

PETER GALL KROGH

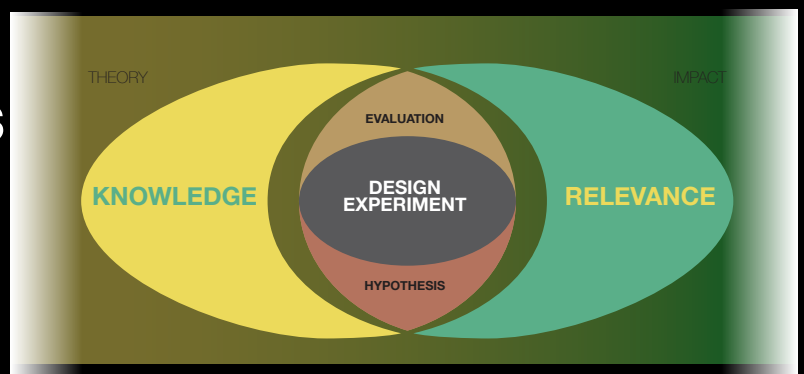
Professor, Architect

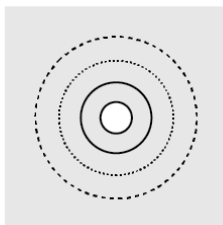
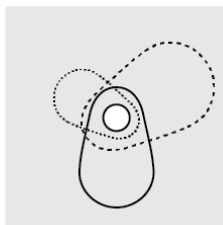
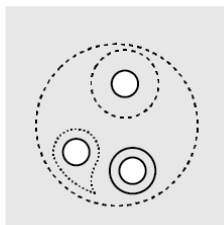
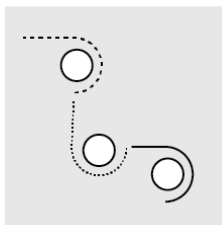
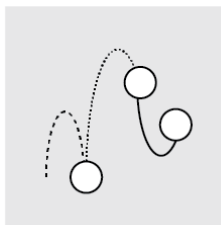
Digital Design

Department of Engineering, Aarhus University, DK

Peter Gall Krogh,
Professor MAA,
Head of design research

Three take aways



Epistemic tradition	METHODIC	PROGRAMATIC	DIALECTIC	PRACTICE	
Contribution ideal	Predictability	Frameworks	Mutual learning	Imagination	
Approach	 <p>ACCUMULATIVE</p>	 <p>COMPARATIVE</p>	 <p>EXPANSIVE</p>	 <p>SERIAL</p>	 <p>PROBING</p>

Program of the day (CEST 8 - 14) 4 modules

• 9.00 - 10.20:

- **Lecture:**
 - Drifting and Accountability – four epistemic traditions

• 10.30 - 11.50:

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Peter...

- Architect MAA - Arkitektskolen Aarhus
- Head of Innovation, Alexandra Instituttet General Technology Service provider
- Visiting professor: Milano, Eindhoven, Hong Kong and currently Wuxi (Kina)
- Co-designer of BA and MA programs in IT-Product Design and Development and MA in Experience design - all AU
- Head the research group Socio-Technical Design at AU



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Professor,
Head of Socio-Technical Design

From Drag'n Drop through Twist'n Shout to Insights and dialogue



Who is here?

Constructive design research

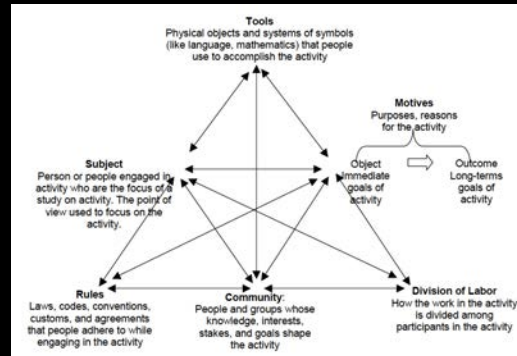
When you design with the objective of building knowledge



Design - The subject of study?

The shift to knowledge

- Exemplars - Particulars - The designer
- Theory - Generalisability - Beyond disciplines



Peter Gall Krogh,
Professor,
Head of Socio-Technical Design

Ill-behaved problem solvers

- Counter brief
- To what **question** is this **project** an **answer**?

Artefacts, experiments and theory in an erratic discipline

- The design world is filled with stuff and realities that doesn't add up to a coherent theory - so why at all talk about research?
- Theory always underspecifies design (Gaver)



(Carroll and Kellogg)

Frayling - an earlier framing

- Research-into-design
- Research-for-design
- Research-through-design

Frayling - an earlier framing

- Research-into-design
- Research-for-design
- **Research-through-design**

Zimmerman Forlizzi 2007

- (i) a philosophical approach, where researchers wish to “investigate a previously articulated theory through a process of making” (e.g. ‘ludic interaction’, ‘rich interaction’, ‘aesthetics of interaction’, etc.);
- (ii) a grounded approach, where researchers focus “on real-world problems by making things that force a concrete framing of the problem”

What is less often noted is that:

- *Our argument [...], hope to show how taking HCI artifacts more seriously can reconcile theory-based design and hermeneutics by enriching the vision of the former and disciplining that of the latter. (Carroll and Kellogg 1989)*
- Is strangely/uncomfortably in line with:
- *This focus on the future [red: what design makes imaginable] and the focus on concretely defining a preferred state allows researchers to become more active and intentional constructors of the world they desire. (Zimmerman et al 2010)*
- Pursuing the aim of formalising Research through Design

Designer Fallacy

- Don Ihde:
 - Designers think they are like any other people...
 - well, - they are not!
- Concepts of appropriation, and culture tells another story
- There is probably also a design researchers fallacy...

The bottom of the dispute

- What is science? What is knowledge?
- And:
- Is scientific knowledge the only relevant in design?
- Is there a single epistemology?, or more? Or even a generic in the making? (Schmid & Hautchel 2014)

Accountability

Bill Gaver:

- Epistemological accountable (the scientist)
- Aesthetic accountable (the designer)

To whom are you accountable?

- The auteur - the designer herself?
- Which design discipline -
 - graphics and fashion have their ideals,
 - products others,
 - while service design and interaction design yet further others...
- Which community of science/ research
- Art?
- Specification of fire and use safety, marketability, efficiency of production, packaging...

