



Aalto University
School of Arts, Design
and Architecture

DESIGN RESEARCH

Methodological considerations

PRE-THESIS SEMINAR 2021

Dr. Antti Pirinen, Aalto ARTS, Department of Architecture

GOOD RESEARCH

Nigel Cross 2007, *Designerly Ways of Knowing*

- **Purposive** – based on identification of an issue or problem worthy and capable of investigation
- **Inquisitive** – seeking to acquire new knowledge
- **Informed** – conducted from an awareness of previous, related research
- **Methodical** – planned and carried out in a disciplined manner
- **Communicable** – generating and reporting results which are testable and accessible by others

CHARACTERISTICS OF DESIGN RESEARCH METHODOLOGY

- Draws from multiple disciplines: social sciences, technology, art...
- Solution-driven, anticipatory, speculative – interested in “what could be”, not just about “what is”
- Emphasis on artefacts and materiality – studies broadly the “adaptation of means to ends” (Herbert Simon)
- Creativity, skills and making in focus (Nigel Cross, Donald Schön)
- Typically qualitative and explorative methods – in-depth interviews, design ethnography in the field, design probes, design games...
- Research through practice, prototypes, experiments
- Visual data and visual means of presenting the results
- Creation of understanding (to guide design action) rather than proving scientific hypotheses
- Expansion towards two directions: users and systems level issues



Research

Design
research

Research-
based
design

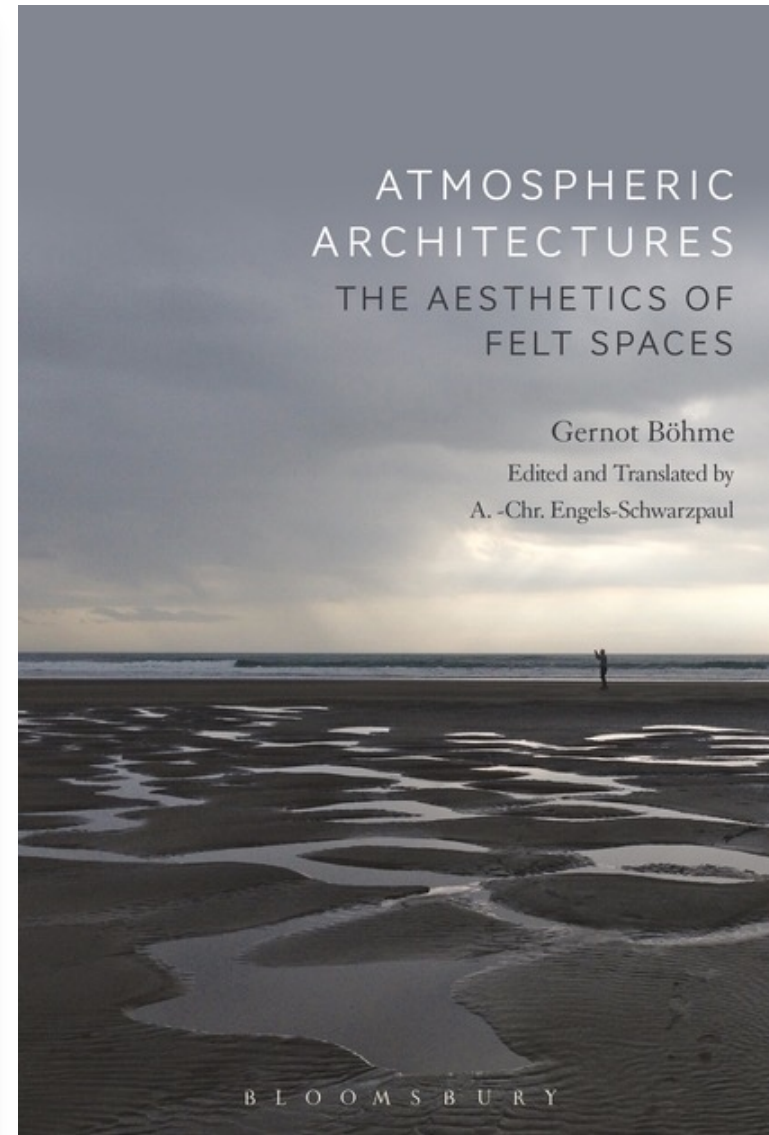
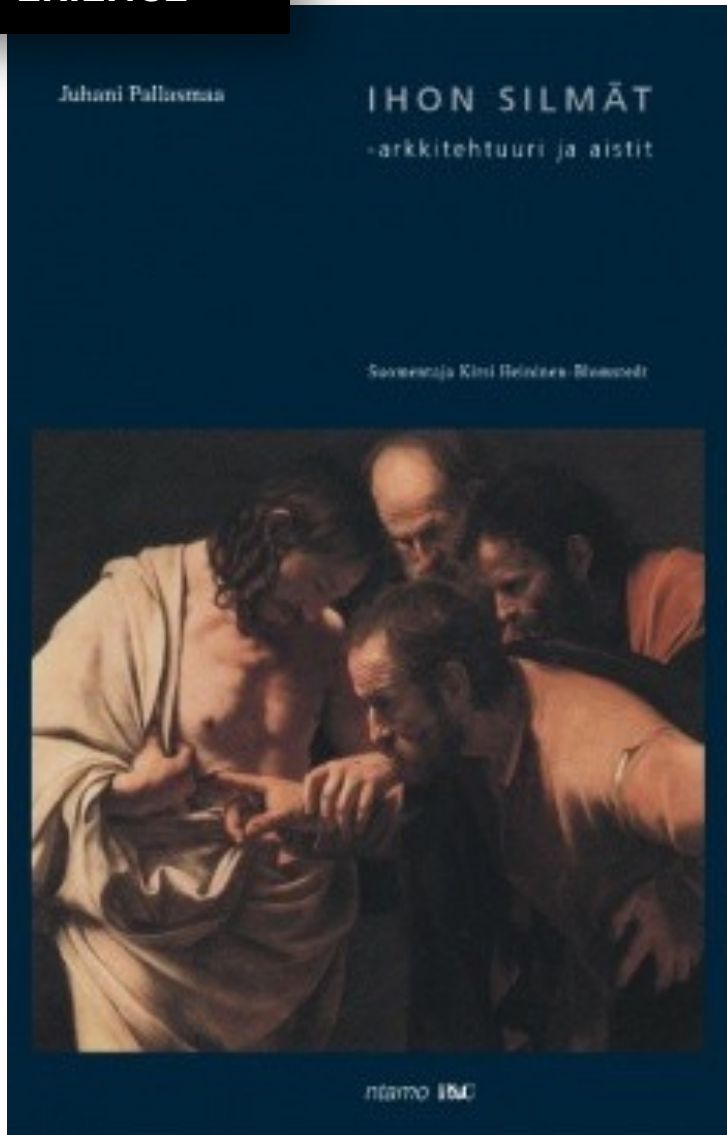
Research
through
design

Design

Image: Alastair Parvin, the WikiHouse Project

STANDPOINTS AND DISCUSSIONS

**SENSORY &
AESTHETIC
EXPERIENCE**

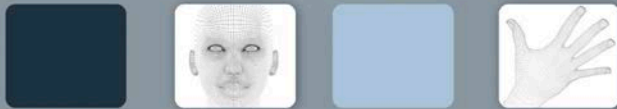


COGNITION AND BEHAVIOUR



ERGONOMICS

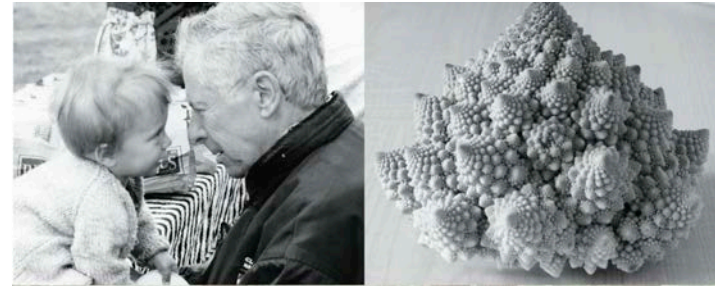
Foundational Principles,
Applications, and Technologies



