



UiO : Universitetet i Oslo

# in1060: om design & design-ideer

Tone Bratteteig

*forskningsgruppe for Design av informasjonssystemer*



*inf1060: 12/2 2018*



# hva gjør vi når vi designer?

## øvelse: design en feiring for noen

- hva vil du lage?  
(mulig og ønskelig)

- visjon eller konsept
- hvilken form velger du?

- hva har du ressurser til å lage?  
- hvordan skal du gå fram?  
hvordan starter du?

- tid
- folk / team
- ressurser (penger)
- kompetanse

- hvilke ideer får du jobbet fram?  
(ide-rom)

- basert på din kunnskap og erfaring
- basert på andres kompetanse

**Norwegian Opera House**  
Oslo (Norway), 2008

JOINT WINNER 2010

The roof of the opera house gently emerges from the waters of the port of Bjørvika to offer people who walk on it splendid views over the city and the fjord.



IMAGES (13)



AFTER

DESCRIPTION

**PREVIOUS STATE**

Although it is part of the city, the area over a cove of the Oslo fjord was an infrastructural construction coming into the central railway station and a busy high-speed road impeded any direct relationship between the port and the city, thus conferring on the port area a residual, run-down character.

**AIM OF THE INTERVENTION**

With the turn of the century, the Norwegian Government decided to transform this zone into an emblematic neighbourhood that would constitute Oslo's main focus of cultural facilities and that would articulate the relationship between city and fjord. Along with the establishment of the Edvard Munch Museum, the first phase in this transformation was the construction of the Oslo Opera House, seat of the Norwegian National Opera and Ballet.

**DESCRIPTION**

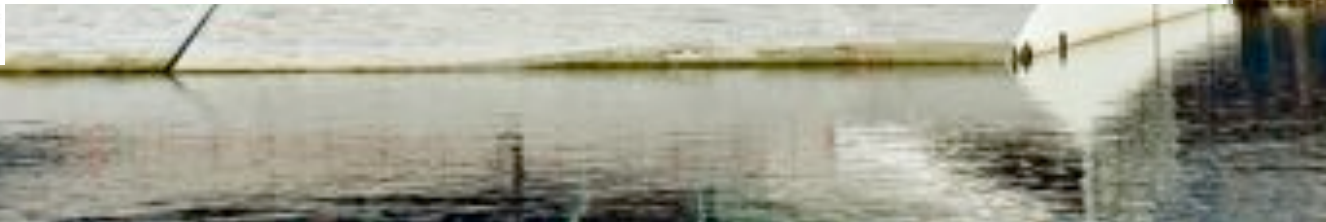
Accessible by means of a pedestrian walkway crossing the adjacent motorway, the roof of the new opera house consists of a series of gently sloping planes that emerge from the waters of the port to rise up and cover the concert hall. They are made to walk on and are covered in white Carrara marble plaques. Their layout creates several different spaces for strolling around, holding open-air shows and enjoying the splendid views over the city and fjord.

**ASSESSMENT**

Independently of the much-frequented main square, the opera house offers visitors the sensation of a slope offers a splendid view of the city and fjord. The new opera house emerges as the symbol of a restored Bjørvika which now presides over the meeting of Oslo with its fjord with due dignity.

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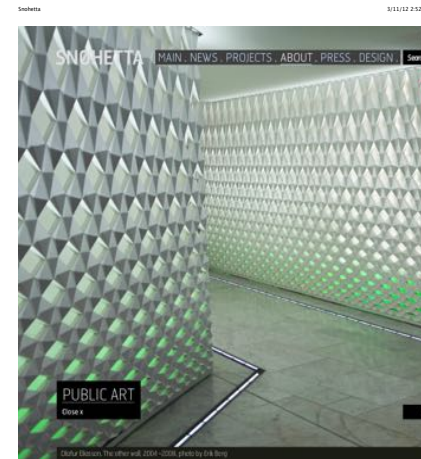
konsept: åpenhet

- åpne byen mot sjøen
- åpne operaen for byens befolkning

*Foto fra Store Norske Leksikon*



form: isbre



<http://www.snoarc.no/#/about/information/45/>

*Tone Bratteteig, in1060: 12/2 2018*



< Nyheter

# Snøhvit-opera blir gul

Tips VG på 2200

(© NTB) 24.11.2007 07:32 - oppdatert 24.11.2007 07:42

Del på Facebook Del på Twitter

**Den omstridte italienske marmoren i det nye operahuset i Bjørvika i Oslo er i ferd med å gulne.**

Statsbygg vet ikke hvorfor marmoren i operabygget til fire milliarder kroner blir gul, men håper å kunne ordne problemet, skriver **Aftenposten**.



# Dyrt Opera-vedlikehold

**Vedlikehold av marmoren på operabygget i Bjørvika kan gjøre den italienske steinen dyrere enn det norsk stein hadde vært, melder NRK.**

Publisert: 31.08.2004 09:15. Sist endret: 27.11.2013 20:53.

- Det er dyrere å vedlikeholde marmor enn granitt. Granitten er sterkere, mer motstandsdyktig mot forvitring, og har lavere vedlikeholdskostnader, sier administrerende direktør Arne Bjørlykke for Norges geologiske undersøkelse. Da Statsbygg la fram beslutningen om at marmoren fra Italia var valgt til å dekke skråtak og uteplass på den nye operaen i Bjørvika i forrige uke, fremhevet prosjektleder Roar Bjordal økonomien som et hovedargument for hvorfor det ble italiensk og ikke norsk. Italiensk marmor var 30 millioner billigere enn stein fra Rennebu granitt. - For det offentlige skal vedlikeholde dette må det være like viktig å se på kostnadene til vedlikehold som til å bygge operaen, sier Bjørlykke til NRK.

**Nøkkelord:** Import



konsept: åpenhet

- åpne byen mot sjøen
- åpne operaen for byens befolkning



form: isbre



*Operahuset i Sydney, arkitekt Jørn Utzon*





## Phelps tractor



*Foto fra Gentner & Grudin 1990*



# hvordan tenker designere

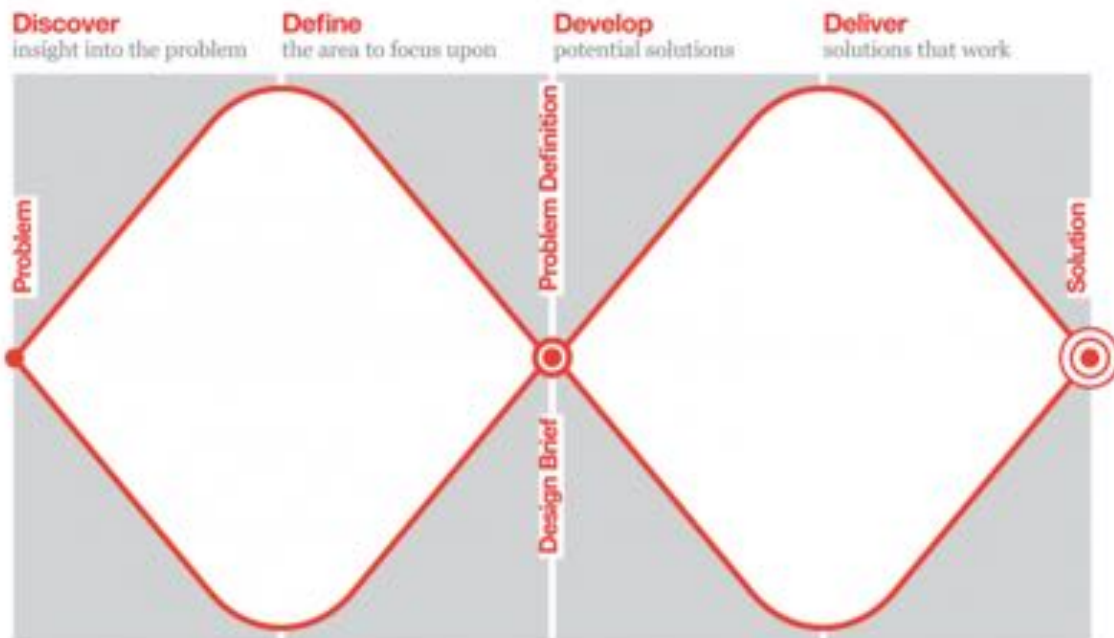
Nigel Cross (bygger på Bruce Archer)



