responding? Simple analog tools for a more direct indication.



Thoughtless Acts

Responding? Can spatial elevation enhance social, physical, and emotional experience?



Thoughtless Acts

Co-opting? Airport office and hands free journey.



Thoughtless Acts

Co-opting? An active storage mode.



Thoughtless Acts

Co-opting? Extending personal space.



Thoughtless Acts

Co-opting? Incidental benefits. Storage with the benefit of sun and fresh air.



Thoughtless Acts

Exploiting? Environmental features act as breaks for carts. Ideas for built-in functions?



exploiting?

80

81

Thoughtless Acts

Exploiting? Butter spatula and handle.



90

Exploiting?

91

Thoughtless Acts

Exploiting? Eating pizza on the go. Cactus bulletin board.



Exploiting?
100



101

Thoughtless Acts

Adapting? When do utilitarian tools become wearable? Personal and decorative?



105

Thoughtless Acts

Conforming? Common view point, stride, and rhythm.



130

conforming?

131

Thoughtless Acts

Conforming? Trash stash.



Thoughtless Acts

Signaling? Shared tools often need status/progress indicators to let others know.



Thoughtless Acts

Signaling? Status indicators can save disappointment. Evident from a distance.



signaling? 152

Thoughtless Acts

Inviting Curiosity

“The key is looking carefully at what people actually do in various situations and asking ourselves questions to explain what we see: Why has someone placed this object here? What are those people doing and why are they grouped like that? Why is it that people apparently avoid being here? Curiosity will reveal meaning behind these nonspectacular interactions that take place around us all the time.”

Thoughtless Acts

Opportunities for Design

Everywhere we look there is evidence of people's creativity in reinterpreting and adapting things, improvising solutions to make up for something that's missing or poorly designed. We should look for patterns that point to a universal need. When we dig deep enough, behavior that might at first seem arbitrary, surprising, or idiosyncratic, usually has an insightful explanation.

Capture Thoughtless Acts

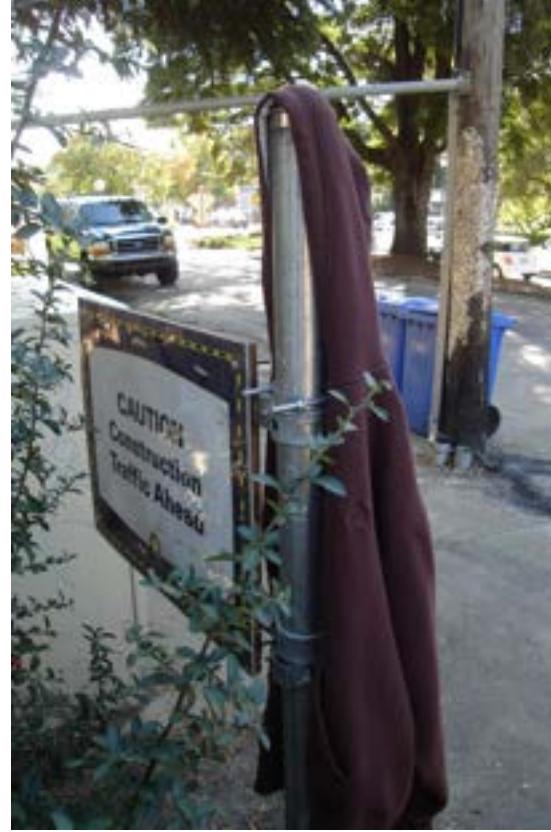
Capture Thoughtless Acts around you. Describe what is happening and suggest a possible design solution.

Post the photo(s), your description, and design solution on the course web site.

Due **Monday October 10th** midnight.



photos by Elisa Oreglia and Jonathan Yen







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IDEO's Thoughtless Acts

Discussion Pool Map 224 Members

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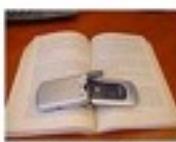
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What Drives Design?

Different forces that drive design

Technology driven design

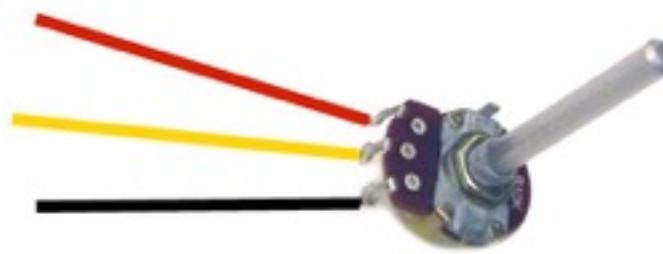
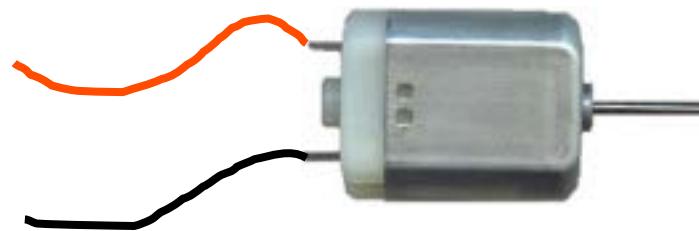
Need driven design

Concept driven design

Technology Driven Design

Begin with an innovative technology, apply it to an application.