Pamela McCauley Bush, PhD, CPE

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ANN SUSSMAN AND JUSTIN B. HOLLANDER

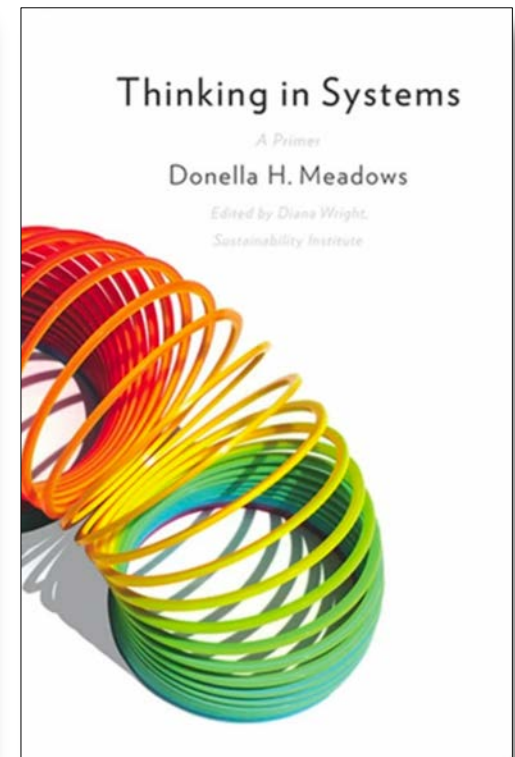
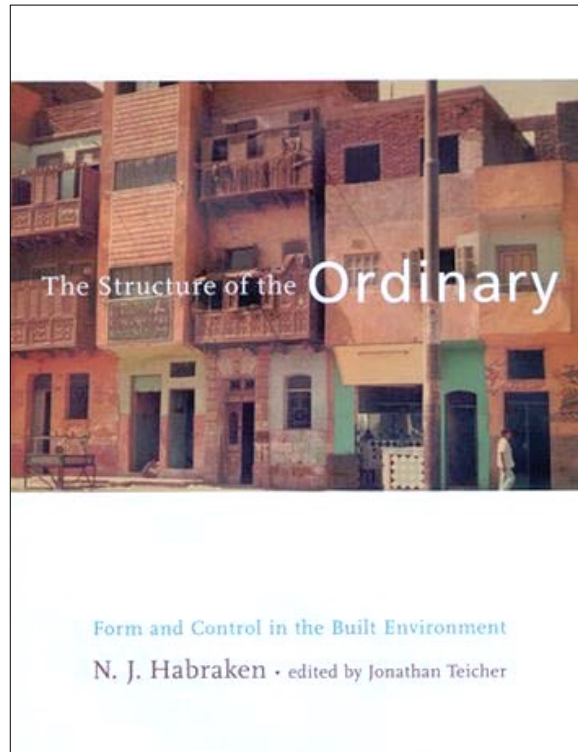
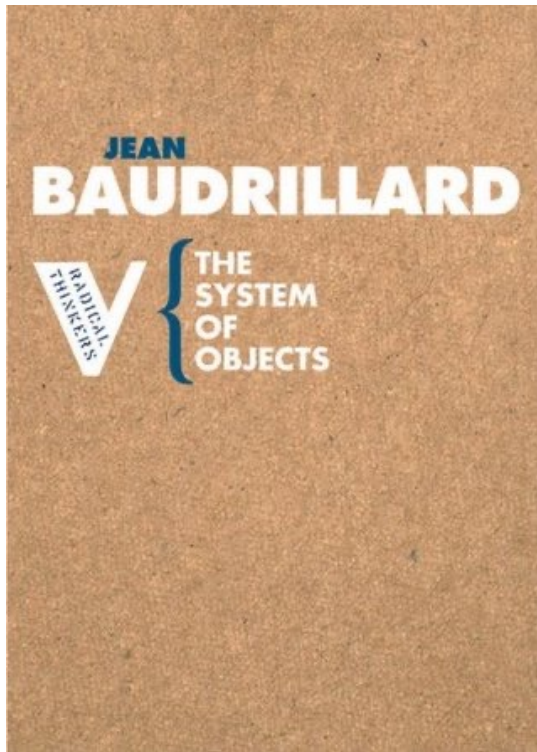
Cognitive Architecture

DESIGNING FOR HOW WE RESPOND
TO THE BUILT ENVIRONMENT

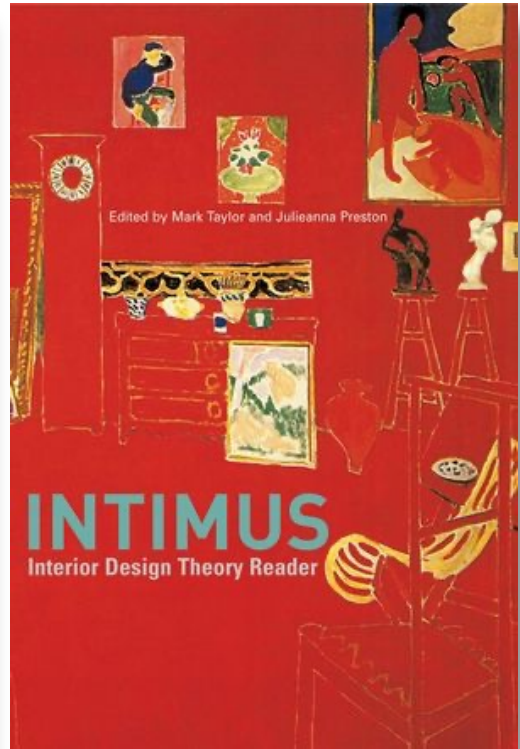
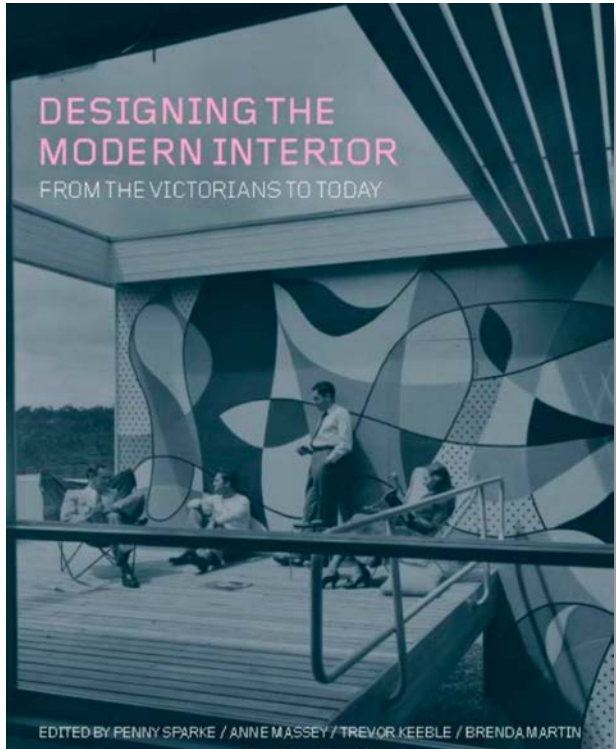


 ROUTLEDGE

PHYSICAL AND SOCIAL SYSTEMS



CULTURAL THEORY ON INTERIOR SPACE



**POWER,
MARGINALITY**

with by humanists, social scientists and
political activists.
—The New York Times Book Review