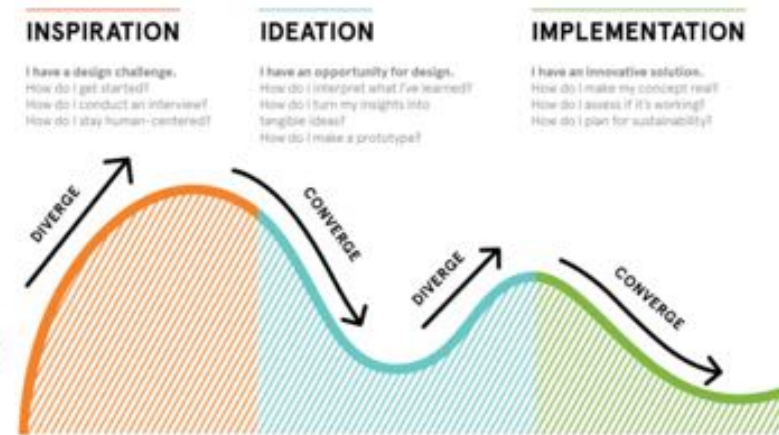
|                                      | the phenomenon of study | the appropriate method                           | the values  |
|--------------------------------------|-------------------------|--|---|
| the sciences                         | the natural world       | controlled experiments, classification, analysis | objectivity, rationality, neutrality, truth       |
| the humanities<br><i>(eg. kunst)</i> | human experience        | analogy, metaphor, evaluation                    | subjectivity, imagination, commitment, justice    |
| design                               | the artificial world    | modeling, pattern-forming, <b>synthesis</b>      | practicality, ingenuity, empathy, appropriateness |

# divergent og konvergent tenkning

Dan Nessler DXD



British Design Council: double diamond



IDEO HCD process, img source: <https://cdn.evbu.com/eventlogos/160332149/designthinkingphases.png>

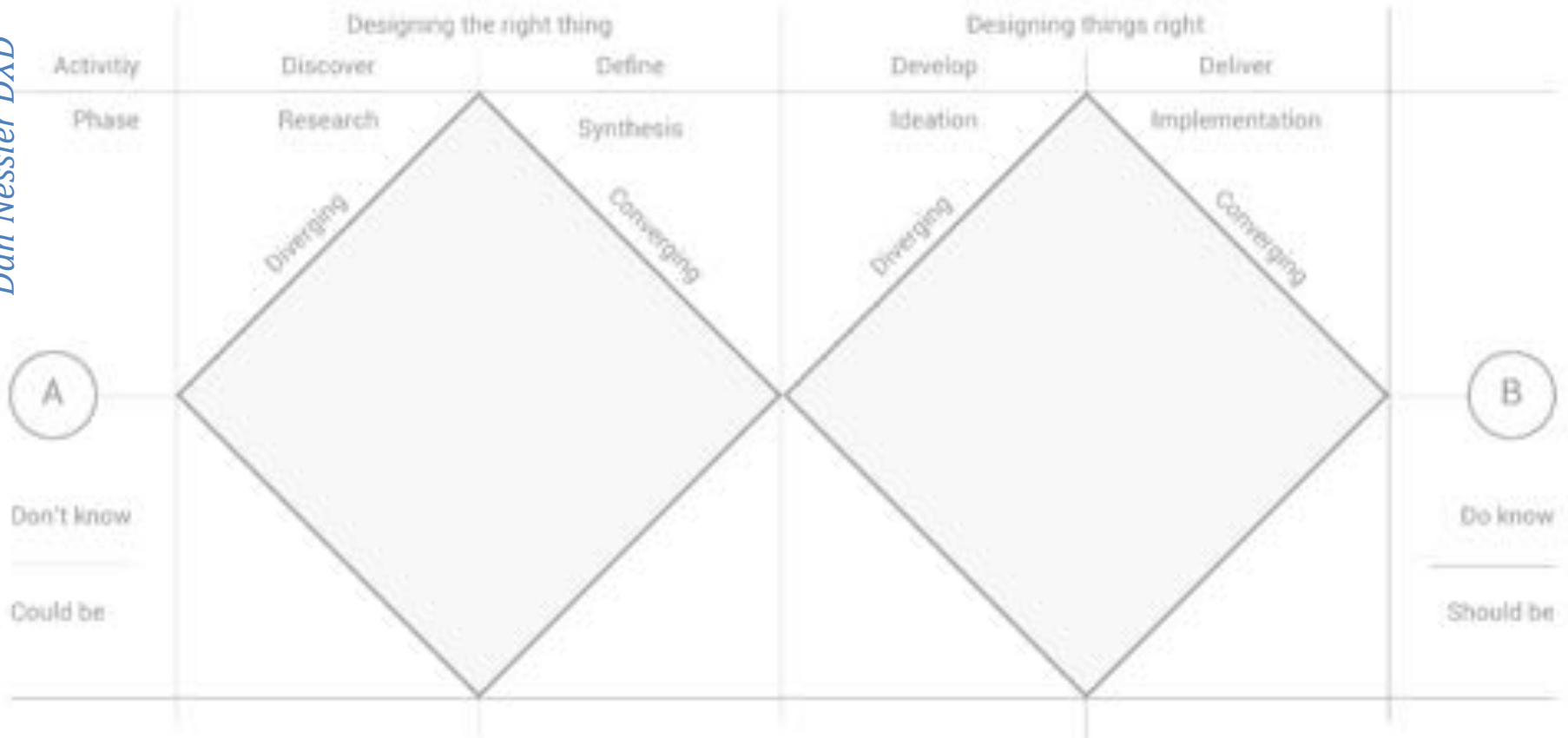


Stanford d.school Design Thinking process, img source: <http://dschool.stanford.edu/wp-content/uploads/2012/02/steps-730x345.png>