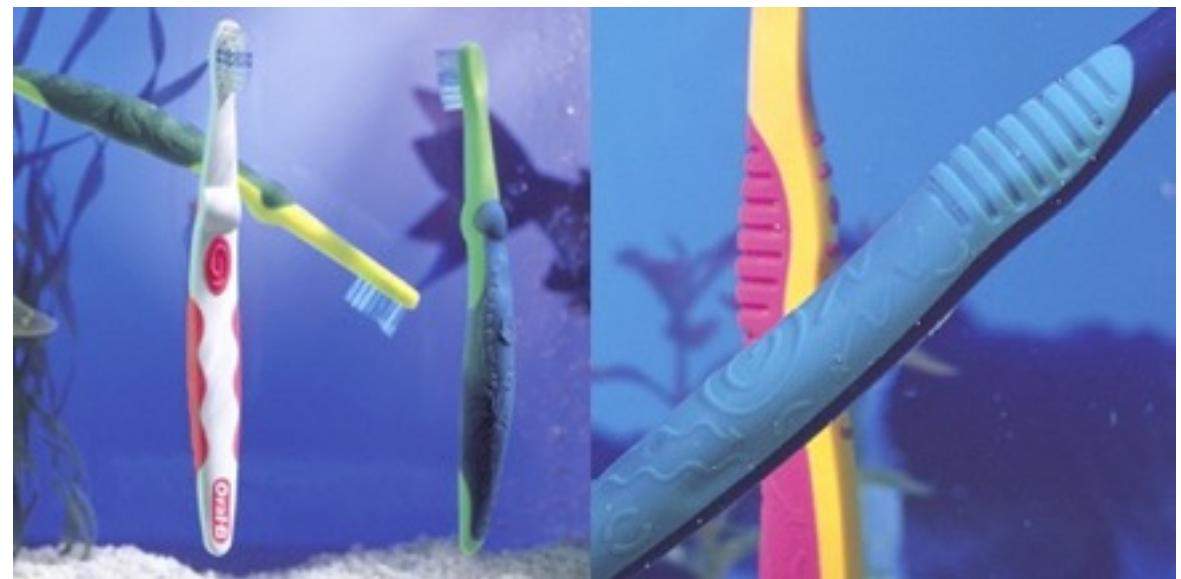
Technology Driven Design



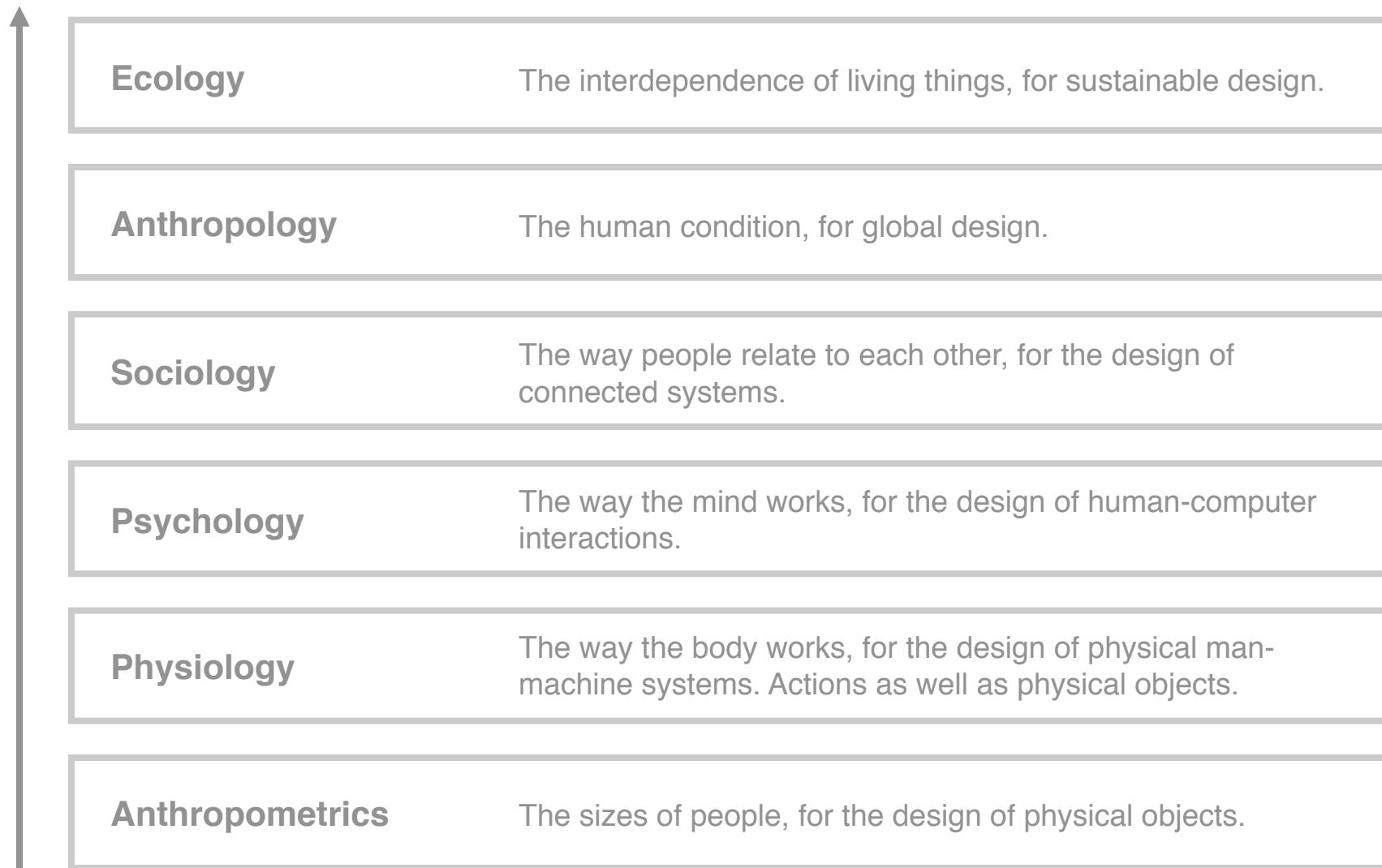
Need Driven Design

Identify an existing problem or set of problems, shape process around solving these problems

Need Driven Design



“Hierarchy of Complexity” [Moggridge, 2006]



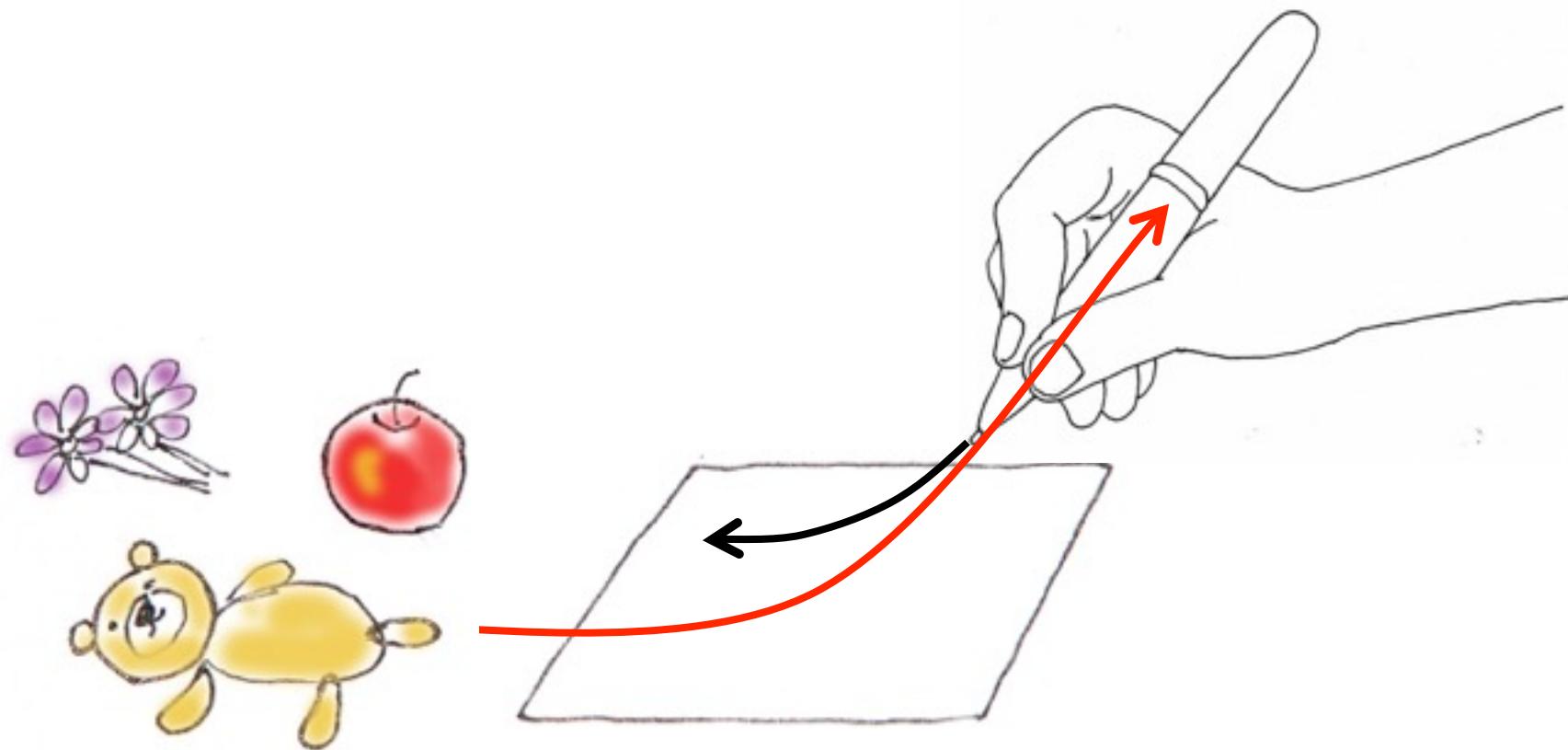
Concept Driven Design

Define a new vision, design artifacts which embody that concept.

Field research may embrace existing conditions and situations but may not necessarily alter our relationship to everyday objects or challenge conventional ideas about design. [Blauvelt, 2004]



Where does ink come from?



Can we use attributes of our environment as ink?

Concept Driven Design

We need to consider and ask questions about the very stuff of everyday life, the objects around us, the places we inhabit, the habits we perform. To question that which seems to have ceased forever to astonish us. [Blauvelt, 2004]

Strangely Familiar

“Strangely Familiar” projects force us to look at our everyday world anew, challenge our own presumptions about what is possible, and reconsider our relationship to things that once seemed so familiar.