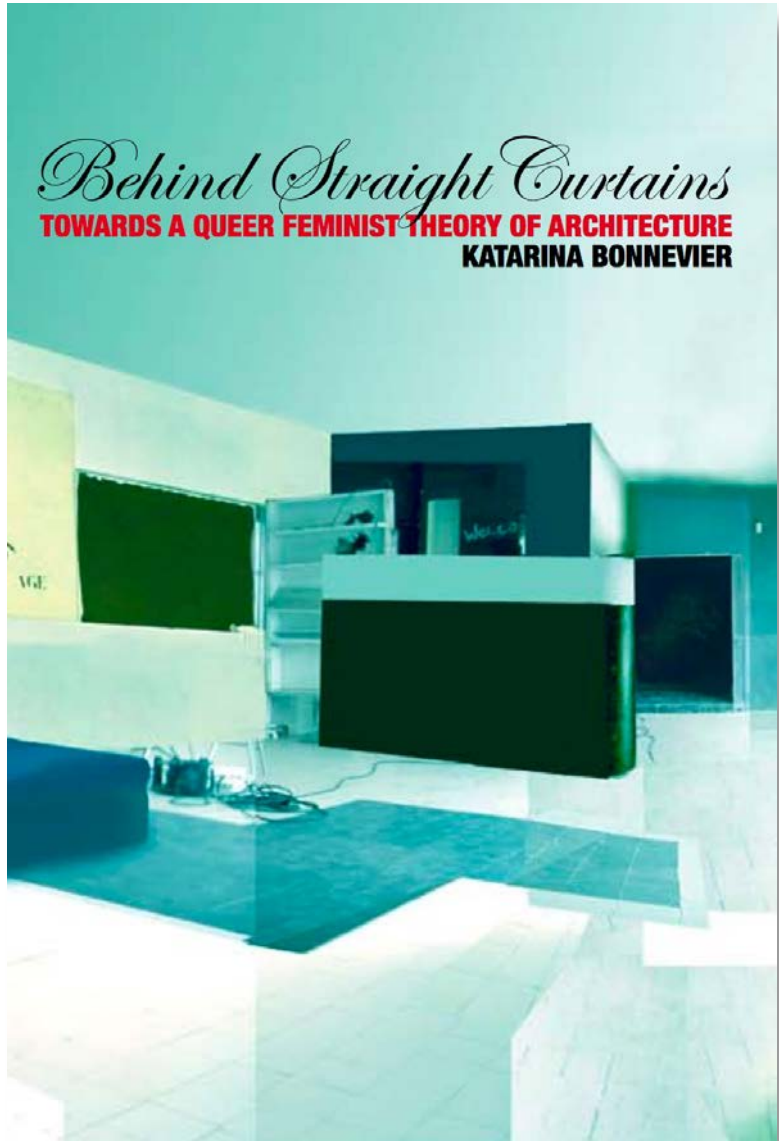
DISCIPLINE & PUNISH



THE BIRTH OF THE PRISON

MICHEL FOUCAULT

\$4.95 • IN CANADA \$5.95 • V-767 • 394-72767-3



Behind Straight Curtains

TOWARDS A QUEER FEMINIST THEORY OF ARCHITECTURE
KATARINA BONNEVIER

MAKING

"An inquiring, intelligent look at how the work of the hand informs the work of the mind."—*New York Times Book Review*

THE CRAFTSMAN



Richard Sennett

TIM INGOLD

MAKING



ANTHROPOLOGY, ARCHAEOLOGY,
ART AND ARCHITECTURE

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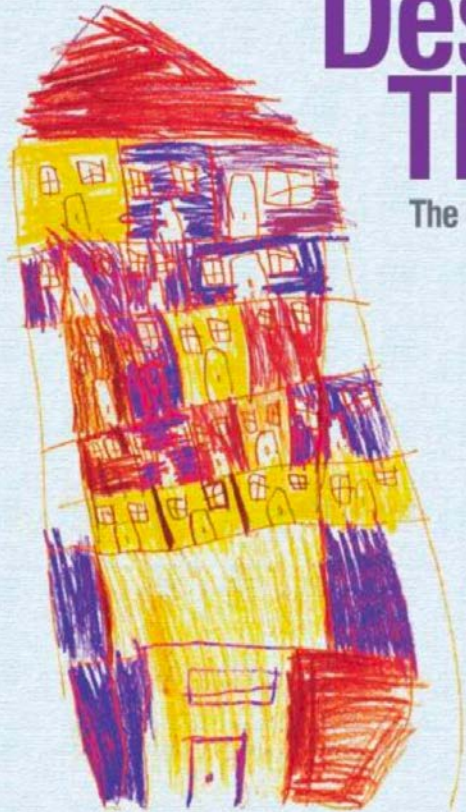


**DESIGN
EXPERTISE**

Fourth Edition

How Designers Think

The design process demystified



Bryan Lawson

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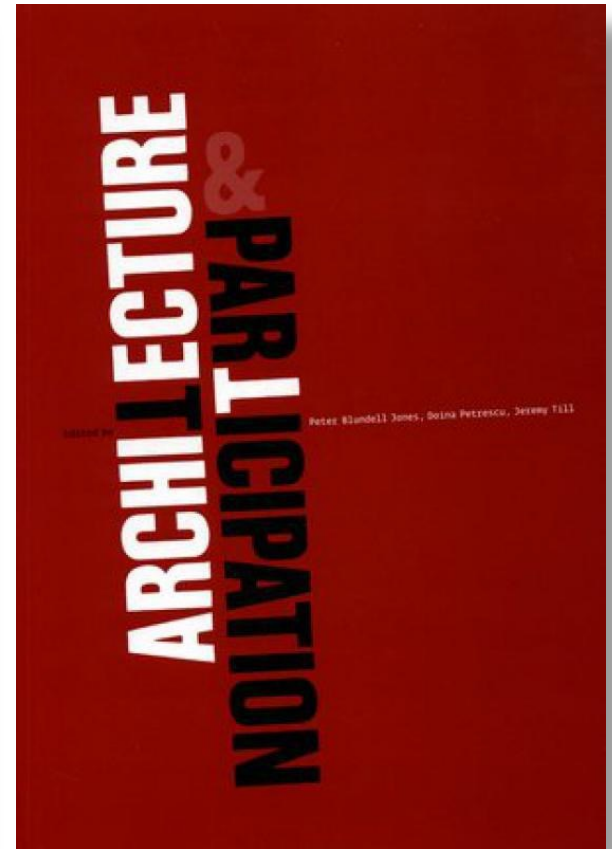
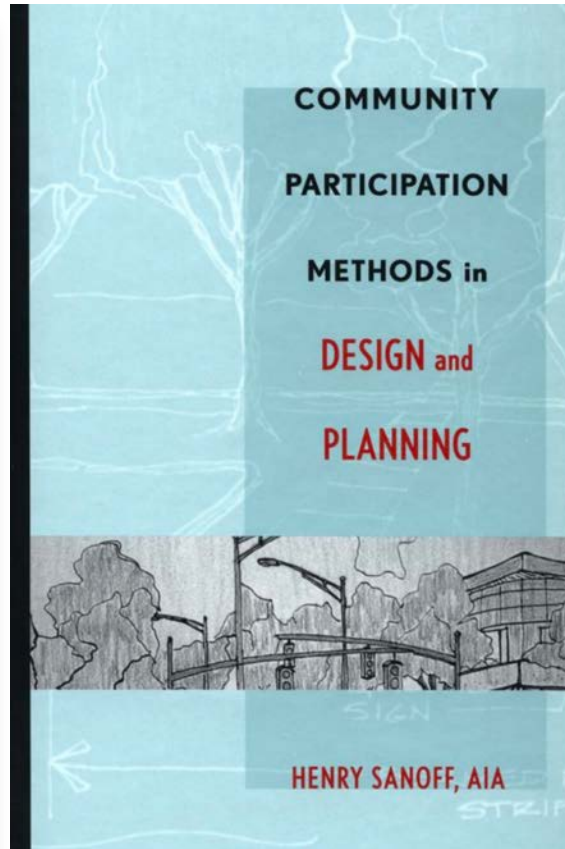
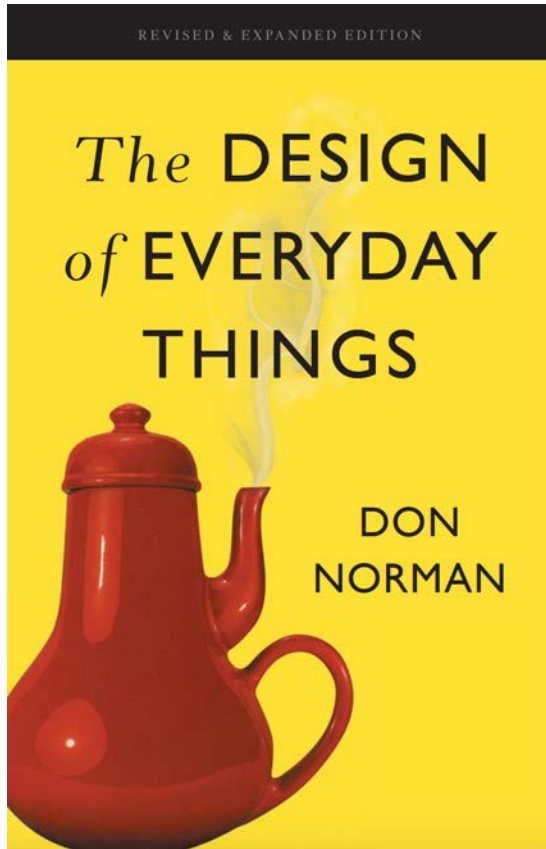
An Ashgate Book