Tone Bratteteig, in1060: 12/2 2018

# divergent og konvergent tenkning

*Dan Nessler DXD*



# seeing-as, what-if – metaphors

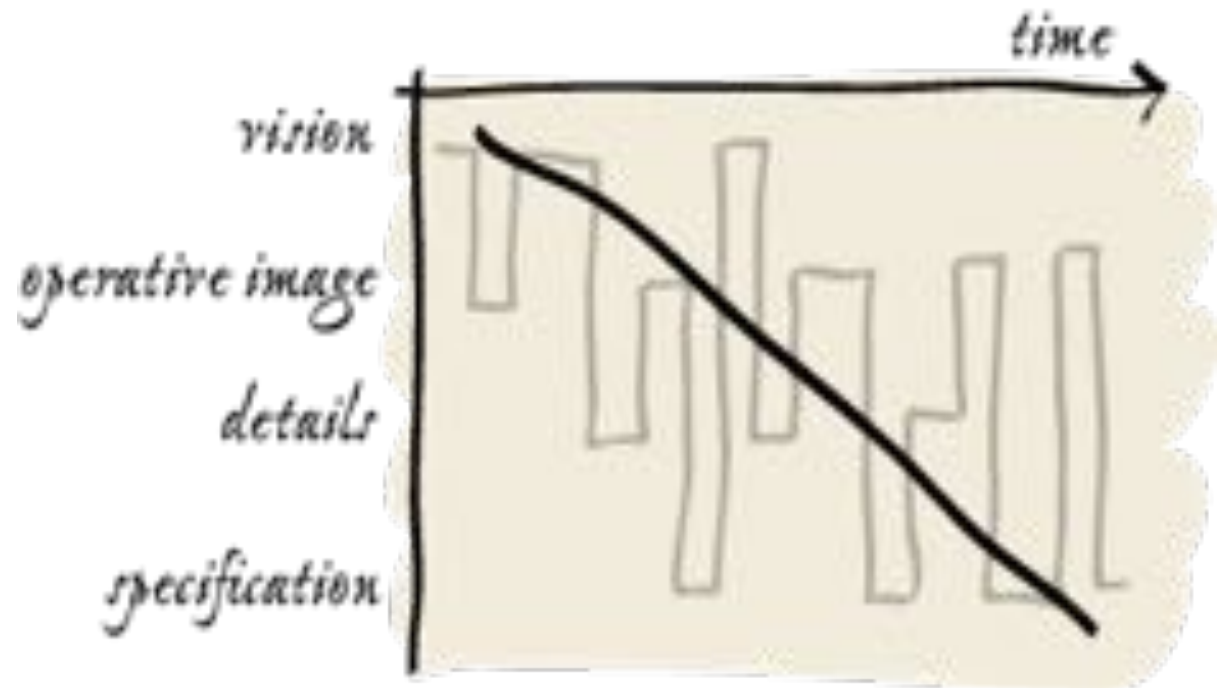
“When a practitioner makes sense of a situation he perceives to be unique, he sees it *as* something already present in his repertoire. To see *this* site as *that* one is not to subsume the first under a familiar category or rule. It is, rather, to see the unfamiliar, unique situation as both similar to and different from the familiar one, without at first being able to say similar or different with respect to what. The familiar situation functions as a precedent, or a metaphor, or ... an exemplar for the unfamiliar one.” (Schön 1983: 138)

games & metaphors: what-if, seeing-as  
(Lanzara)