Practice-based design research Koskinen et al (2011)



Lab



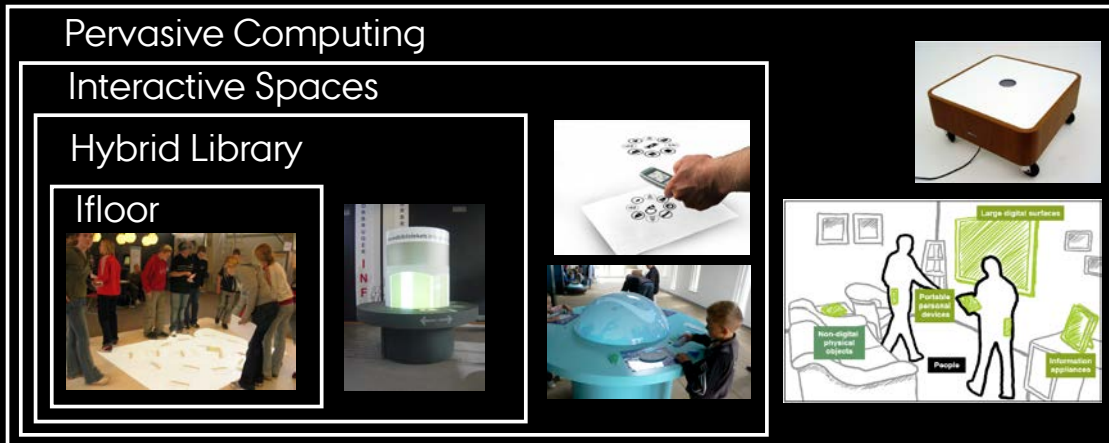
Showroom



Field

Johan Redström: Making Design Theory (2017)

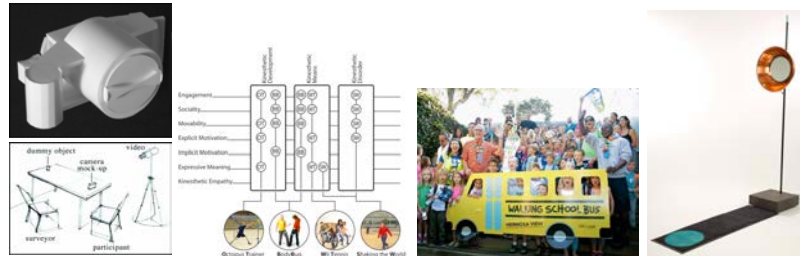
- 4 P's: Product, project, program, paradigm



Drifting by intention

4 Epistemic traditions

Constructive design research



Epistemic tradition	METHODIC	PROGRAMATIC	DIALECTIC	PRACTICE
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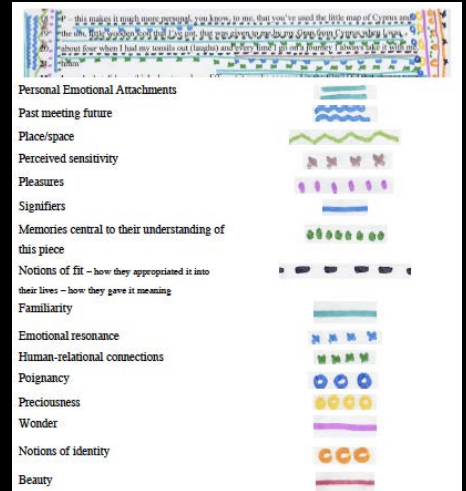
Experience-based Practice

- Theory underspecifies design (Bill Gaver)
- Drifting is central element of the design process and needs no justification
- The artefacts are hypotheses in themselves:
 - The produced objects elicits experiences along the line of thinking of the designer?
 - The project is considered a succes if the hypothesis is confirmed

Jayne Wallace 2007



Emotionally Charged:
A Practice-Centred Enquiry of Digital
Jewellery and Personal Emotional
Significance



Mo Michelsen Stochholm Krag (2017)



**Transformation on
Abandonment:**
A New Critical Practice?

Experiential practice and hypothesising

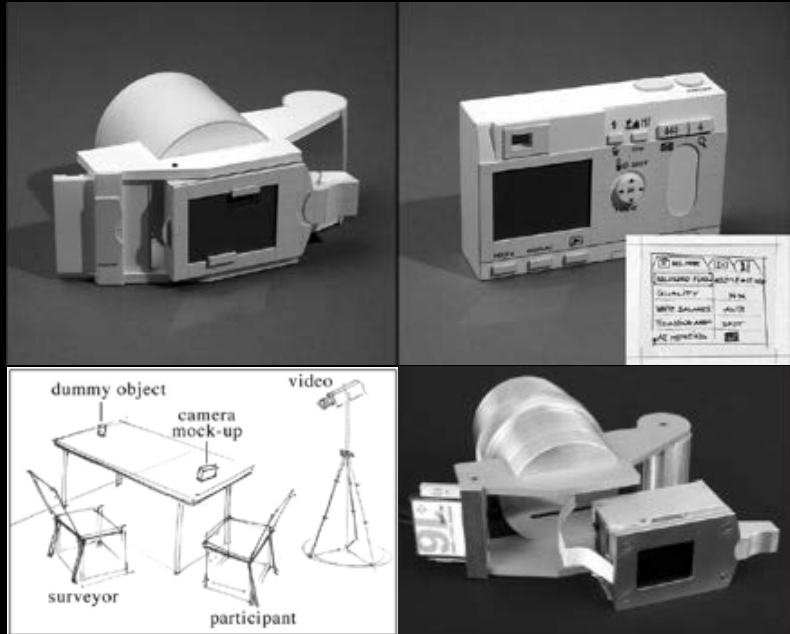
- Products are hypotheses
- They are qualified through comparison
- Annotated portfolios

Methodic

- Ensure collaboration through compliance
- Methodologies, procedures and process tools steward the design work
- Strive for verifiability
- Identify measures
- Any drift needs to be justified by reason
- In its extreme any personal assessment should be ruled out

Joep Frens (2006)

***Designing for Rich
Interaction:
Integrating Form,
Interaction, and Function.***



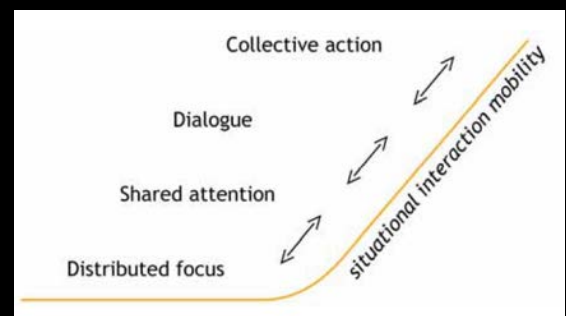
Methodic tradition and hypothesising

- Concepts from literature form the basis for something to be tested by design
- Theoretical work creates a structure of meaning
- This is as close constructive design research goes to become a science...