the Reflective Practitioner

HOW PROFESSIONALS
THINK IN ACTION

DONALD A SCHÖN

**HUMAN-CENTRED &
PARTICIPATORY
DESIGN**



SOCIAL DESIGN

Design, When Everybody Designs

An Introduction to Design for Social Innovation

Ezio Manzini



design for social responsibility series

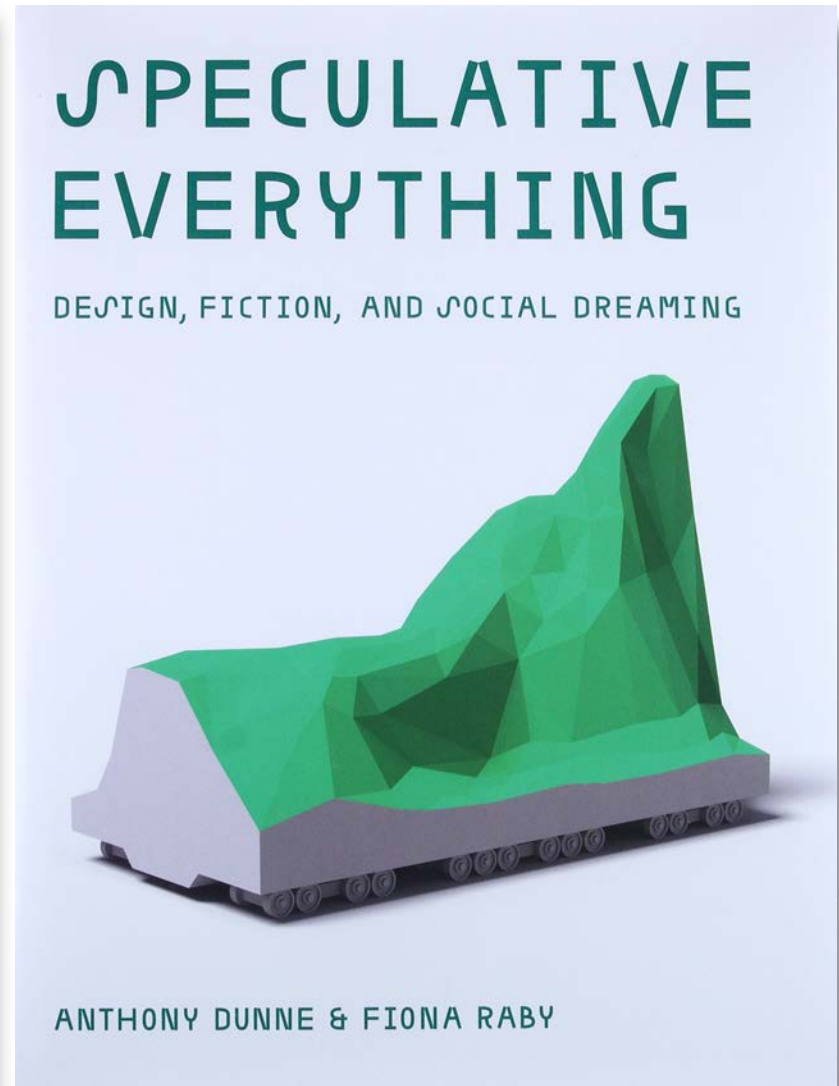
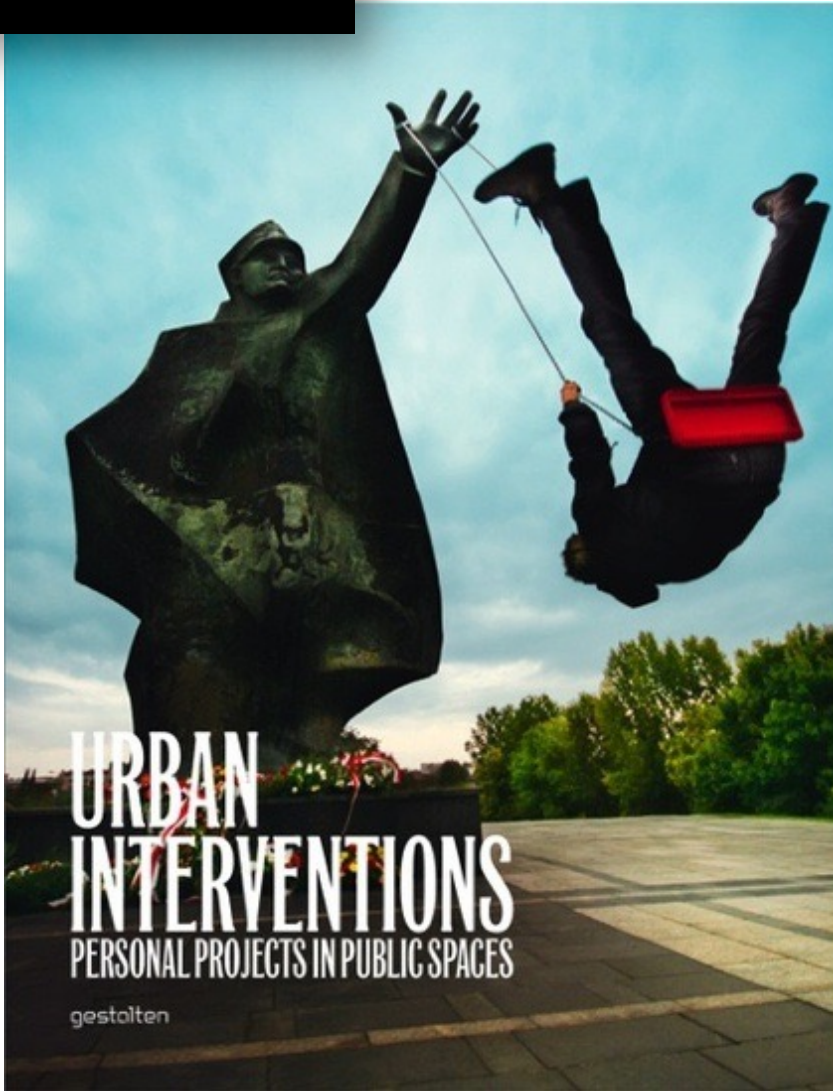