# nivåer av konkretisering

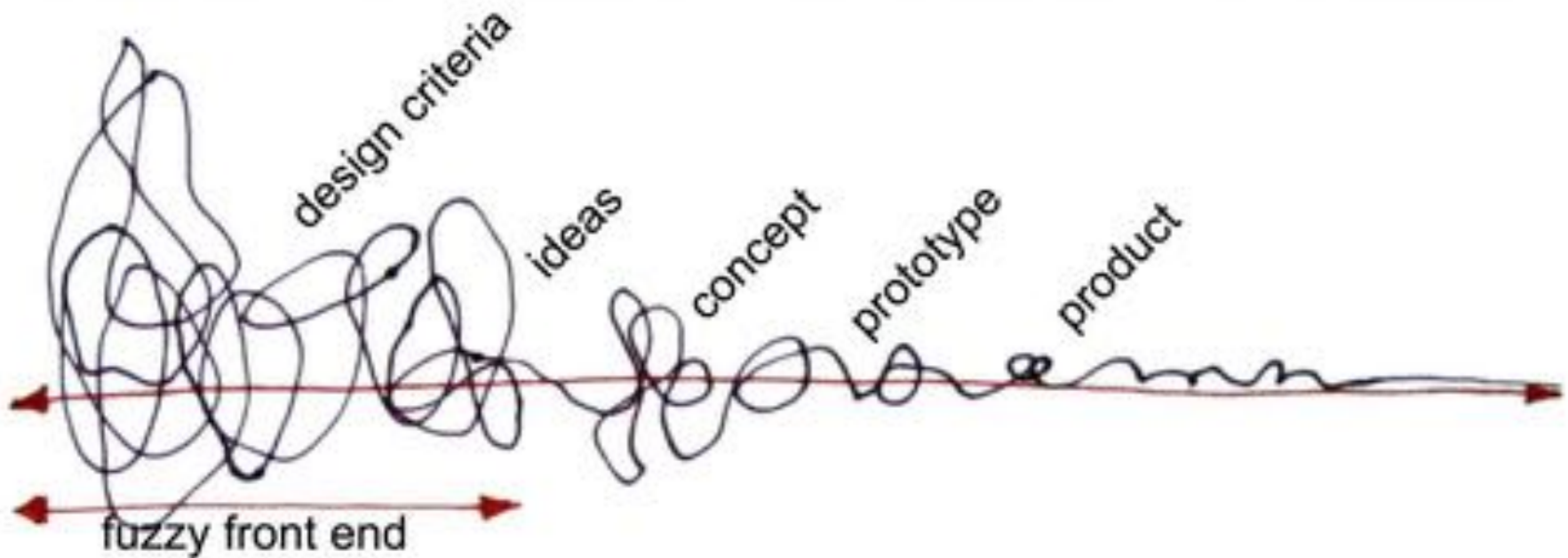


flere nivåer av  
konkretisering  
samtidig



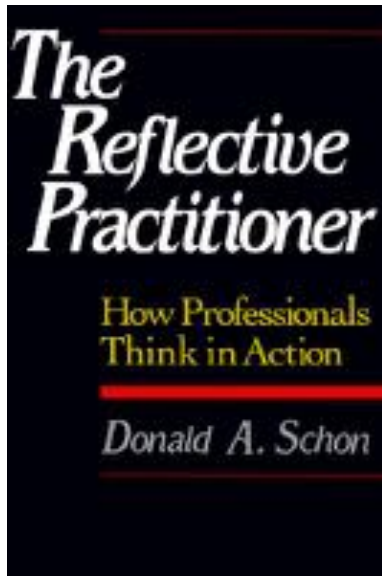


# “fuzzy frontend”

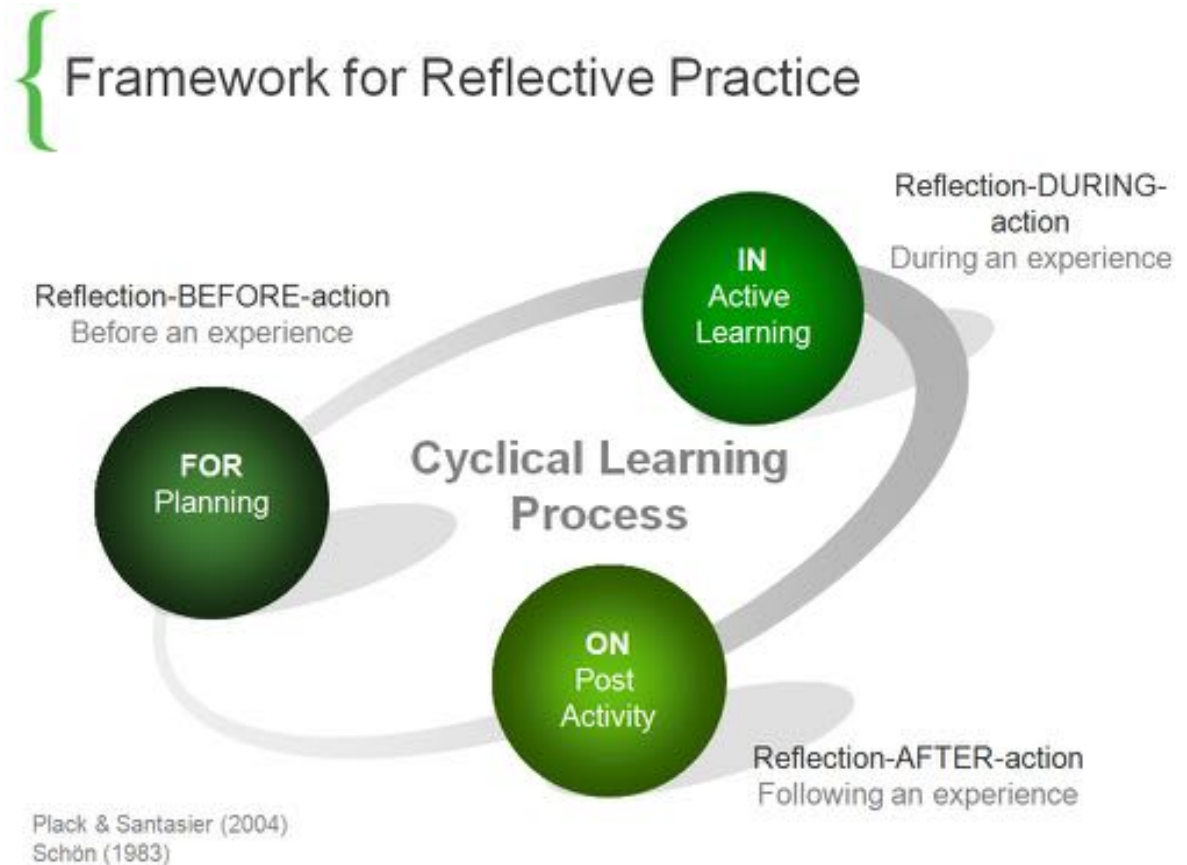


*Sanders & Stappers (2007)*

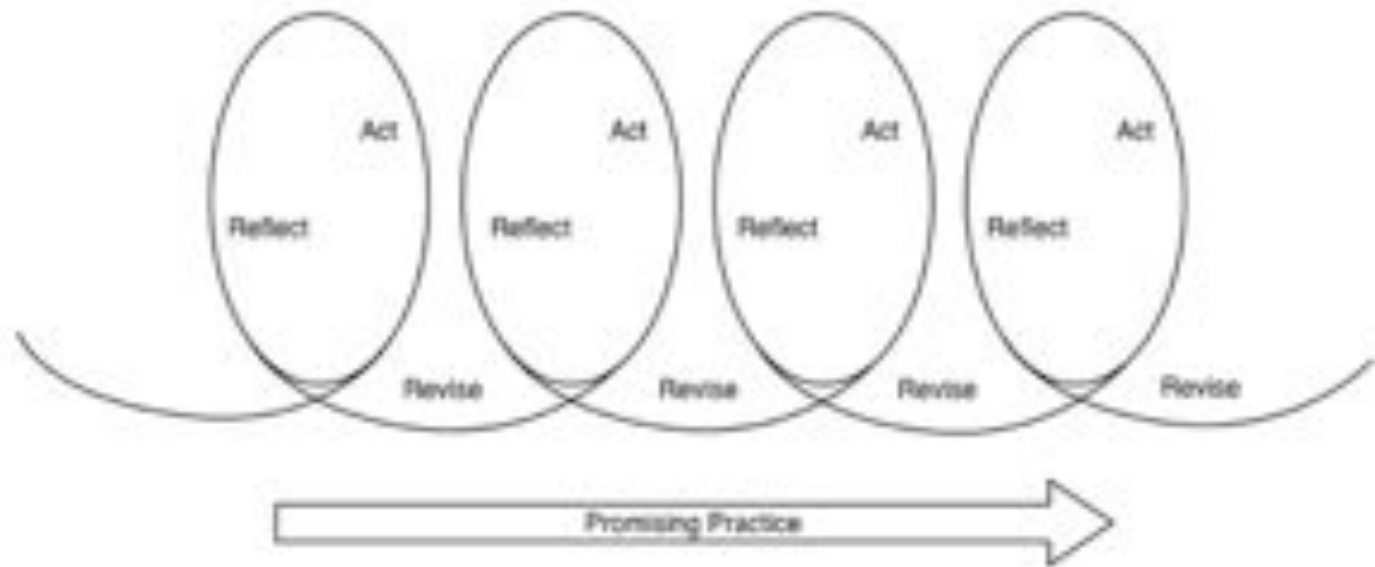
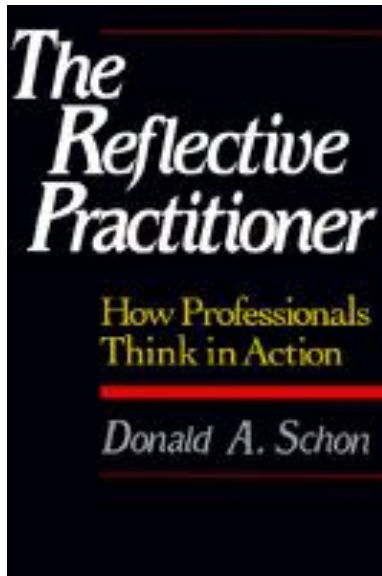
# design som en “samtale med materialet”



- reflektere (tenke)
- før vi designer
  - mens vi designer
  - etter at vi har designet



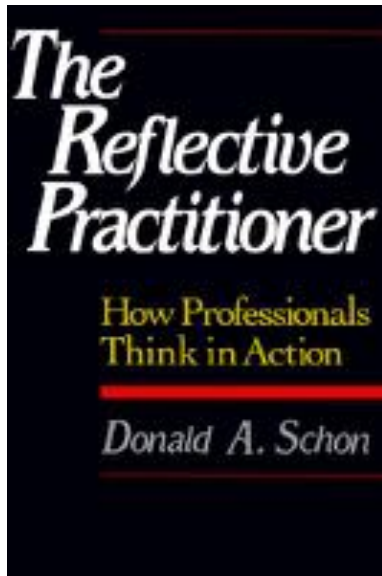
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Schön: move experiments: “see – move – see”

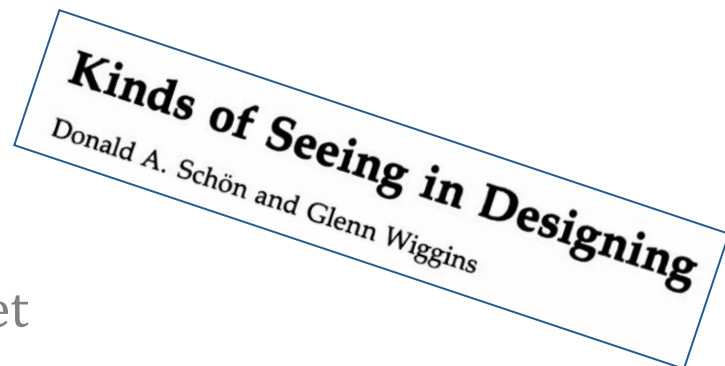
**see:** forstå situasjonen, se muligheter & valg