[Blauvelt, 2004]

Concept Driven Design

Strangely Familiar 1

Ritual of Use

Polemical objects that force us to reconsider our relationship to products and dictate new rituals of use and expectations of performance.

The Placebo Project [Dunne & Raby, 2001]



Compass Table investigates people's attitudes, experiences, and relationships to electromagnetic fields emitted by consumer goods.

Anti-Social Light [Anastassiades, 2001]



Illuminates the servile role of products, creating a world in which users cannot simply command an action to occur, but rather one in which their own behavior produces specific effects.

Concept Driven Design

Strangely Familiar 2

Portability

Portable structures that respond to nomadic conditions of lightness and ephemerality, thereby undermining long-held architectural principles of site-specificity and permanence.

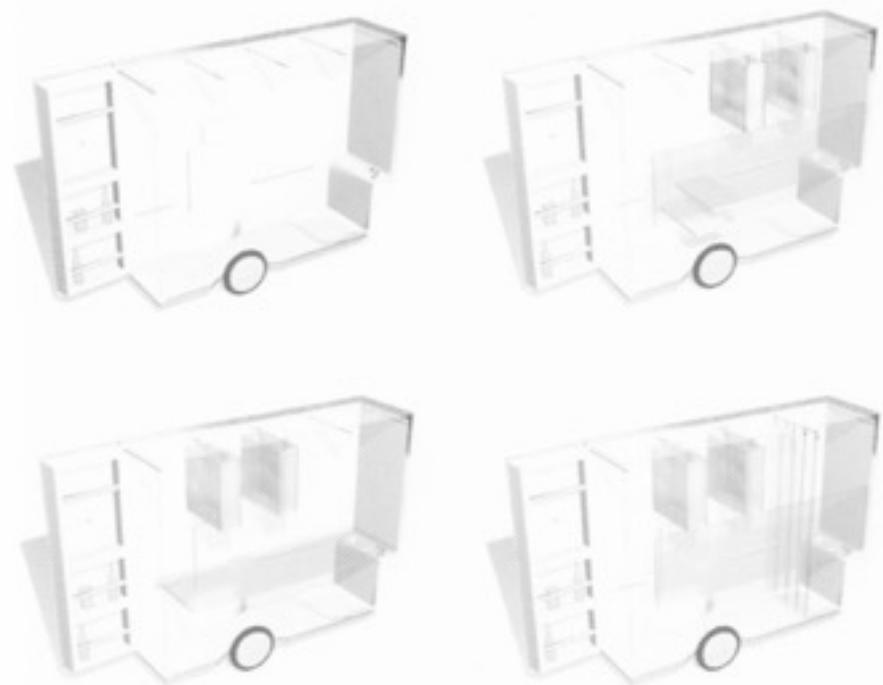
Basic House [de Azua, 2000]



Weighing a few ounces, **Basic House** is an individual quest for maximum mobility and freedom.



Habitat Furtif [R&SIE..., 1998]



A stealth-like mobile living space. Effectively disguises the portable dwelling and the condition of homelessness itself, at once visible and often ignored or rendered invisible.



Concept Driven Design

Strangely Familiar 3

Multifunctionality

Multifunctional objects that change both shape and use, thereby blurring the traditionally fixed relationship between so-called “form and function.”