Programmatic

- Frameworks and theories as outlets and evaluative criteria of research
- Pervasive in HCI and geographically in Scandinavia and the USA
- Drifting happens in the design work - but most importantly it happens when conceptualising the work, and debating pros and cons
- Knowledge is build on research predecessors and may drift depending under which theoretical perspective work is viewed - this may be viewed as an ambiguity that thus needs to be declared

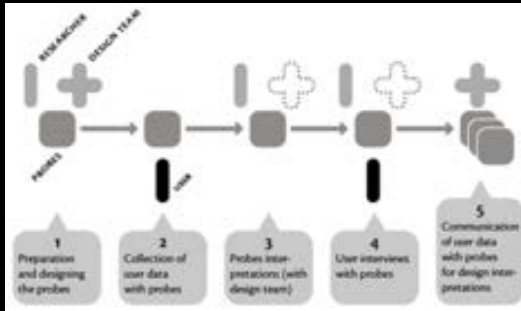
Martin Ludvigsen (2006)



Designing for Social Interaction

Tuuli Mattelmäki

(2006)



Design Probes

Programmatic tradition and hypothesising

- Artefacts are understood with regard to the research program they are a part of
 - both literature tested by design
 - and design being understood by frameworks
- It is dependent on its community - and the community defines itself on examples and the framework that document them

Dialectic

- A key driver is mutual learning between prospective users, stakeholders and designers
- The objective of the design process may not be the what is designed, that the process facilitated change
- Drifting and progress is based on the involvement of people
- User-centred and participatory design are different approaches

Christian Dindler (2010)



***Fictional Space in Participatory
Design of Engaging Interactive
Environments.***

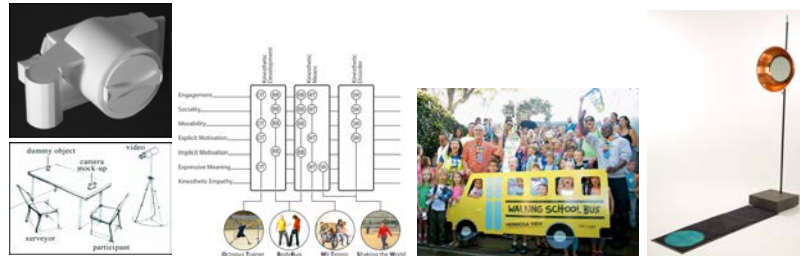
Dialectic Tradition and Hypothesising

- the result of a dialogue between multiple agents
- Mutual learning - collective hypothesising
- The hypothesis has a life on its own...
- ...dialectically pointing to a potential future
- Participatory, adversarial, user-centred

Knowledge - accountability

- Epistemology - the way we know things, and checking if we can trust our senses...
- We claim that the way in which knowledge and practice work depends crucially on how we understand knowledge.
- Knowledge for us is more than scientific knowledge; it is also practical.
- To put it on standard philosophical terms, when design becomes research, i.e. leaves the context of discovery and has to play the game of "context of justification"
- Knowledge takes many forms - and scientific is not the only of value here
- It is at least Janus-headed

4 epistemologies



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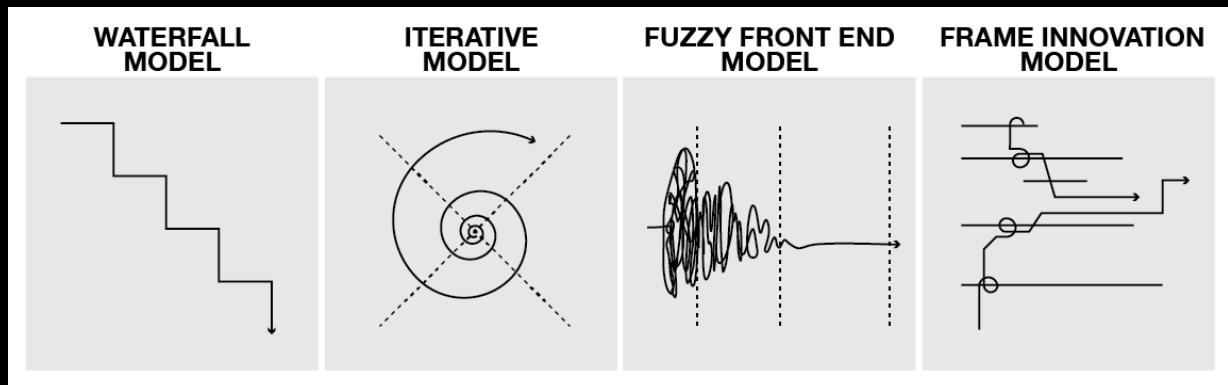
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 - Prepare presentation (10 min)
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Experimentation