Design for Policy




Edited by
Christian Bason
Series Editor: Rachel Cooper

**SPECULATIVE &
CRITICAL DESIGN**



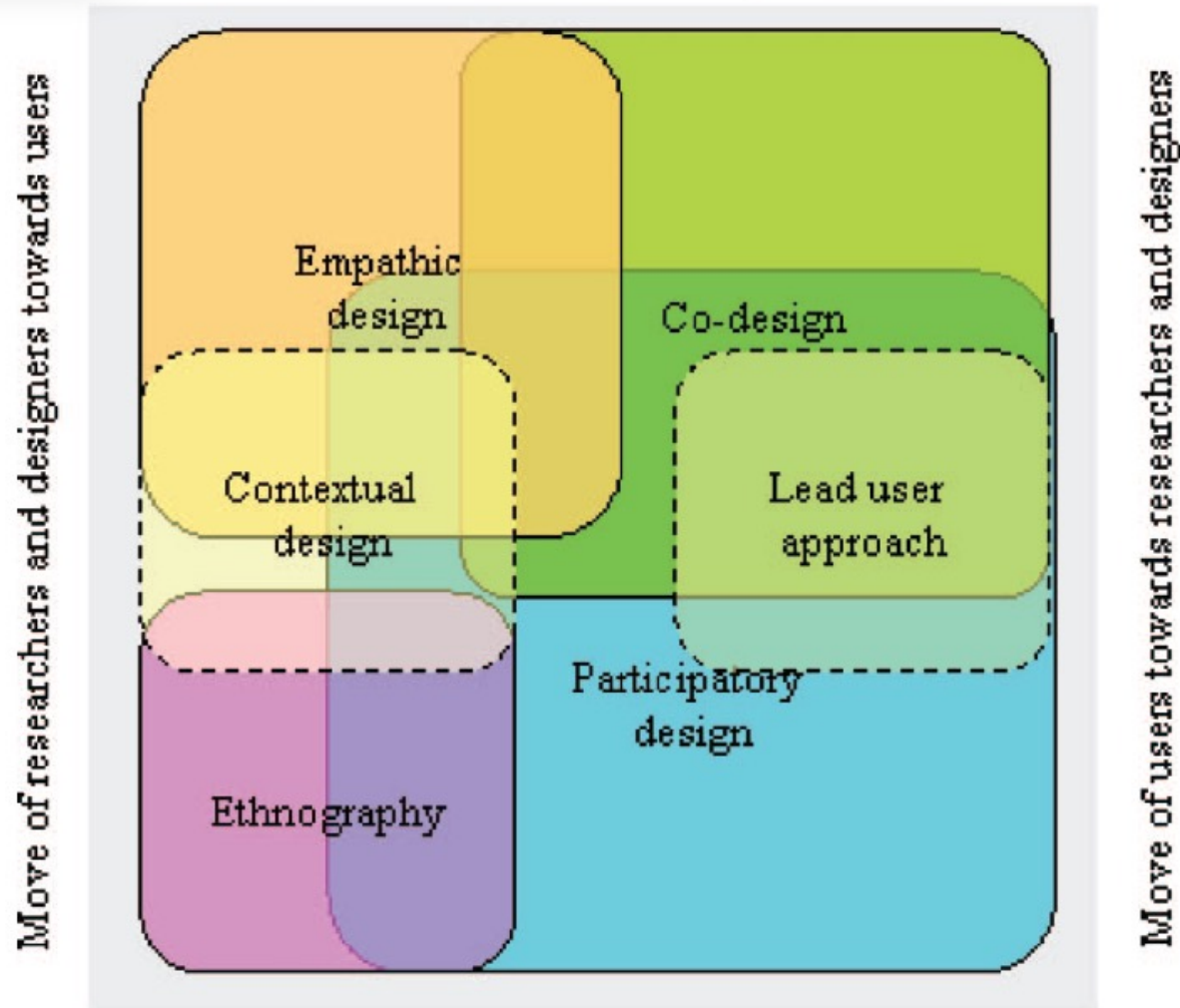
**DESIGNERLY
METHODS OF
INQUIRY**

CONTINUUM OF METHODS

- 
- Quantitative research – insight on large-scale societal and demographic developments through statistics, big data, surveys, etc.
 - Qualitative (user) research – ethnography, in-depth user studies in local contexts, sociological research, interviews, market research etc.
 - Participatory research – engaging stakeholders to elicit their needs, preferences and dreams through probes, workshops, make tools or other methods
 - Environmental scanning and monitoring – observation, web searches etc. to detect weak signals, typically used in fashion trend forecasting
 - Design-driven innovation (Verganti 2009) – looking into “interpreters” (scientists, designers, artist) who deeply understand and shape the markets they work in
 - Case analysis, benchmarking – systematic collection and analysis of international best examples and design precedents to gather ideas and inspire new designs
 - Future studies methods – e.g. PESTE analysis for identifying the key political, economic, social, technological and ecological factors impacting the design problem; Delphi method for collecting future insight from a panel of experts through surveys
 - Scenario building – constructing plausible stories of alternative futures based on the identification of megatrends and key uncertainties impacting the design problem
 - Design fiction (Sterling 2005) – form of critical design; uses narrative elements such as film or provocative prototypes to envision and explain possible futures for design

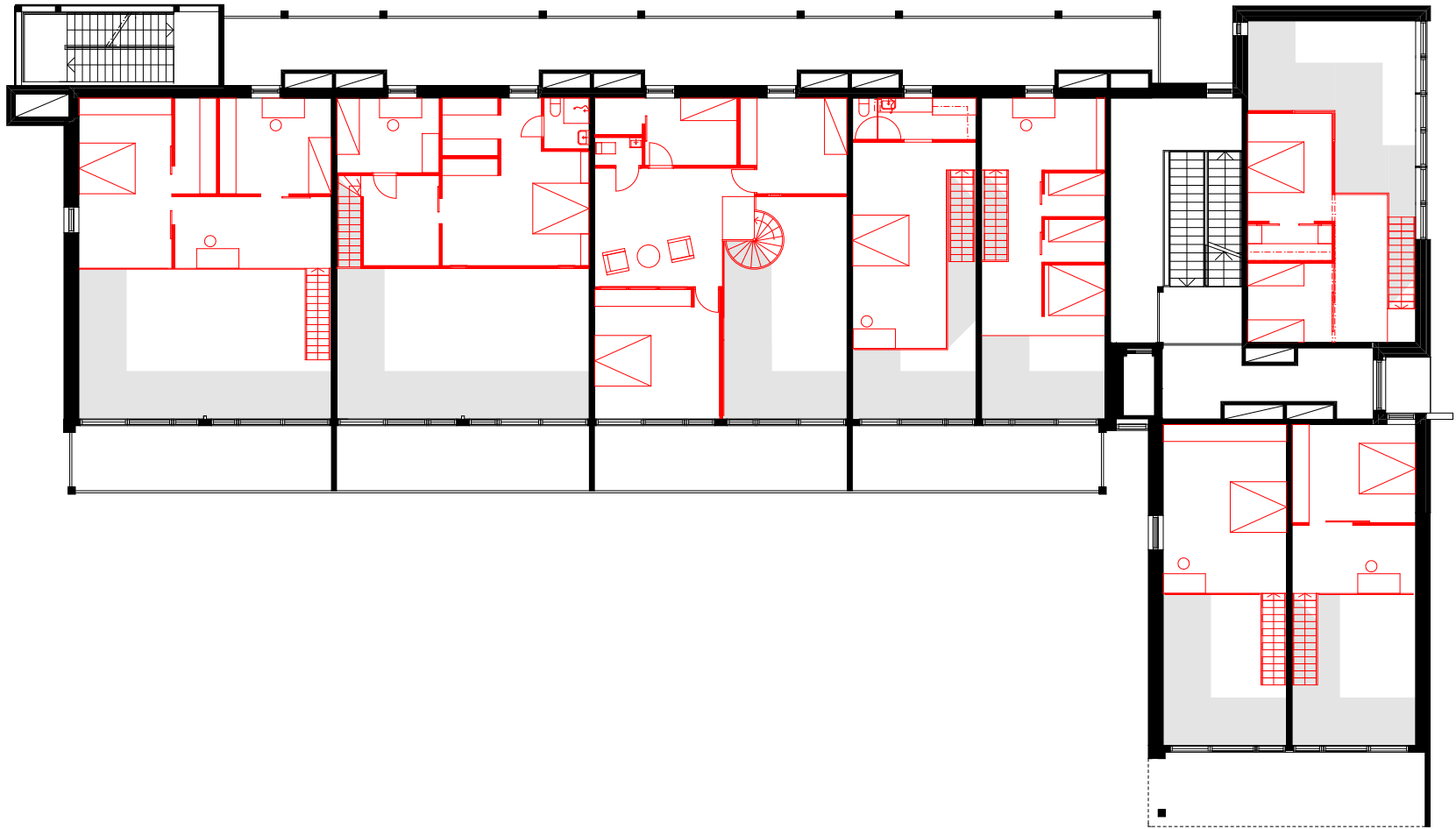
APPROACHES IN HUMAN-CENTRED DESIGN (Steen 2011)