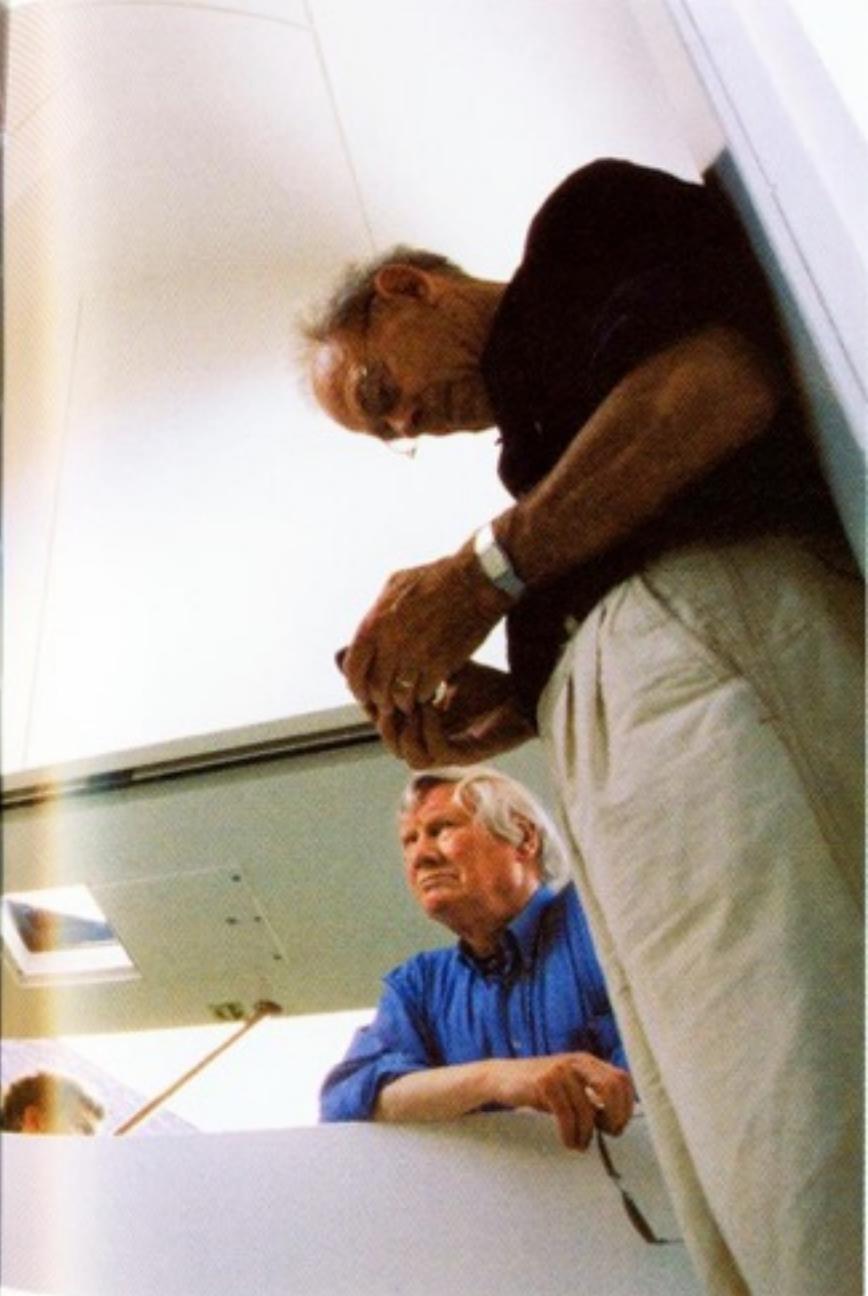
Tumble House

[Koers, Zeinstra, van Gelderen, 1998]



Tumble House can be tumbled onto any of its sides, and each orientation creates a unique interior configuration with an entrance, or door, that in other positions functions as a window, skylight, closet, table or bed.





Concept Driven Design

Strangely Familiar 4

Transforming the Everyday

Extraordinary designs that reference and transform otherwise ordinary objects and spaces, drawing our attention to everyday conditions.



Do Break [Tjepkema & van der Jagt, 2001]



Do Break [Tjepkema & van der Jagt, 2001]



Do Hit [van der Poll, 2001]



Reconsideration of the role of the designer and the user?



Come a Little Bit Closer Bench [droog, 2001]



Come a Little Bit Closer Bench [droog, 2001]

Designer as Curious George

[Boym & Boym, 2002]



"Curious George is driven by curiosity to play and experiment with elements of his daily environment. He finds new uses for familiar objects, invents different ways of doing things, and tests the limits of materials and objects. Many of his experiments do not work, and he routinely gets in trouble, but occasionally he reaps praise or a medal."

What do representations represent?

Danger of Cargo Cult Design

What do representations represent in designing and prototyping?
[Holmquist, 2005]

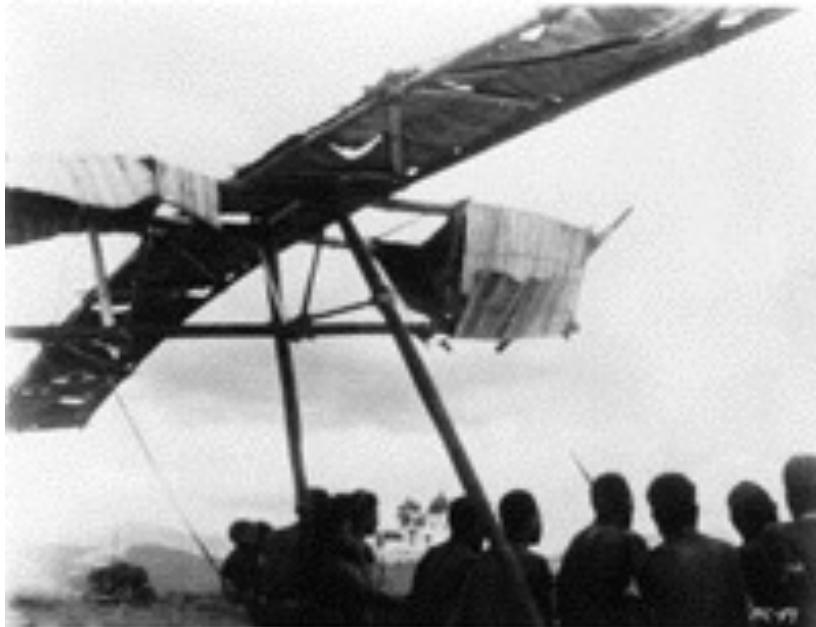
Cargo Cult Science

Looks like science, but it really is not.

Richard Feynman (1974) based the phrase on a concept in anthropology, the cargo cult.

The Cargo Cult in Melanesia

They believe that planes come from paradise. Their ancestors sent them. But the white man, a crafty pirate, manages to get his hands on them by attracting them into a big trap of an airport.



Cargo Cult Design

The designer builds a “fetish” object that has the appearance of a real artifact—but it doesn’t actually do what it claims to do.

Pretends to have solved the underlying problems—and is often successful in fooling others into believing this.

[Holmquist, 2005]

Forms of Representations

Prototype represents the knowledge of **function**. A tangible artifact in which the necessary technology to achieve a particular functionality is implemented.

Mockup is the embodiment of **form**. How an artifact could manifest itself in the world.

Neither of them are the real thing.