Constructive design research

Pursuing knowledge and relevance

Models of Design progression and status of solution

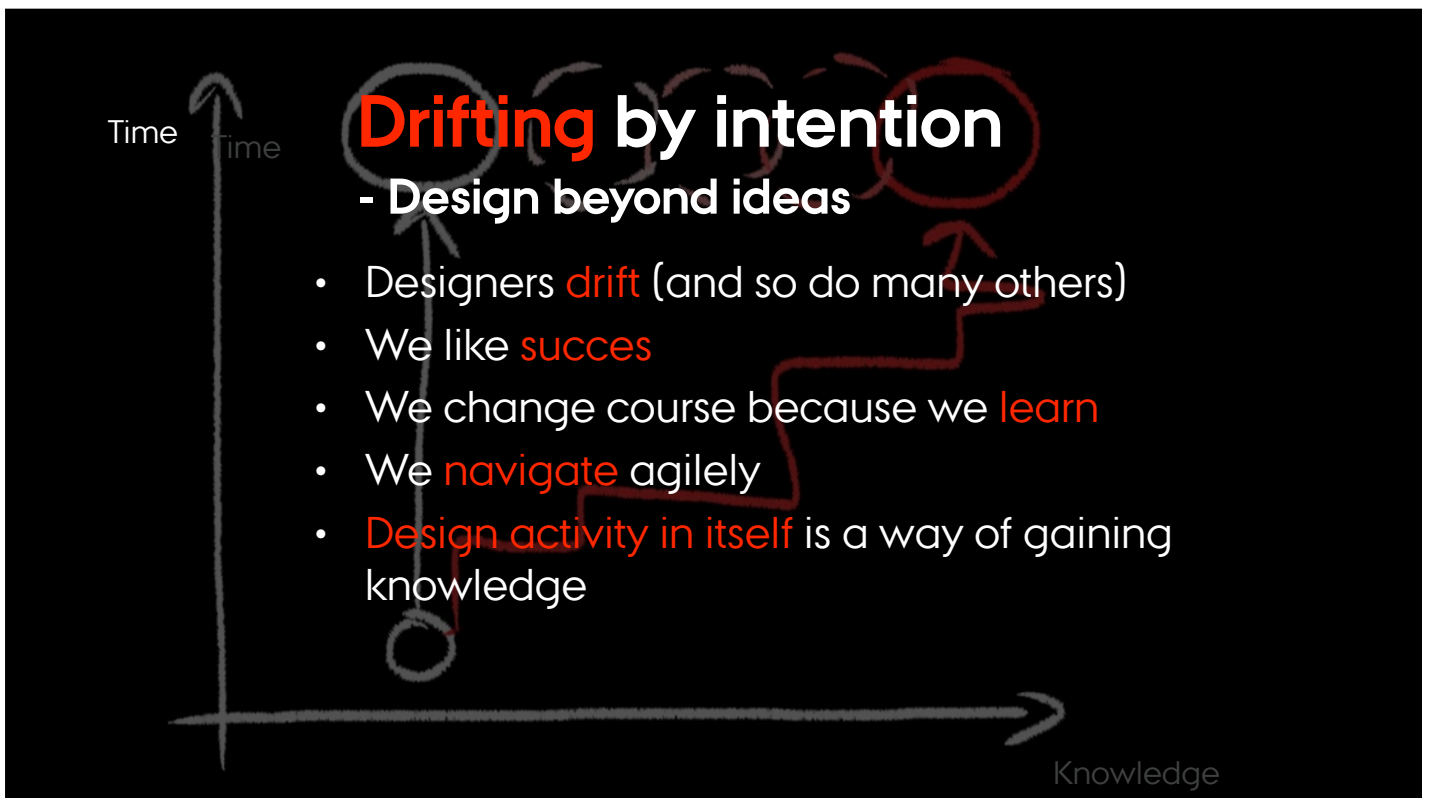
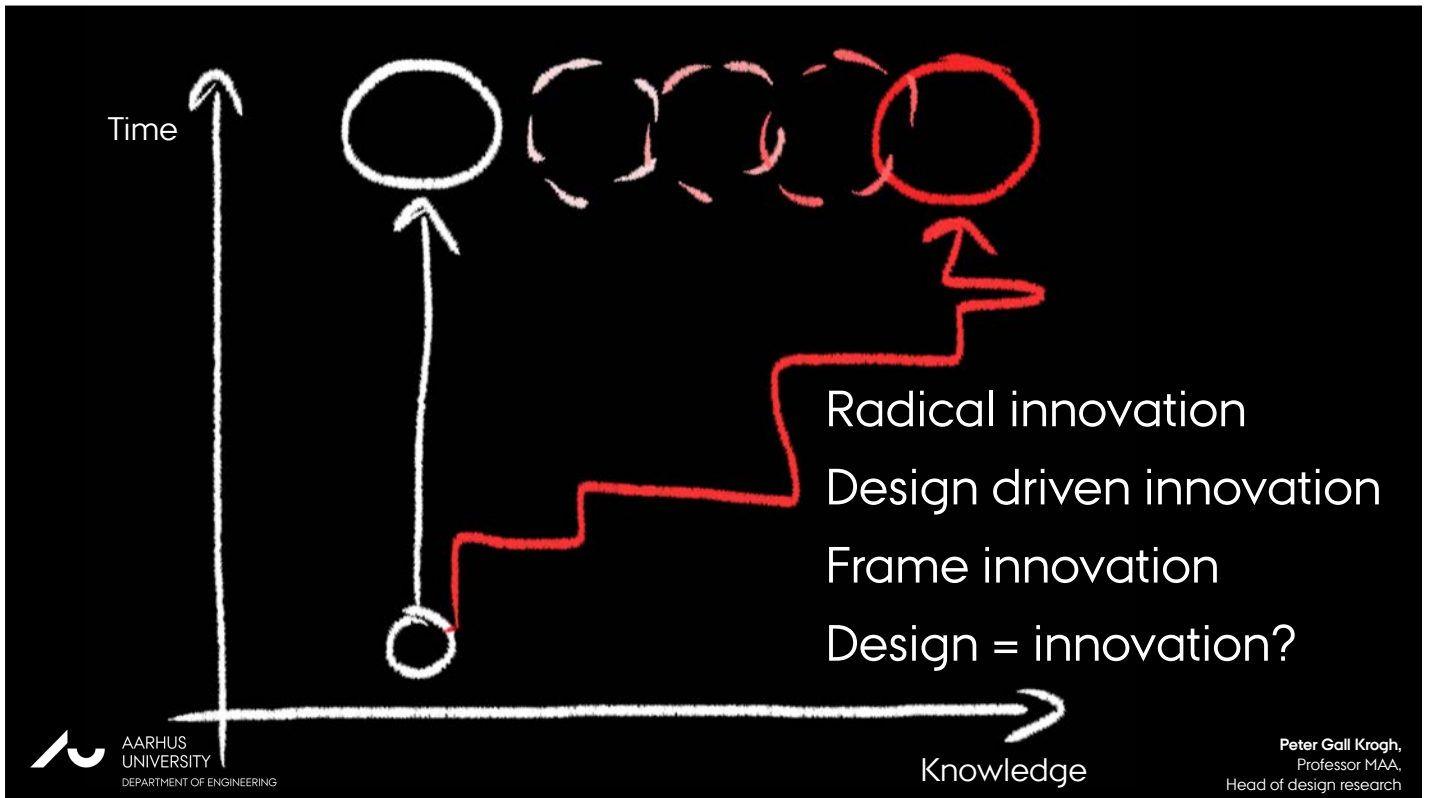


A note on experiment

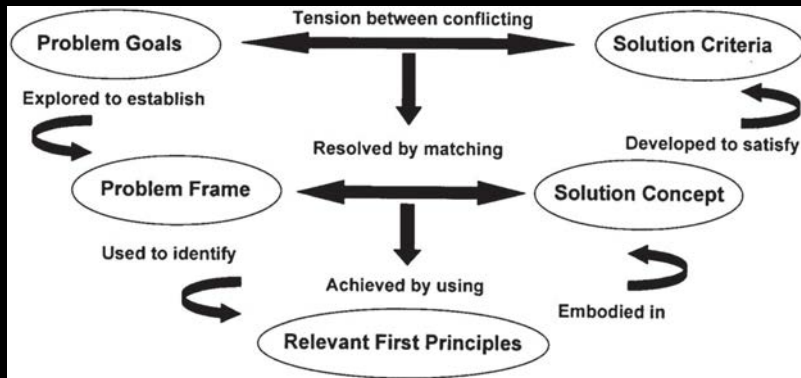
- In science experiment concerns testing a hypothesis
- In design and art experiment concerns exploration

Experiments change characteristics over the course of a project

- Experiments change characteristics as they are conducted at different times during a constructive design research process.



Knowledge and the design process



Nigel Cross 2002

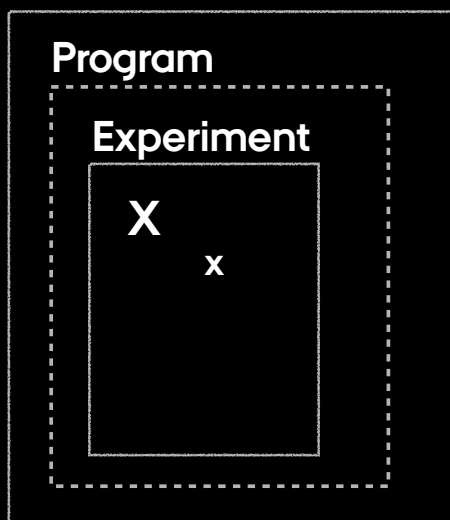


Jan Pieter van Stappers 2006

Program

- "Provisional Knowledge Regime"
- Indicated, experientially and academically substantiated