Concern for *what could be*; a design orientation



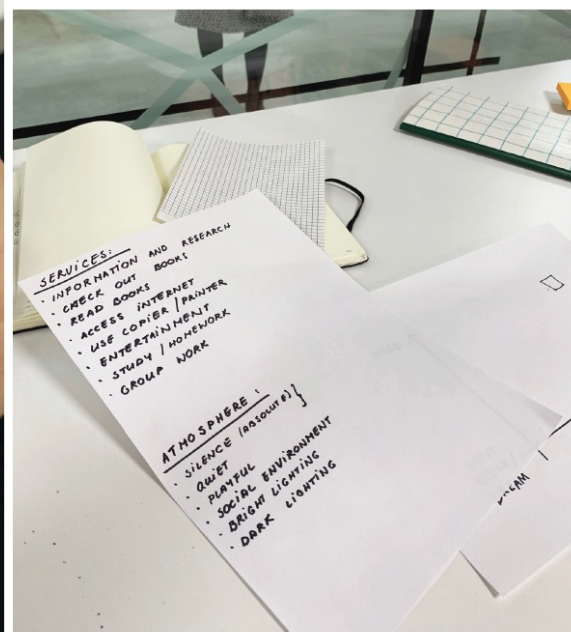
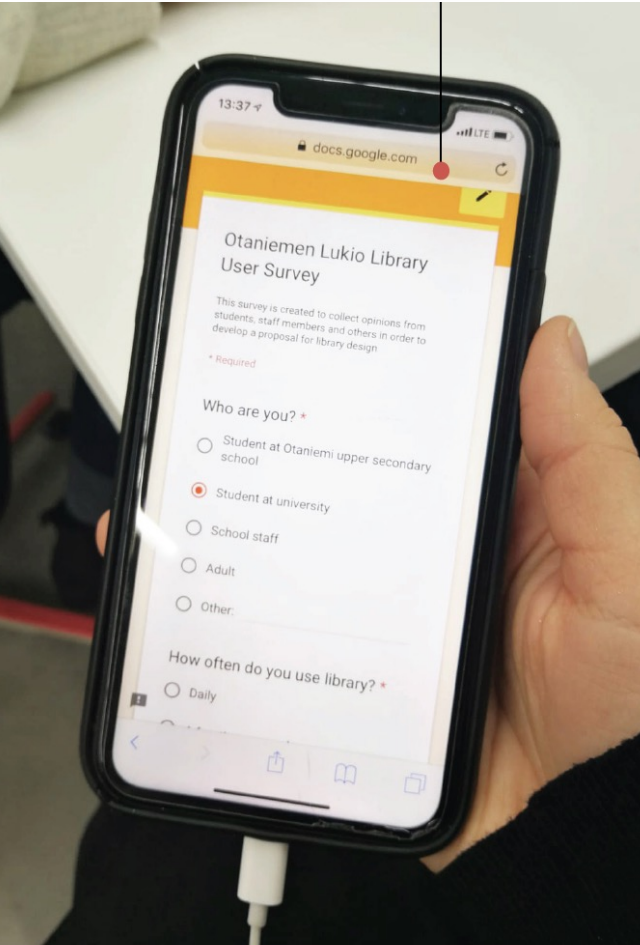
Concern for *what is*; a research orientation

ANALYSIS AND COMPARISON OF DESIGNS



Architect Pia Ilonen, *Tila* housing, Arabianranta, Helsinki. Plan of the 3rd floor mezzanine as built by the residents.

SURVEYS, INTERVIEWS



- Mobile survey and physical “dream wall” for collecting user insights in a library space, student project in 2019 (Ada Ala-Härkönen, Luiza Sevele & Haibo Qu)