**move:** velge et trekk og gjøre det

**see:** evaluere trekket (mot visjonen)

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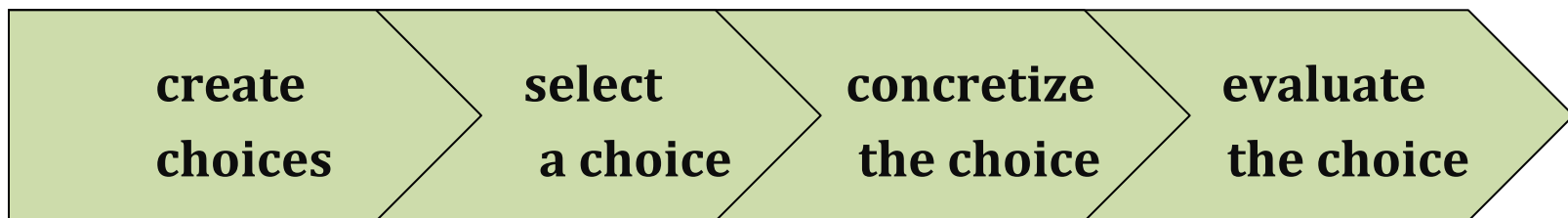


# design som beslutningsprosess

**see:** hvilke muligheter fins –  
hvilke valg har vi?

**move:** hvilken valgmulighet skal vi prøve?  
- velge en mulighet  
- konkretisere den

**see:** vurdere den nye situasjonen –  
leder den oss et skritt i riktig retning?



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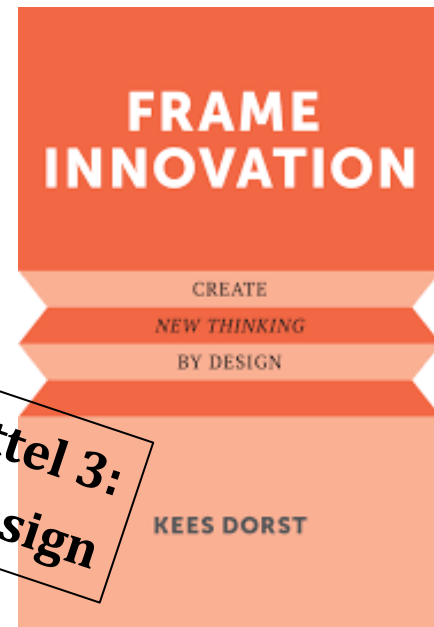


**Kapittel 3:  
Lessons from design**

# hva gjør vi når vi designer?

hvordan tenker designere?

- deduksjon
- induksjon
- abduksjon - normal abduksjon
- **design abduksjon**



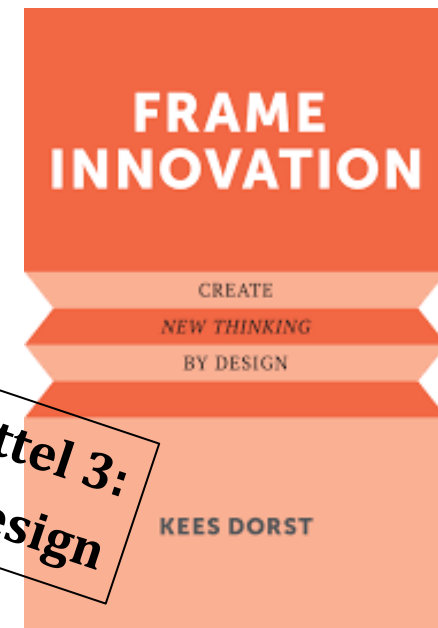
**Kapittel 3:  
Lessons from design**



# hva gjør vi når vi designer?



Figure 3.1  
The spectrum of design activities (after Lawson and Dorst 2009).



**Kapittel 3:  
Lessons from design**

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# FORMULATING

UNDERSTANDING – IDENTIFYING – FRAMING

# REPRESENTING

EXTERNALIZING – CONVERSING –  
USING MULTIPLE REPRESENTATIONS

# MOVING

CREATING PRIMARY GENERATORS –  
KINDS OF MOVING – MOVING THE PROBLEM

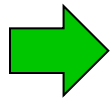
# EVALUATING

OBJECTIVE / SUBJECTIVE REFLECTING-IN-ACTION –  
JUDGING ON 3 QUALITIES – SUSPENDING JUDGMENT

# MANAGING

REFLECTING-ON-ACTION – BRIEFING –  
PURSUING PARALLEL LINES

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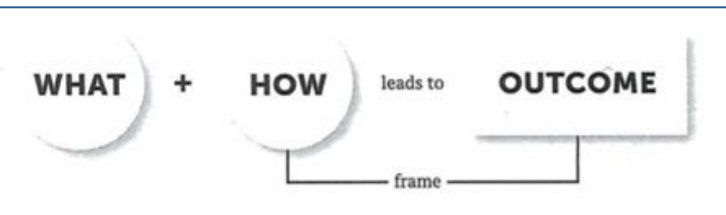


# FORMULATING

UNDERSTANDING – IDENTIFYING – FRAMING

formulating / identifying issues  
i et problemområde

“wicked problems” (Rittel)



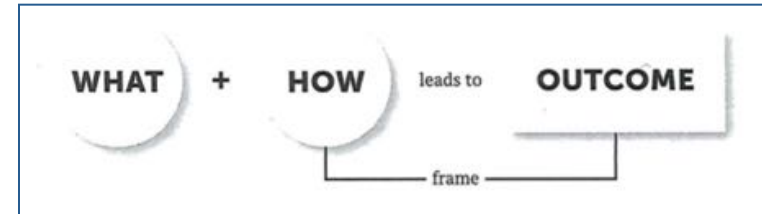
framing (Schön)

kan rammes inn på flere nye måter



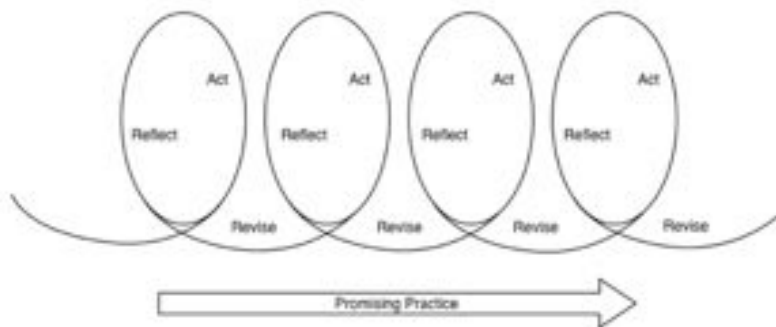
# ➔ REPRESENTING

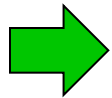
EXTERNALIZING – CONVERSING –  
USING MULTIPLE REPRESENTATIONS



representere problemer & løsninger  
på flere måter, i parallell

Schön:  
conversation with the material





# MOVING

CREATING PRIMARY GENERATORS —  
KINDS OF MOVING — MOVING THE PROBLEM

**Kinds of Seeing in Designing**  
Donald A. Schön and Glenn Wiggins

Schön:

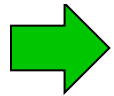
move experiments: “see – move – see”

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# EVALUATING

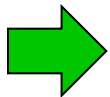
OBJECTIVE / SUBJECTIVE REFLECTING-IN-ACTION –  
JUDGING ON 3 QUALITIES – SUSPENDING JUDGMENT

kontinuerlig evaluering  
- seeing – moving - seeing

## designe design-prosessen

lede:

miks av problemløsning, kreativ frihet,  
læring drevet av reflection-on-action



**MANAGING**

REFLECTING-ON-ACTION — BRIEFING —  
PURSUING PARALLEL LINES

---

## 5 lærdommer fra design

1) co-evolution av problem-definisjon og problem-løsning

2) utvikle problemsituasjonen, både reformulere problem & finne løsning

3) creating frames: frame & reframe – rammer er bilder, metaforer, posisjoner, perspektiver som gir ideer til former (både what & how)