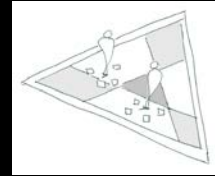
Question



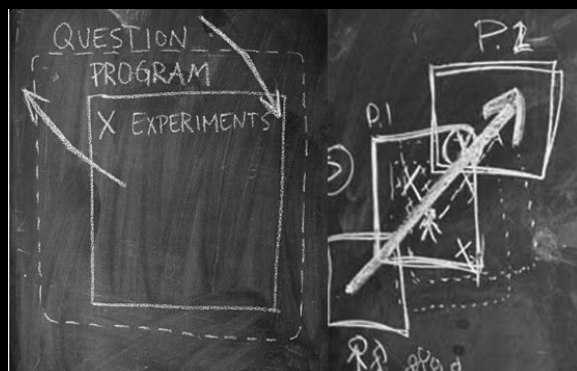
Binder and Redström 2006

Ideas on and roles of experiments

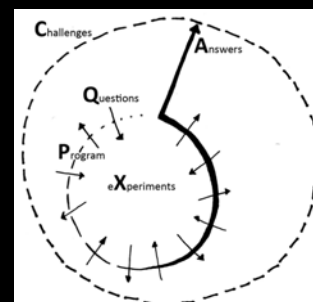
Donald Schön (1984)	Binder and Redström (2006)	Bang and Eriksen (2014)
Exploratory experiments	Beginnings	Initiating Driving Framing
Move testing experiments	Perform	Drift Reframing Maturing Stabilising
Hypothesis-testing experiments	Intersections	Closure Finalizing



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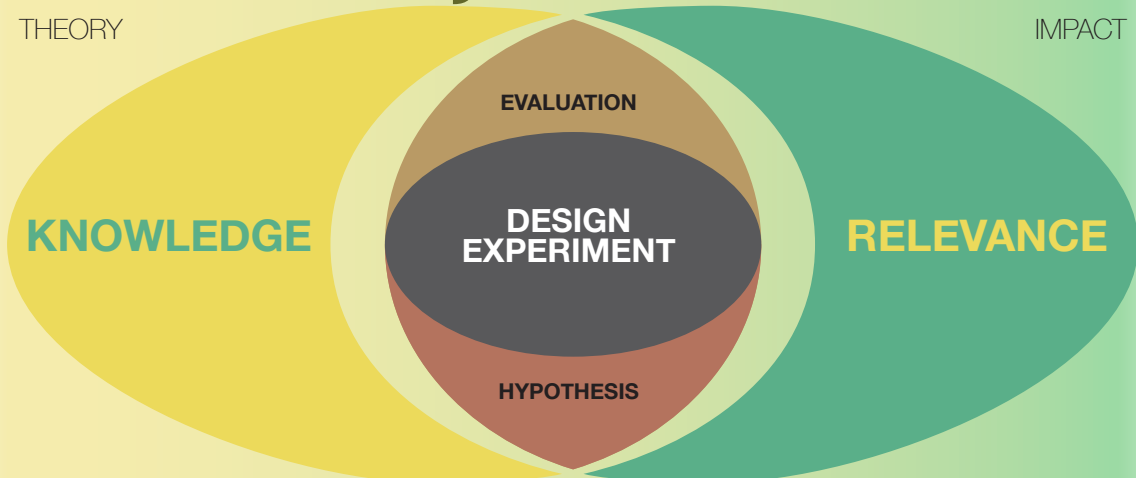
- (x) Experiments
- (X) exemplars



Knowledge and relevance

- When experimenting in design research we serve two concerns:
- **Knowledge** production
- Pursuing **relevance**

The Knowledge/Relevance model



Interactive Interior and Proxemics Thresholds:

Empowering Participants in Sensitive Conversations for Value-Driven Healthcare



Josephine Raun Thomsen,

Peter Gall Krogh,

Jacob Albæk Schnedler

Hanne Linnet

Design, Department of Engineering,
Aarhus University, Aarhus, Denmark

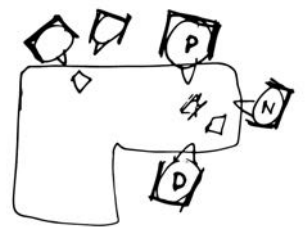
Department of Oncology, Herning
Hospital, Herning, Denmark



Peter Gall Krogh,
Professor,
Socio-Technical Design

A balanced user-centred and PD process

- 19 observations of existing consultations
- 4 Workshops each with
 - healthcare personel
 - former patients
 - relatives
- Provotypes



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Professor,
Socio-Technical Design

Proxemics Post-structural notions of power

THEORY

Notions

Interactive technologies and the spatial enactment of social relations

How may we understand the relations between socio-spatial configurations and power?

How may we apply
the patient better options
for prevention?



physical tokens and peoples positions
will help structuring consultation
and balanced exercise of power

Shared structuring
Review conversation

IMPACT

VANCE

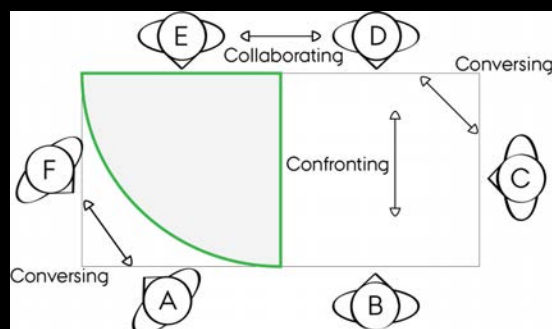
Patient consent
Increase outcome of consultations



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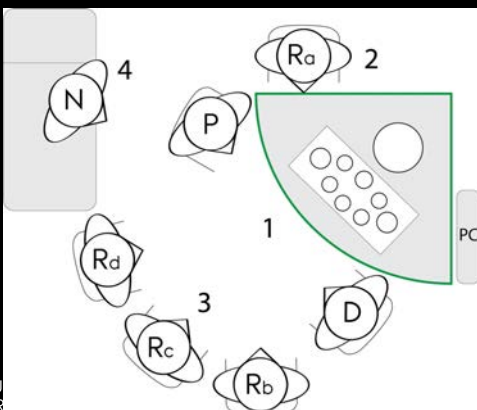
Peter Gall Krogh,
professor MAA,
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In conversation



B. Lawson:
Language of
Space

Patient,
Doctor,
Nurse and
relatives
Concerted



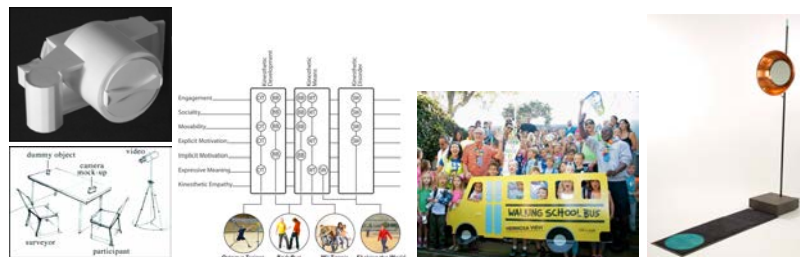
Activating the
microphone,
Agenda
setting
tokens,
bookmarking
audio file