[Holmquist, 2005]

Design and Technology

In the end, good design results from exploiting the technological possibilities and limitations creatively, not from ignoring them. The demand for computer knowledge in a design group using mock-ups is very high.

[Holmquist, 2005]

Avoiding Cargo Cult Design

Principles (adapted from Feynman and Holmquist)

Am I fooling myself?

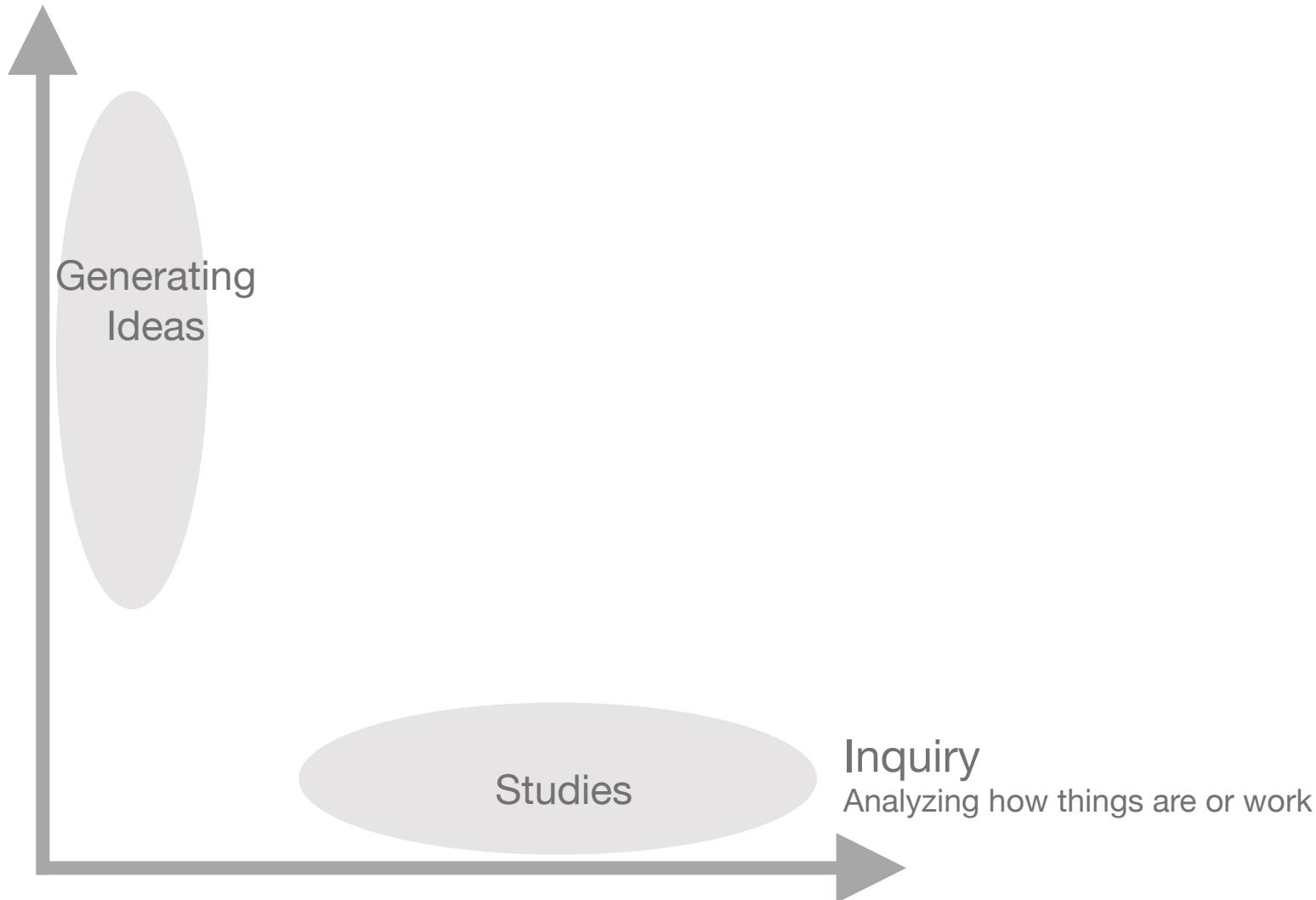
- Do I really have enough knowledge of the technology and potential users to say this will work?

Am I fooling the layman?

- Is there a risk that people will believe the representation is the real thing?