4) exploring themes: temaer som er mer allmenne (empati, dybdekunnskap)

5) dyrke debatt og diskusjon:  
“the discourse is embodied in the physical space where the designers are working”





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# design thinking

**FORMULATING**  
 UNDERSTANDING – IDENTIFYING – FRAMING  
**REPRESENTING**

EXTERNALIZING – CONVERSING –  
 USING MULTIPLE REPRESENTATIONS

**MOVING**

CREATING PRIMARY GENERATORS –  
 KINDS OF MOVING – MOVING THE PROBLEM

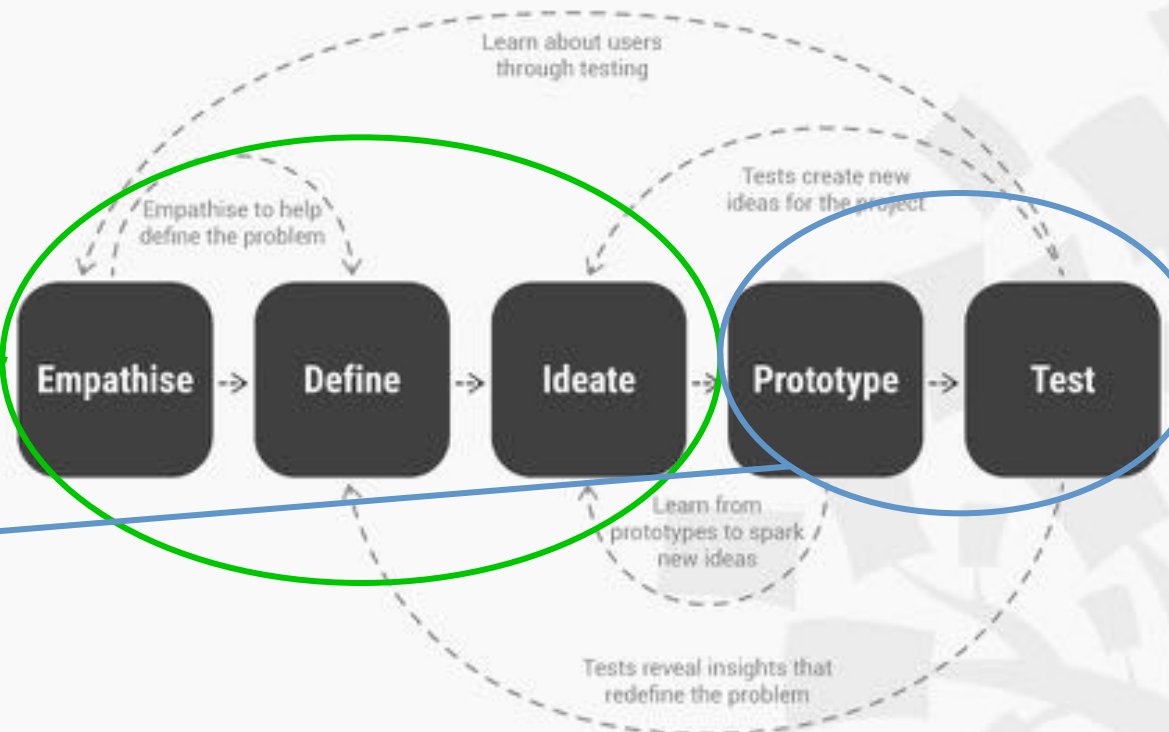
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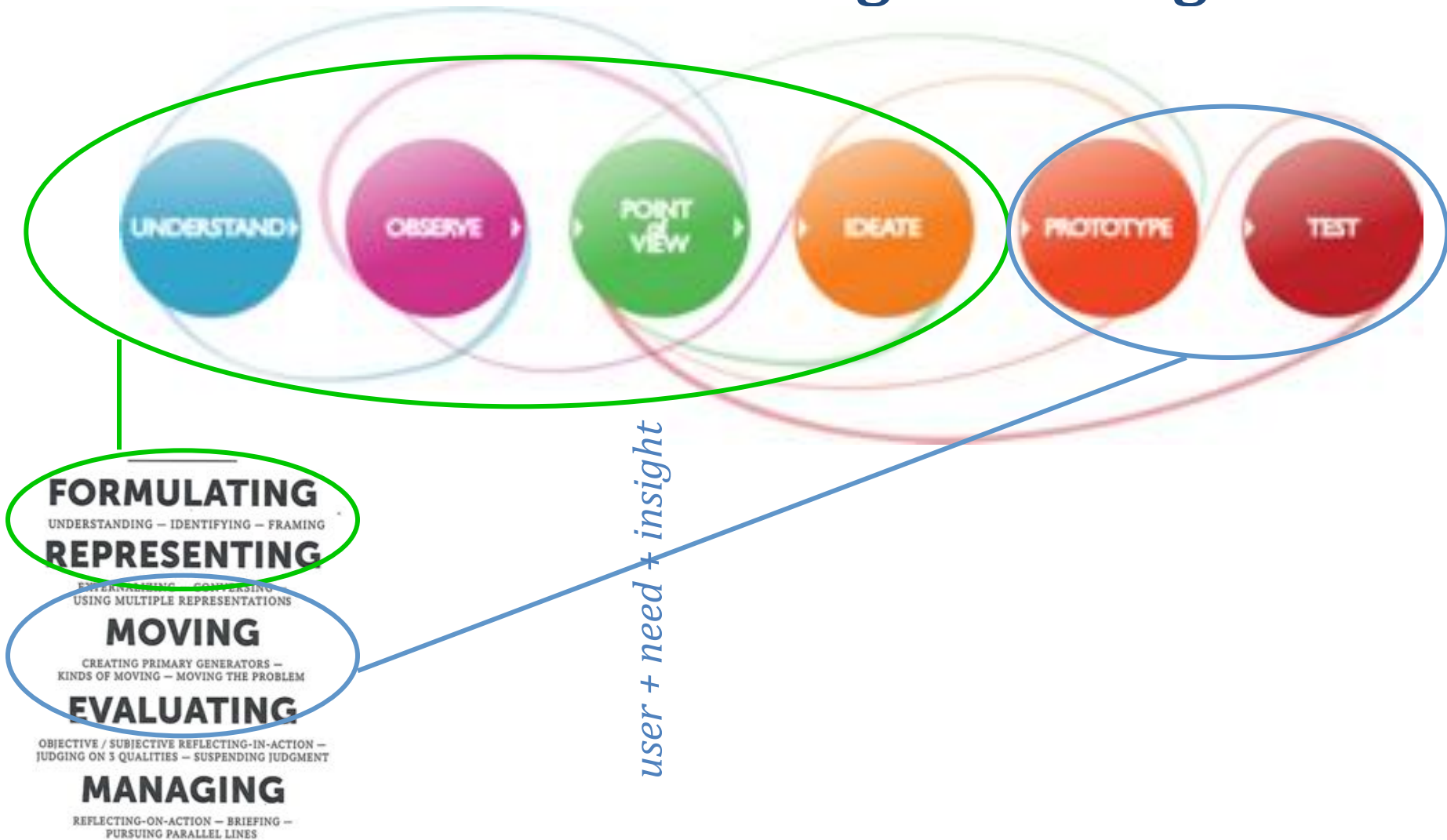
## DESIGN THINKING: A NON-LINEAR PROCESS