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Ways of Drifting



Epistemic tradition

METHODIC

PROGRAMATIC

DIALECTIC

PRACTICE

Contribution ideal

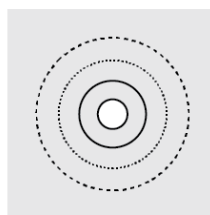
Predictability

Frameworks

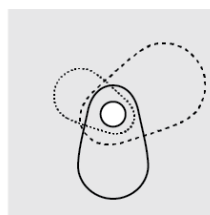
Mutual learning

Imagination

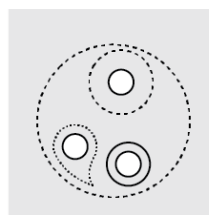
Approach



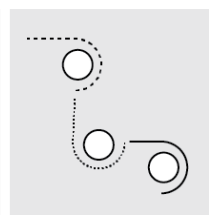
ACCUMULATIVE



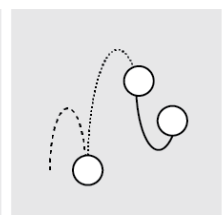
COMPARATIVE



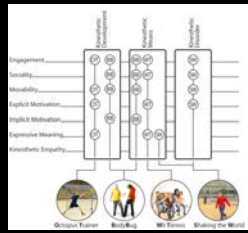
EXPANSIVE



SERIAL

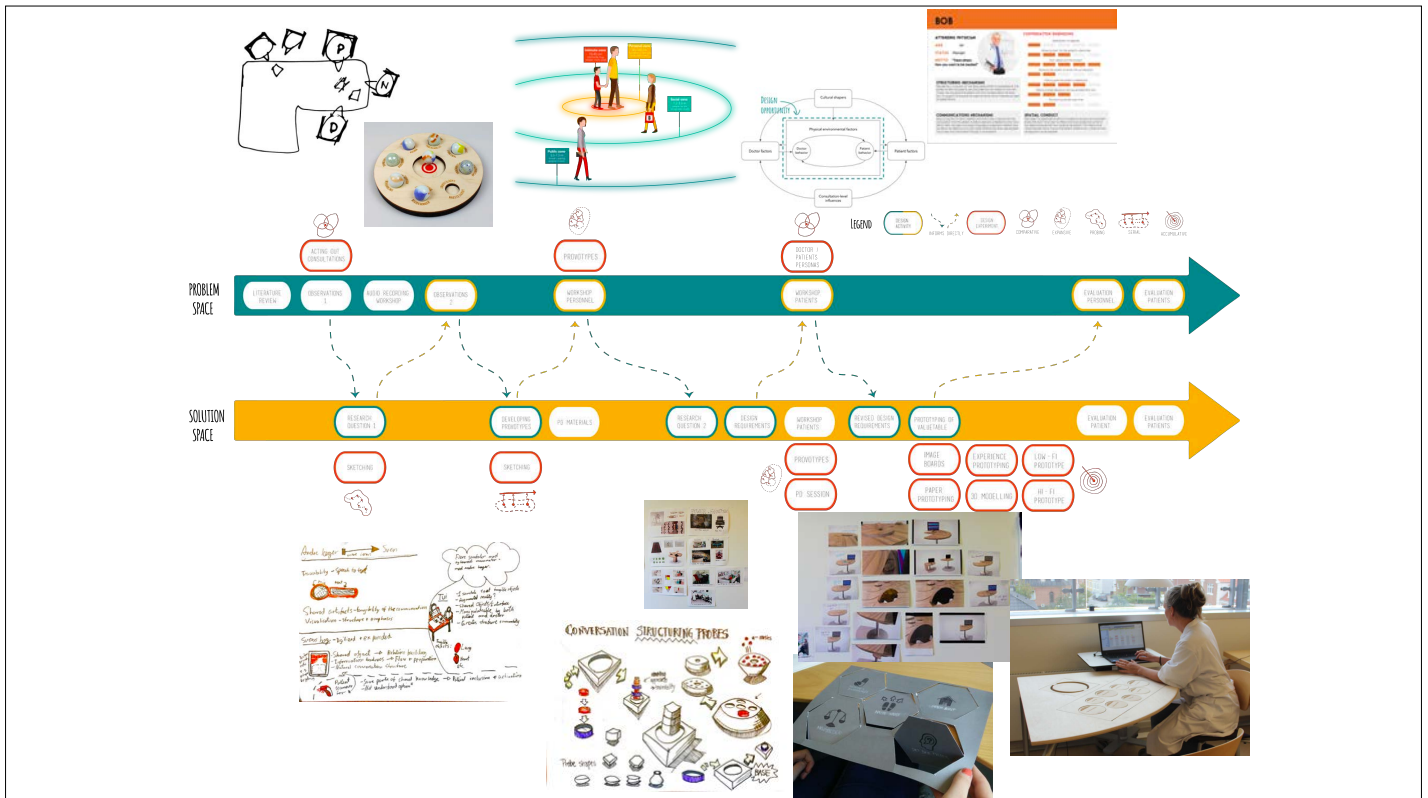


PROBING



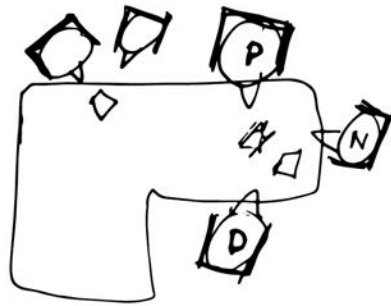
ACCUMULATIVE	COMPARATIVE	EXPANSIVE	SERIAL	PROBING
Keyword Depth, stacking	Keyword Acknowledging complexity	Keyword Broadening, extending	Keyword Systematising local knowledge	Keyword Illogical, artistic, impact oriented
Author Frens	Author Ross, Fogtmann, Wu	Author Dindler, Trotto	Author Lynggaard, Bang	Author Busch, Worbin

Drifting in detail



Drifting - reflected in research question

- How may we by means of **IT** support the **doctor** **in conducting** the consultation?
- to
- How can interactive interior, comprised of “intelligent” surfaces and objects, facilitate a **balanced relationship** between **doctor** and **patient**?



PROBLEM SPACE

Anders Lager → Sven

Troubleshooting - Speech to text



Shared artifacts - tangibility of the communication
Visualizations - structure + emphasis

Svensberg - digitized + expanded



Shared object → Relation building
Information resources → flow + preparation
Visual conversation structure



Shared object → Relation building
Information resources → flow + preparation
Visual conversation structure



Shared object → Relation building
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Visual conversation structure

Shared object → Relation building
Information resources → flow + preparation
Visual conversation structure