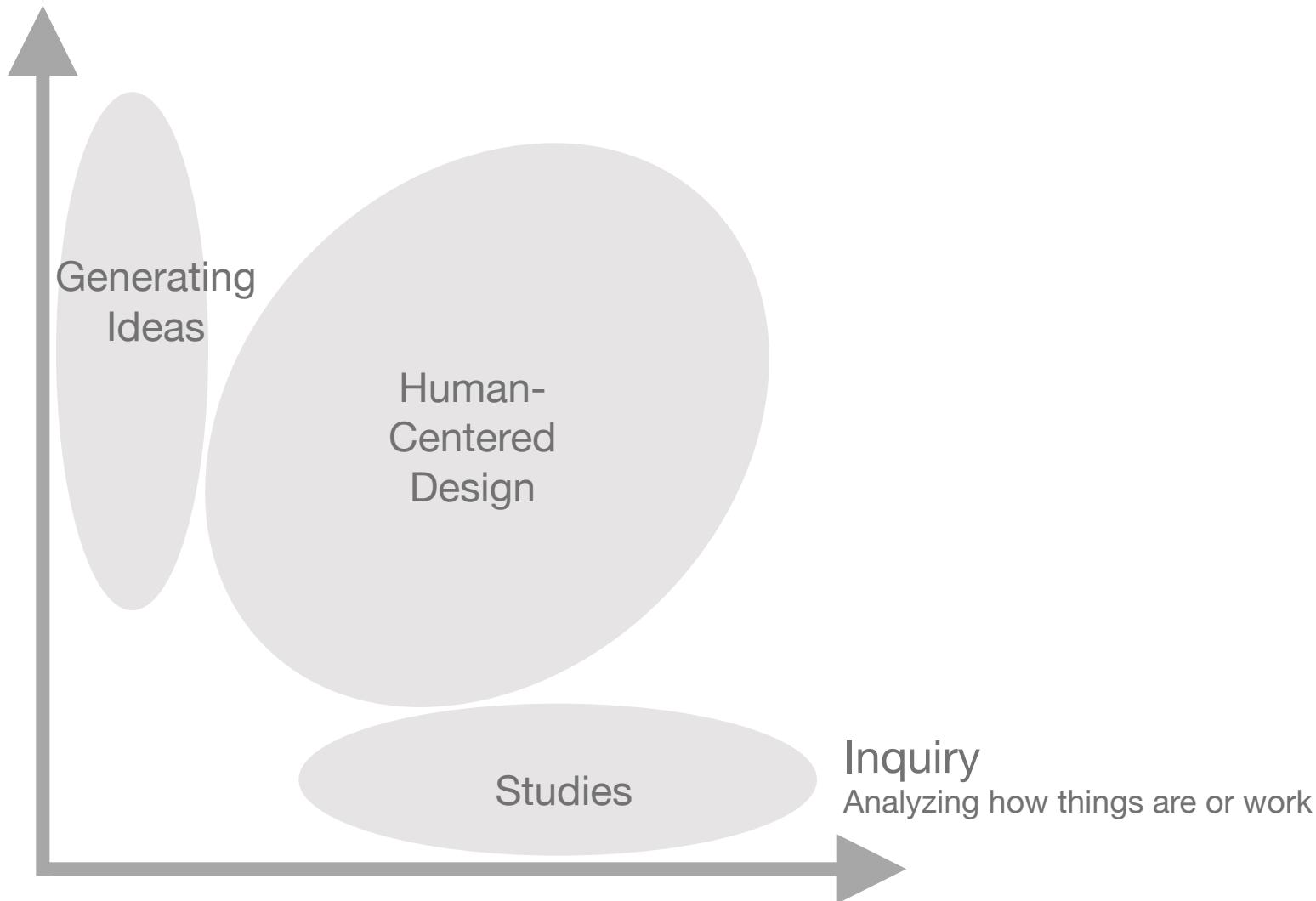
Invention

Coming up with new and original ideas



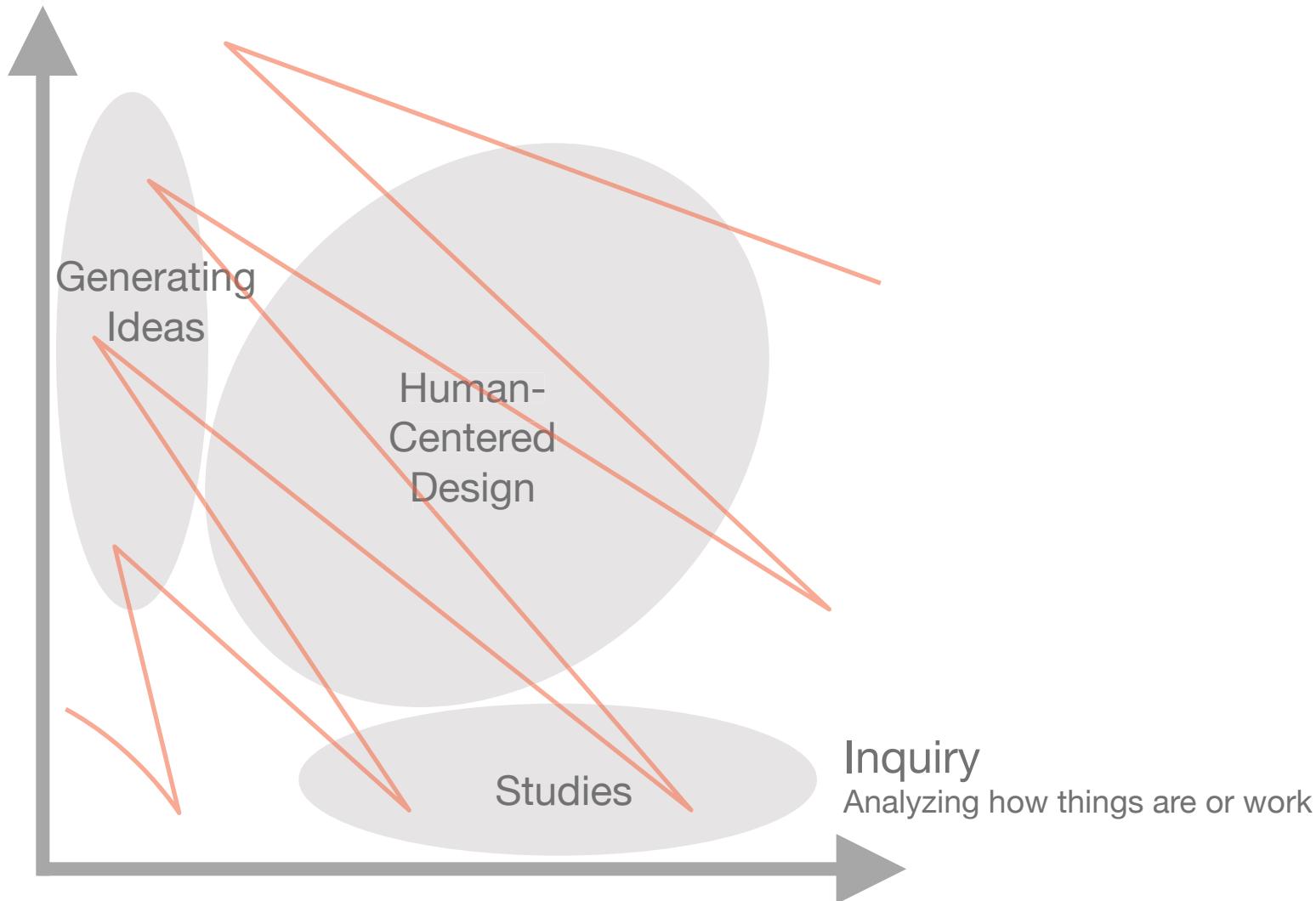
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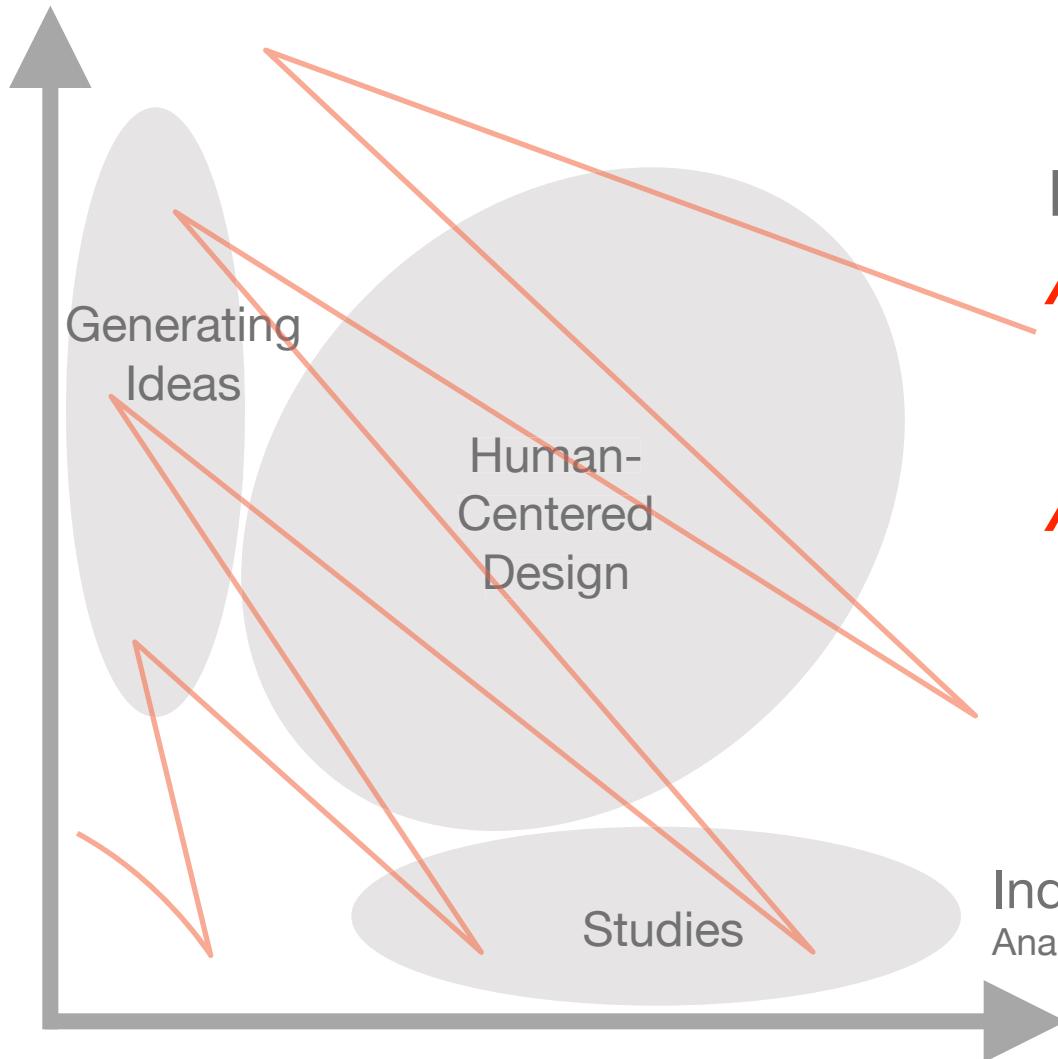
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Principles

Am I fooling myself?

- Do I really have enough knowledge of the technology and potential users to say this will work?

Am I fooling the layman?

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Inquiry

Analyzing how things are or work

Thanks!