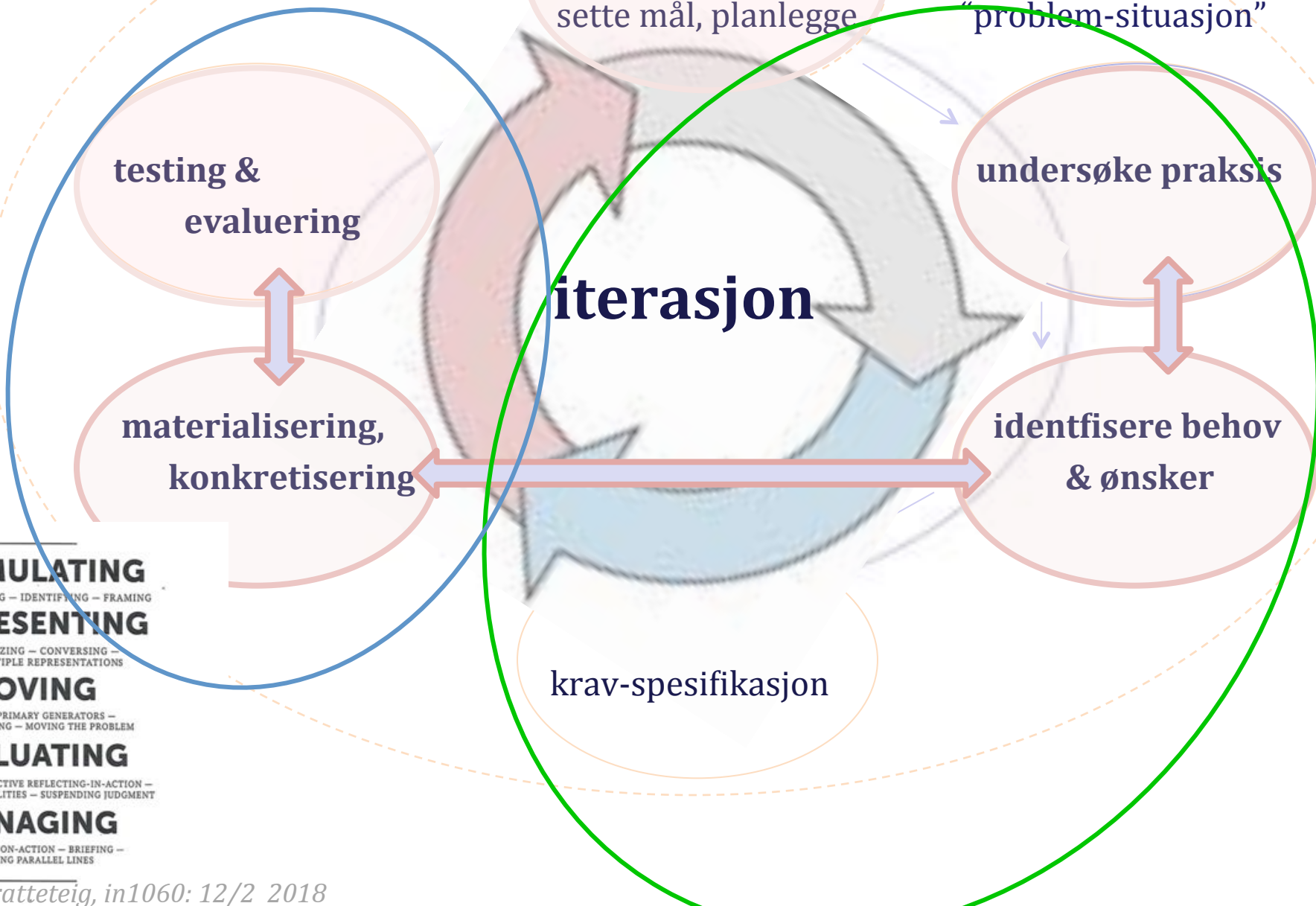
INTERACTION DESIGN  
 FOUNDATION

INTERACTION-DESIGN.ORG

# Stanford's d.school on design thinking



# bruksorientert design



**FORMULATING**  
UNDERSTANDING – IDENTIFYING – FRAMING

**REPRESENTING**  
EXTERNALIZING – CONVERTING – USING MULTIPLE REPRESENTATIONS

**MOVING**  
CREATING PRIMARY GENERATORS – KINDS OF MOVING – MOVING THE PROBLEM

**EVALUATING**  
OBJECTIVE / SUBJECTIVE REFLECTING-IN-ACTION – JUDGING ON 3 QUALITIES – SUSPENDING JUDGMENT

**MANAGING**  
REFLECTING-ON-ACTION – BRIEFING – PURSUING PARALLEL LINES

# å tenke nytt



å tenke nytt

# BRAUN OR APPLE?

BRAUN T3 POCKET RADIO (1958)



APPLE IPOD (2001)



VS

BRAUN LE3 SPEAKER (1959)



APPLE IMAC (2007)



VS

BRAUN T1000 RADIO (1967)



POWERMAC G5/MAC PRO (2003)



VS

BRAUN T1000 RADIO (1967)



POWERMAC G5/MAC PRO (2003)



VS


BRAUN LE1 SPEAKER (1959)

APPLE IMAC (2007)

# å utvide ide-rommet **problem-rommet** **løsnings-rommet**


utgangspunkt i

- deltakernes kompetanse
- deltakernes erfaringer

- 
- om teknologier
  - om bruksområdet
  - andre relevante kunnskaper

(NB brukerdeltakelse øker iderommet)

- hvordan kan disse utvides?

- 
- med teknologien (designmaterialet)
  - med bruksområdet (el. undersøk.)
  - metoder & teknikker

mål:

øke antall & kvalitet på  
ideer + ekte nyskaping



# hvordan får vi flere ideer?

systematisk

- bygge på kunnskaper og erfaringer som fins i teamet
- skaffe nye kunnskaper og erfaringer
- systematisk skifte perspektiv (Buchanan: placements)
- systematisk tenke metaforer og muligheter

bilde, overført betydning,  
sammenlikning

(Schön: see-move-see; Lanzara: seeing-as, what-if)

{ tegn  
ting  
handlinger  
tanker



# brainstorming

- forbudt med vurdering
- en samtale av gangen
- et tema av gangen
- bygg på andres ideer
- gå for volum (mange ideer)
- oppmuntre til ville ideer
- vær visuell (mange kommu. former)
- lag overskrifter (korte,klare)

i prosjektet: analyser, diskuter, velg



- |                              |                               |
|------------------------------|-------------------------------|
| One Conversation at a Time   | Encourage wild ideas          |
| Go for Quantity              | Be Visual                     |
| Headline!                    | Stay on Topic                 |
| Build on the Ideas of Others | Defer Judgement - NO Blocking |

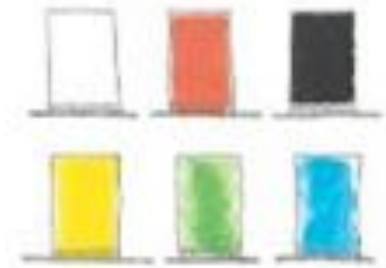


# six thinking hats

mål,  
bakgrunn  
hva vet vi?