SOLUTION SPACE



ACTING OUT CONSULTATIONS

LITERATURE REVIEW

OBSERVATIONS 1

AUDIO RECORDING WORKSHOP

OBSERVATIONS 2

RESEARCH QUESTION 1

SKETCHING



PROBLEM SPACE



PROTOTYPES

IONS

WORKSHOP PERSONNEL

SOLUTION SPACE

DEVELOPING PROTOTYPES

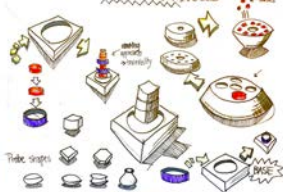
PD MATERIALS

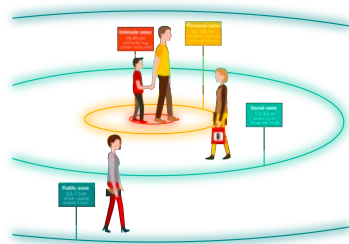
RESEARCH QUESTION

SKETCHING



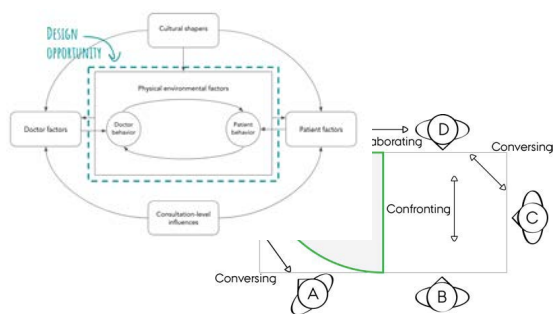
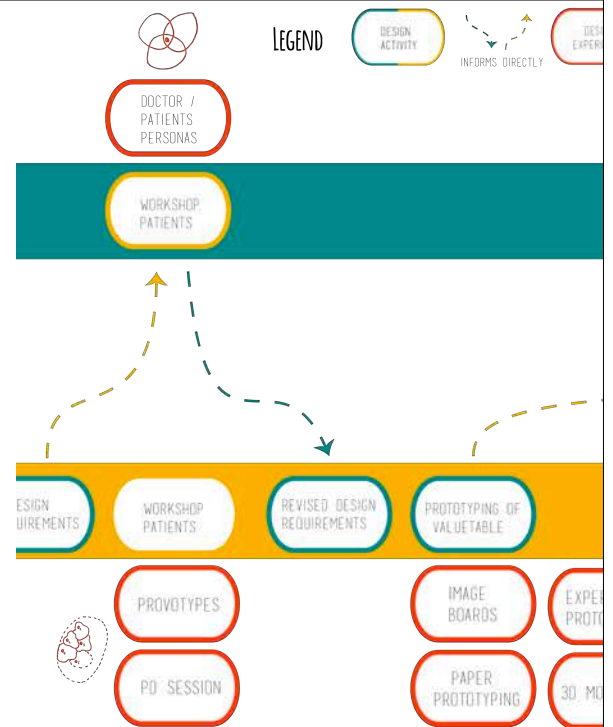
CONVERSATION STRUCTURING TOOLS





PROBLEM SPACE

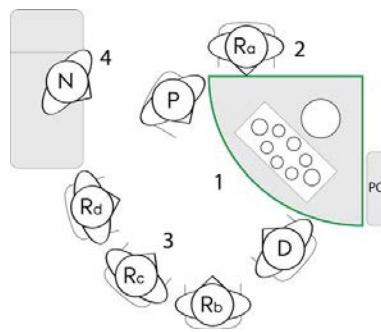
SOLUTION SPACE



SOLUTION SPACE

PROBLEM SPACE





PROBLEM
SPACE



SOLUTION
SPACE



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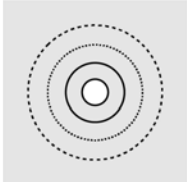
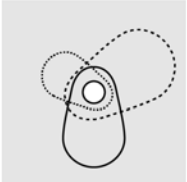
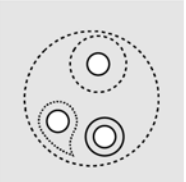
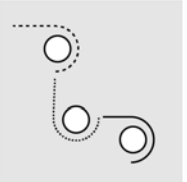
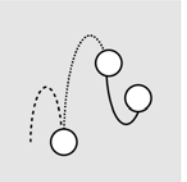
Drifting and Evaluation ...

An example

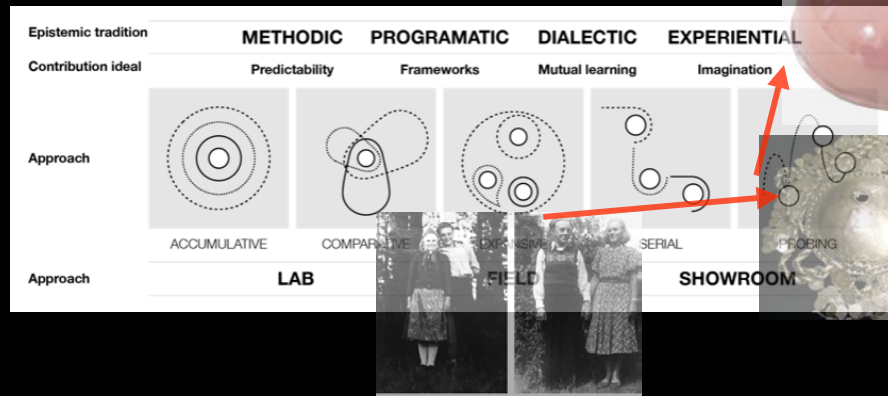


Evaluating

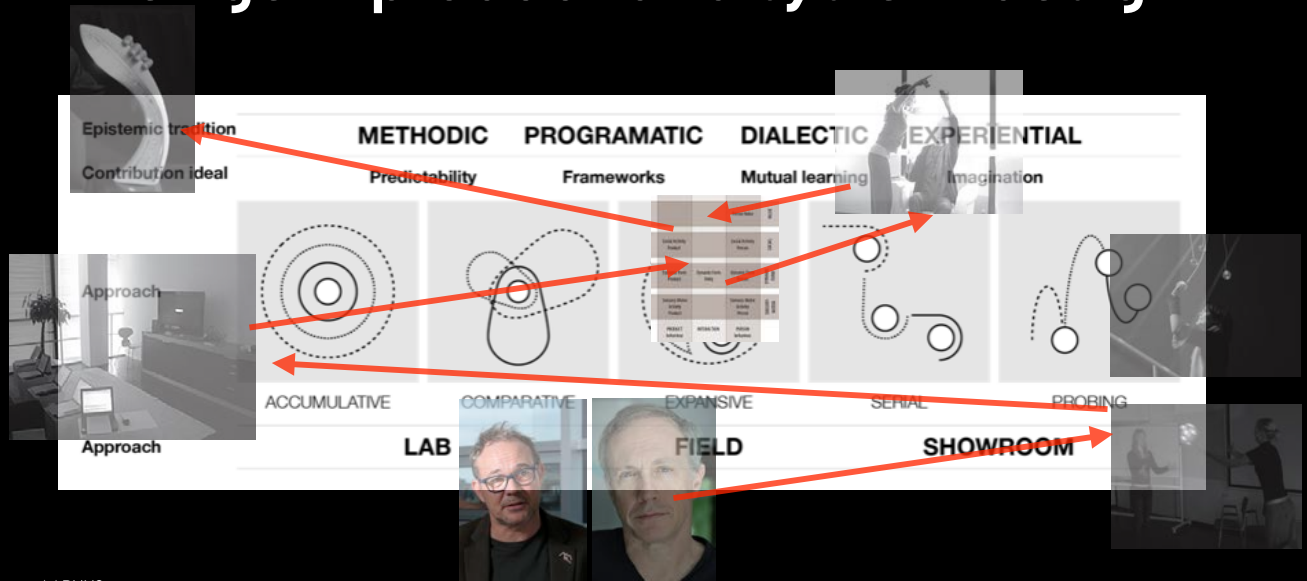
- On what grounds do we judge whether a theory for design is useful, valuable or successful?
- What is validity in constructive design research?
- What is the role of theory produced from design?