DESIGN ETHNOGRAPHY, OBSERVATION



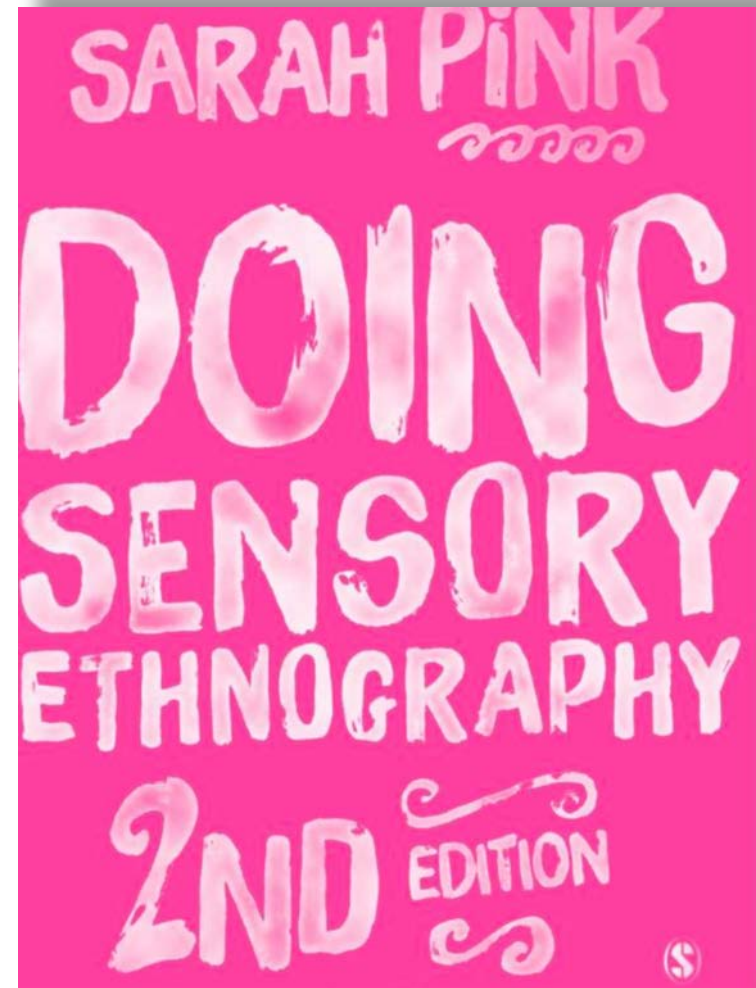
Source: Jack Whalen



Unloading and sorting the trawl catch in Thailand

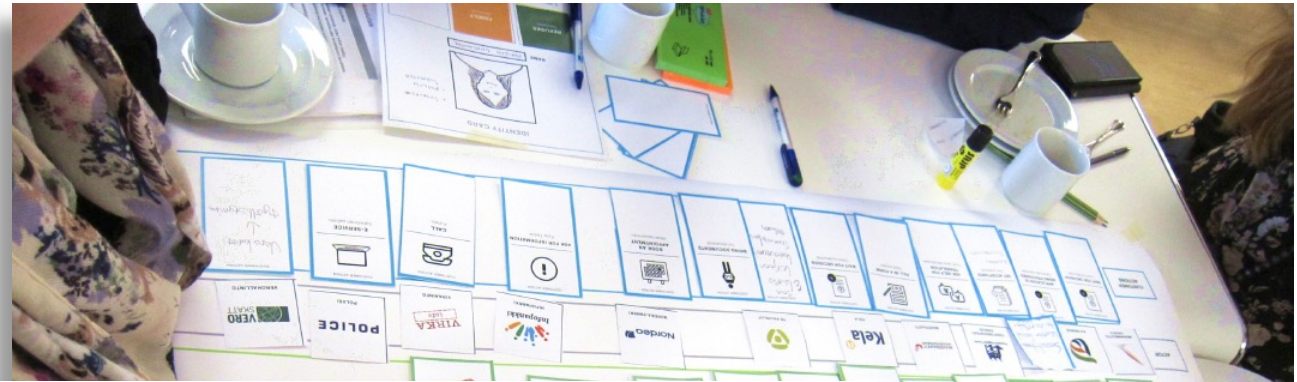


Indonesia crab fishing landing site

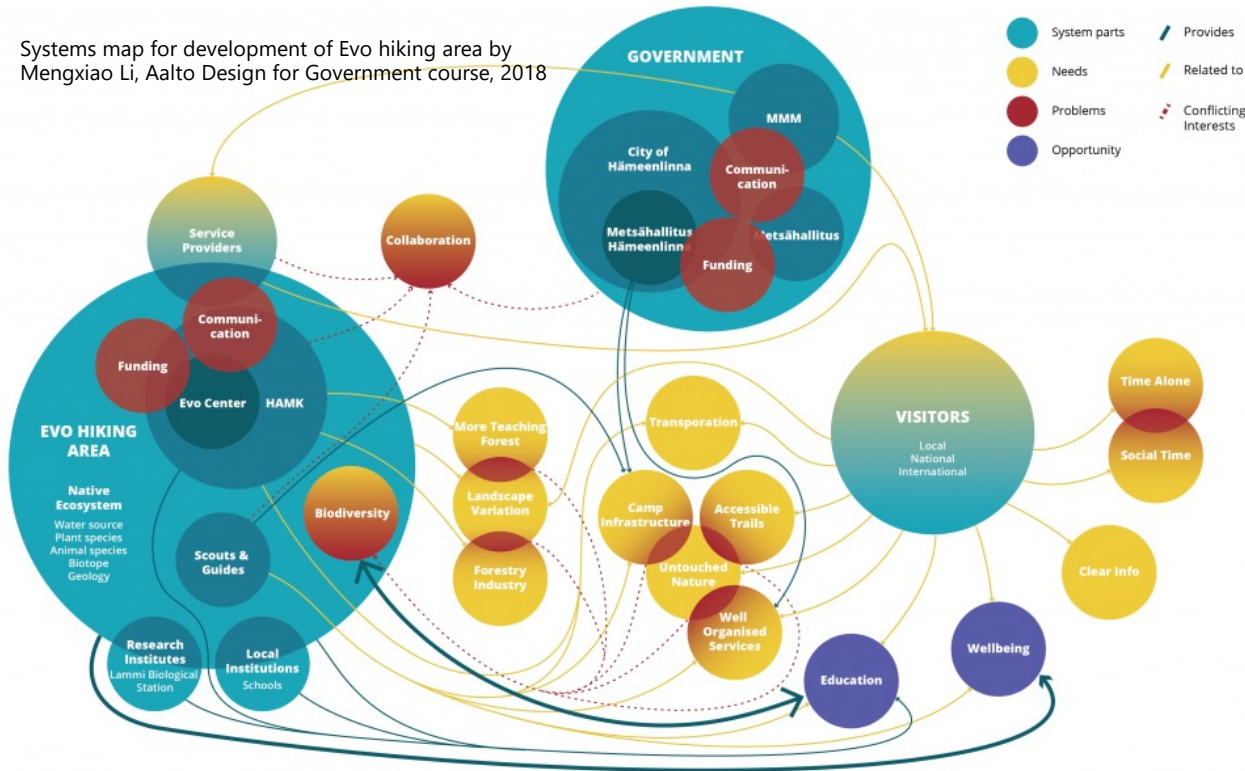


- Immersing to the studied setting, community, culture
- Revealing underlying logics, practices and cultures related to the design problem
- Fieldwork with participant observation and contextual interviews
- Sensory and visual ethnography as interesting approaches to designers
- Sketches, field notes, images, thick descriptions, rich narratives as outcomes

SYSTEMS MAPPING, JOURNEY MAPPING



Systems map for development of Evo hiking area by Mengxiao Li, Aalto Design for Government course, 2018



Creating an understanding of the target system or users' journey

ENGAGING THE USERS OR OTHER STAKEHOLDERS



Photo: Eloise Smith-Foster

MY HOME PROJECT 2014, WORKING WITH YOUNG PERSONS WITH INTELLECTUAL DISABILITIES

Pirinen, A. & Verma, I. Levels of Inclusion: Design Concepts for Supporting the Everyday Living of Young Persons with Intellectual Disabilities. Sotamaa, Y. (Ed.), *Design for All Institute of India Newsletter*. New Delhi, India.

CO-DESIGN METHODS

Customer Journey



Visualizes a service journey from customer's point of view, including customers' interactions with various touchpoints through several paths and their emotions

- Helps to understand sequential actions of customers through the service path and their emotions
- Can be used as a discussion tool to improve the service

Design Probes



A package consisting of various open-ended tasks and documentation tools, e.g. disposable camera, diary, workbook, visual mapping exercise, collage, postcard etc.

- Users receive the probe package and document their experiences, opinions and ideas to various tasks in their own environment.
- Designers can have an access to users' personal experiences through their language and perspective.

Design Game



Co-design activities built on the game structure and rules for providing a make-believe setting and a playful atmosphere

- Helps out-of-box thinking, negotiation and decision-making for participants from different backgrounds
- Understanding different perspectives from the participants in a playful and tangible way
- A design game workshop can combine various techniques, e.g. role-playing or participatory 3D modeling.

Personas



Portrayals of user characteristics

- Visual images with textual descriptions about a profile, situations, behaviors, needs, frustrations and values of users
- Can be used for understanding experiences and characteristics of a user group
- Can be used in co-design workshops to introduce users' perspectives

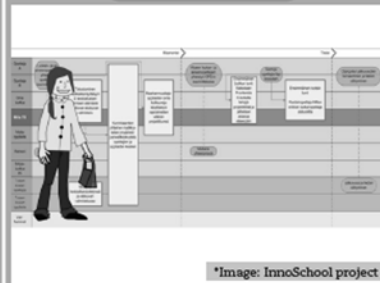
Process Simulation



A simulation workshop where participants discuss about the visual process models and create new ideas

- The visual process models are created based on stakeholder interviews beforehand

Future Recall



Participants create a common vision of an ideal future through discussion and formulate the future story; then they recall the steps that are taken on the way to that future.

- Helps to set a mutual vision of desired future and to identify concrete steps to reach it.

Acting and Drama



Role-playing as users and service providers in service scenes

- Helps to understand how users experience the service through bodily and social actions
- Helps to identify problems of the future service; Can be used to test new services before launching