Epistemic tradition	METHODIC		PROGRAMATIC	DIALECTIC	EXPERIENTIAL	
Contribution ideal	Predictability		Frameworks	Mutual learning	Imagination	
Approach						
	ACCUMULATIVE		COMPARATIVE	EXPANSIVE	SERIAL	PROBING
Approach	LAB		FIELD		SHOWROOM	

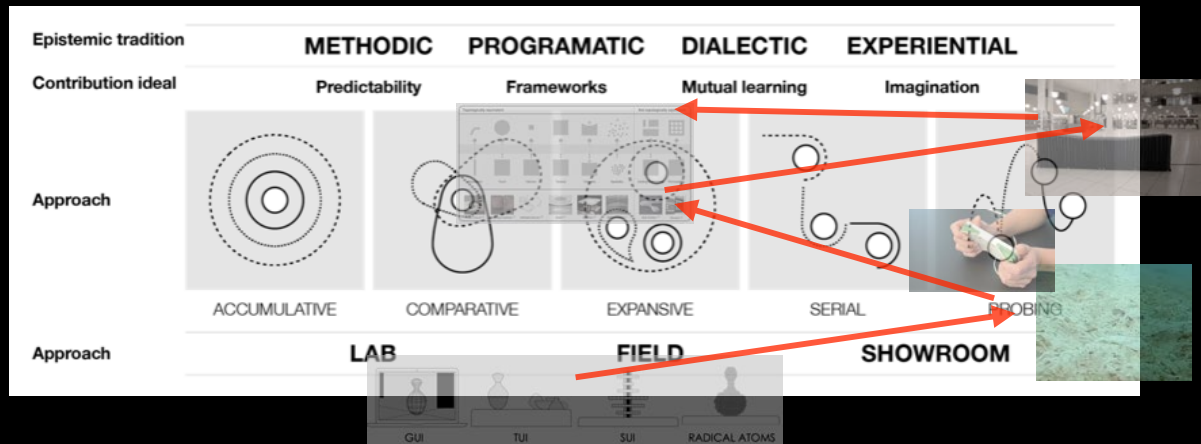
Summatavet: Folk Tradition and Artistic Inspiration



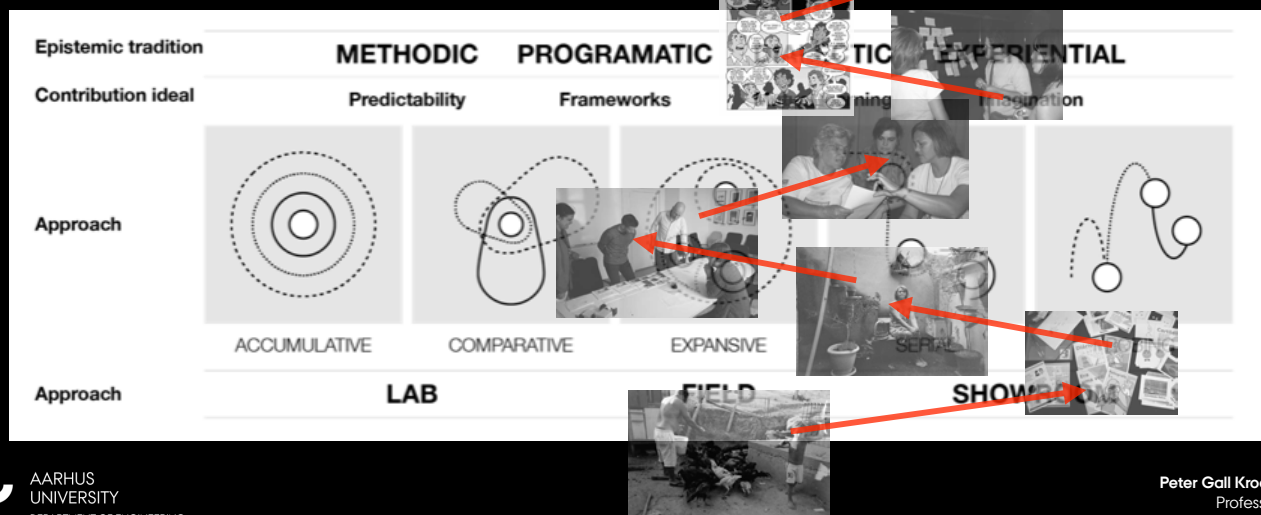
Philip Ross: Ethics and aesthetics in intelligent product and system design



Majken Kirkegaard Rasmussen: Shape Changing Interfaces



Andrea and Marcelo Judice: You are important - Designing for Health agents in Vila Rosario



Program of the day (CEST 8 - 14) 4 modules

• 8.00 - 9.20:

• Lecture:

- Drifting and Accountability – four epistemic traditions

• 10.30 - 11.50:

• Exercise in break-out groups (total of 30 min):

- Based upon participant's position papers and discussions two/three groups are formed in line with the dominant epistemic tradition (10 min).
- Positioning and discuss each participants research in relation to the epistemic tradition of the group (20 min).

• Lecture (45 min):

- Knowledge-Relevance model and ways of drifting in constructive design research

11.00 - 12.20

• exercise:

- Individually (30 min): Map a current/ recent constructive design research experiment using the presented tools and models

• Lecture: Drifting and evaluation (20 min)

• exercise:

- Individually (10 min): point to a potential drift from conception to evaluation
- In groups (30 min): participants present the mapping exercise.

13.40 - 15.00

• Exercise (30 min):

- Short Individual presentations, Group discuss and note similarities and differences revealed through mapping exercise.

• Plenum (50 min):

- Group presentations of findings and discussions (40 min); Wrap up by instructors (10 min)



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The strength and weaknesses of cacophony on evaluation

- Constructive design research is not and can not be linear and stay within only one regime of knowing
- Several well argued stances is a sign of **maturity** - there is something to disagree about
- **From validity to accountability**
 - Measures and purposes are flip sides of a coin
 - Different measures serve **different communities** and value systems
- Participate in the **language game** of other research fields and establish identity

Eurocentrism

- The trouble of global brands and products
 - assuming that will meet the needs -
- They are only signs of young, successful and rich - regional relevance will win in the long run...
- Relational aesthetics, "hacktivism", collective action are eurocentric concepts
- Research should be aware of this...



Sum up - Drifting by intention

- Defined the concept of constructive design research
- Provided a way for constructive design researchers to participate in the language games of other research disciplines
- Identified four epistemic traditions within the field of research
- Provided the K/R model to map research activities and concerns
- Unravled to five ways and motives for experimental drift
- Pointed to the concept of accountability as a way to allow diverse appreciation of research work and supporting a rich variety of contributions without compromising credibility
- Unpacked how drift in discourse can be tracked and justified over the course of a project