Scenarios

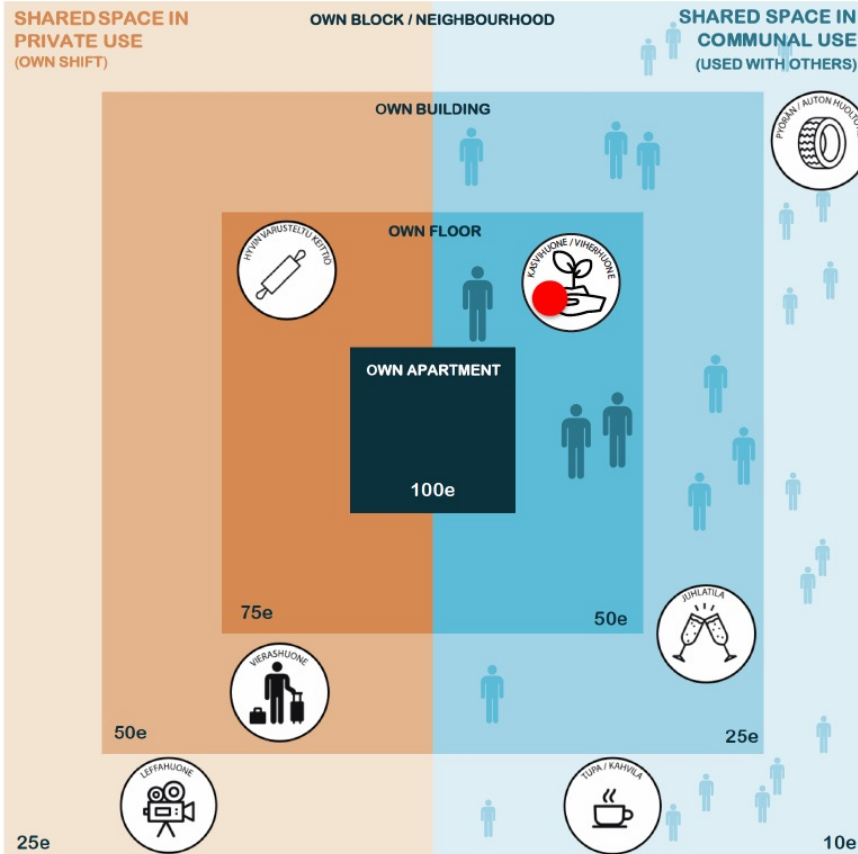
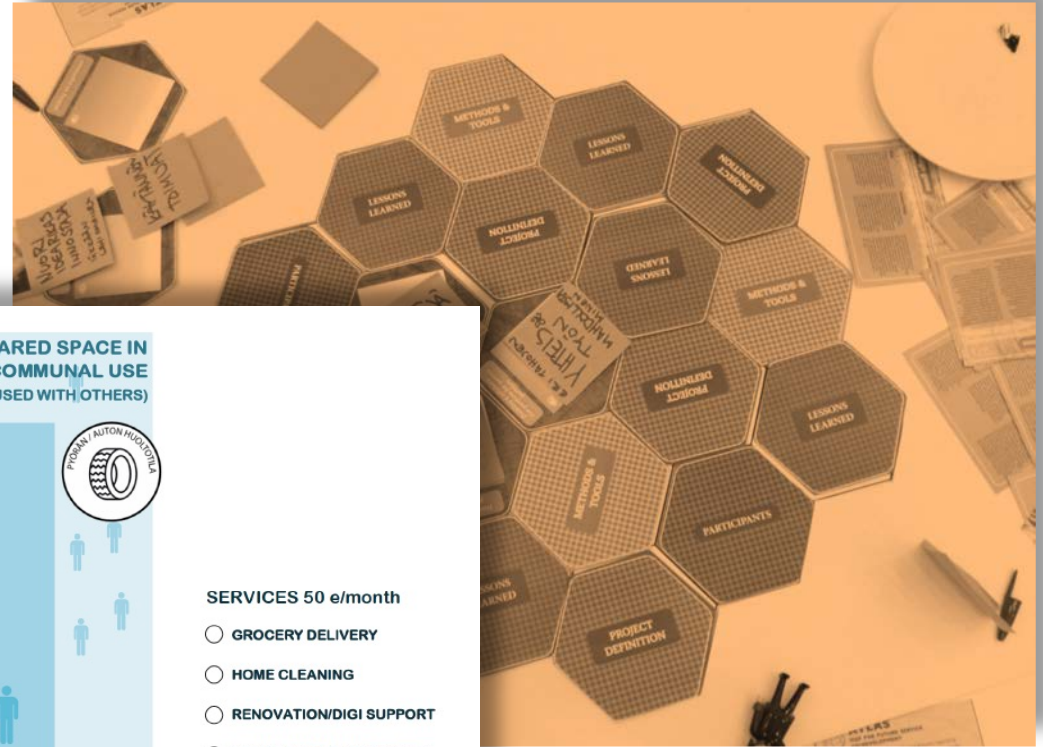


Scenarios illustrate a future service concept by visualizing scenes, paths, interactions and customers' experiences through cartoon-like stories or videos.

- Can be built on interviews and observations.
- In co-design sessions, scenarios can help participants describe their visions of the future and build a future service concept together.

DESIGN GAMES

Sanoff, Brandt, Vaajakallio



SERVICES 50 e/month

- GROCERY DELIVERY
- HOME CLEANING
- RENOVATION/DIGI SUPPORT
- HOUSE SITTER / PET SITTER
- SHARED CAR
- PERSONAL TRAINER
- LENDING OF TOOLS/EQUIPMENT
- SOMETHING ELSE? (Specify)

- Design game for eliciting user perceptions and developing the shared spaces in housing, Anne Tervo & Antti Pirinen 2017
- *Atlas Game* for planning co-design projects, ATLAS Project, photo Jung-Joo Lee

**CRITICAL DESIGN &
DESIGN FICTION**



SlaveCity, Atelier Van Lieshout, Rotterdam 2005–

Imaginary, dystopian model of a “new city and concentration camp” based on closed energy cycles

THREE MODES OF DESIGN RESEARCH

Koskinen, Zimmerman, Binder, Redström & Wensveen (2011). *Design Research Through Practice: From the Lab, Field, and Showroom*. Morgan Kaufmann.

LAB

- Decontextualizing design into a “laboratory”
- Controlled experiments, testing, data analysis
- Premises in science, e.g. material science, HCI, cognitive psychology

FIELD

- Contextualizing design into the “field”
- Understanding users, communities, local needs, meanings
- Premises in social sciences, e.g. ethnography

SHOWROOM

- Design on display and under debate
- Critical design, exhibitions, art interventions
- Premises outside of science: art, design, philosophy

THREE TYPES OF DESIGN THESES

Seliger & Hahn 2015. Thesis Design.

Theoretical research	Artistic research	Production-based research
Objectivist position <ul style="list-style-type: none"> • Research question • Hypotheses 	Subjectivist position <ul style="list-style-type: none"> • Art-philosophical focus • Reflection 	Constructivist position <ul style="list-style-type: none"> • Problem statement • Design thinking
Methodological approach <ul style="list-style-type: none"> • Quantitative • Qualitative 	Artistic work approach <ul style="list-style-type: none"> • Inside-in engagement • Distance taking • Social / human aspect • Discovery 	Problem-solving approach <ul style="list-style-type: none"> • Exploration • Creation • Reflection
Theory generation	Artistic production	Product or service design
Written research	Work of art or design + a written component	Documented production + a written component

TYPES OF RESULTS AND OUTCOMES IN A THESIS

- A new design?
- Design principles, guidelines?
- Design concepts, scenarios, visions?
- A new/improved process or method?
- Evaluation of existing designs, processes or methods?
- In-depth knowledge about a phenomenon?
- Scientific knowledge, contribution to academic discussion?

SOME METHOD GUIDES

Anttila, Pirkko (1998), *Tutkimisen taito ja tiedonhankinta*. Helsinki: Akatiimi.

Creswell, John W. (2003), *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. Second Edition. SAGE Publications.

Gray, Carole and Malins, Julian (2004), *Visualizing Research: A Guide to the Research Process in Art and Design*. Aldershot: Ashgate.

IDEO (2015), *The Field Guide to Human-Centered Design*. www.ideo.com

Koskinen, Ilpo; Alasuutari, Pentti and Peltonen, Tuomo (2005), *Laadulliset menetelmät kauppatieteissä*. Tampere: Vastapaino.

Miles, M.B. and Huberman, A.M. (1994), *Qualitative Data Analysis: An Expanded Sourcebook*. SAGE Publications.

Milton, Alex and Rodgers, Paul (2013), *Research Methods for Product Design*. London: Laurence King Publishing.

Silverman, David (2005), *Doing Qualitative Research*. Second Edition. SAGE Publications.

Yin, Robert K. (2003), *Case Study Research: Design and Methods*. Third Edition. SAGE Publications.

Kiitos!