praktisk planlegg,  
hvem gjør hva

problemer,  
svakheter,  
risiki



**SIX THINKING HATS**  
**EDWARD DE BONO**

THE INTERNATIONAL BESTSELLER  
 that has changed the way the world's  
 most successful business leaders think  
 the way to solve a problem is to consider all sides of the  
 thinking hat will, and how to improve...  
 REVISED AND UPDATED

følelser,  
liker ideen

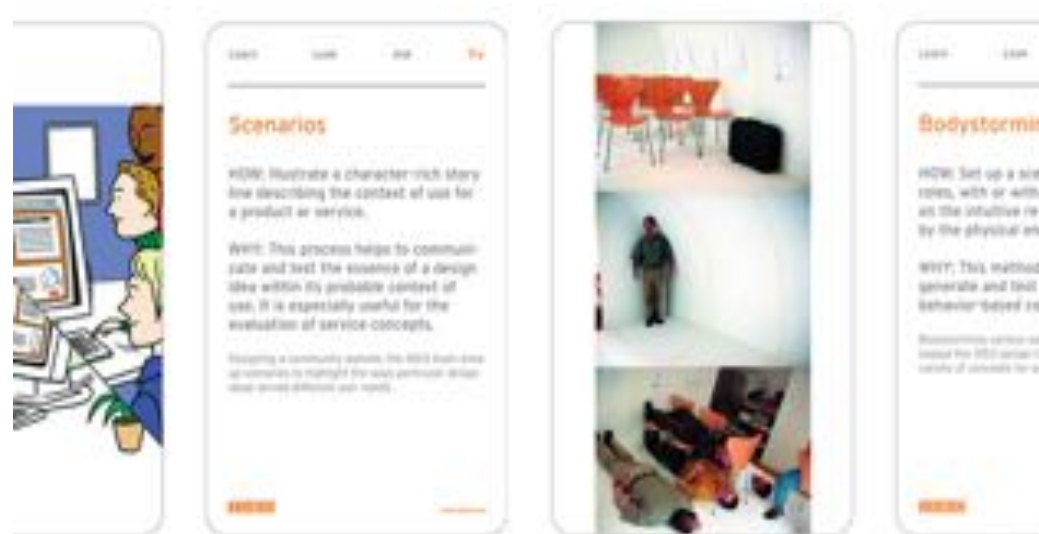
analyse, syntese  
felles, nye ideer

positive sider,  
mulighet, suksess

# hvordan får vi flere ideer?

systematisk utvide perspektiver og metoder

bygge på kunnskaper og erfaringer som fins i teamet



# bodystorming



“gå i brukernes sko”:

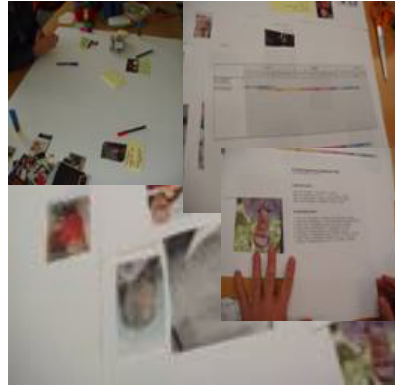
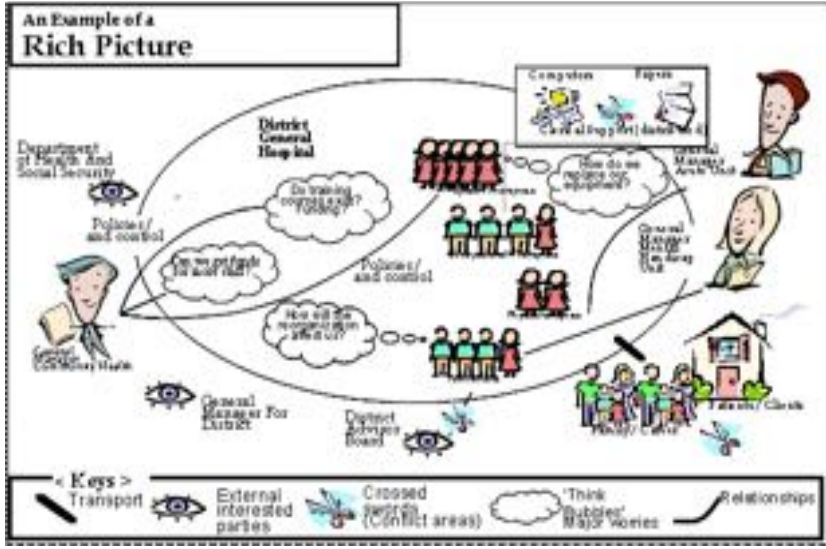
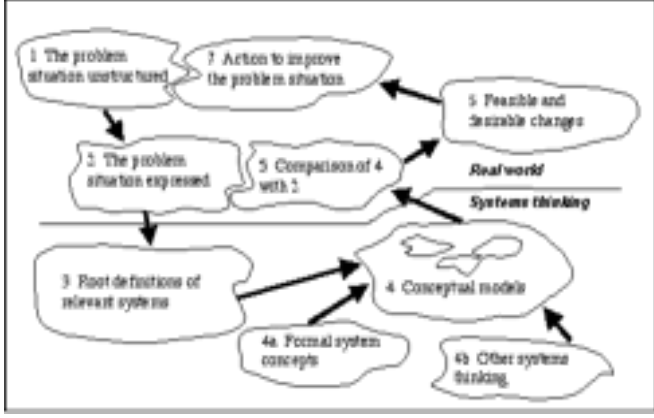
- egen-erfare brukeropplevelsen
- spille / leke med bruksomgivelsene



*Buchenau & Fulton Suri:  
generate and test ideas for a new airplane interior*

# kart & rike bilder

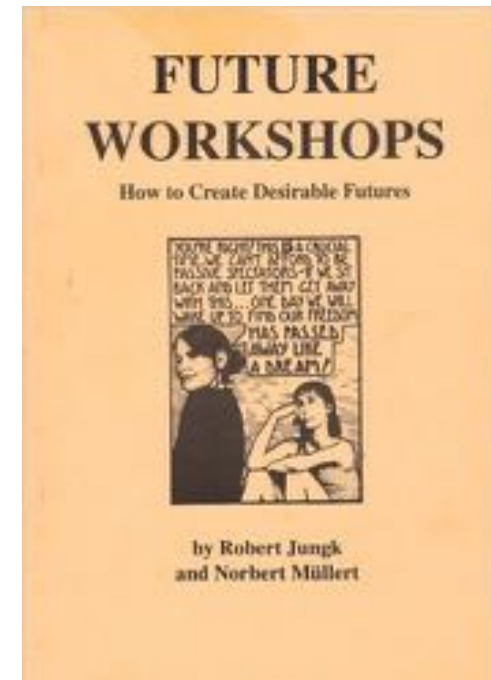
Checkland: soft systems methodology



Mörtberg: chartografies

# framtidswerksted

- 1) kritikkfase: hva er dårlig med dagens situasjon, for hvem er det dårlig for? Ikke kritiser hverandre; bruk de samme reglene som for brainstorming
- 2) fantasifase: hva ville drømmesituasjonen være? Lag en utopi. Tenk: hva hvis ... & tenk om ...
- 3) implementeringsfase: hvilke ideer kan virkelig gjøres? Ta utgangspunkt i utopiene og ideene og diskuter hva som kan oppnås. Lag en plan for gjennomføring av endringen. Hvem har ansvar for hva?





UiO : **Institutt for informatikk**  
 Det matematisk-naturvitenskapelige fakultet

«Du må vite hvor du skal lete»  
 Eldres bruk av nettbaserte tjenester

Karoline Helene Stark

Masteroppgave - Mai 2016



# Karoline Stark: variant av future workshop

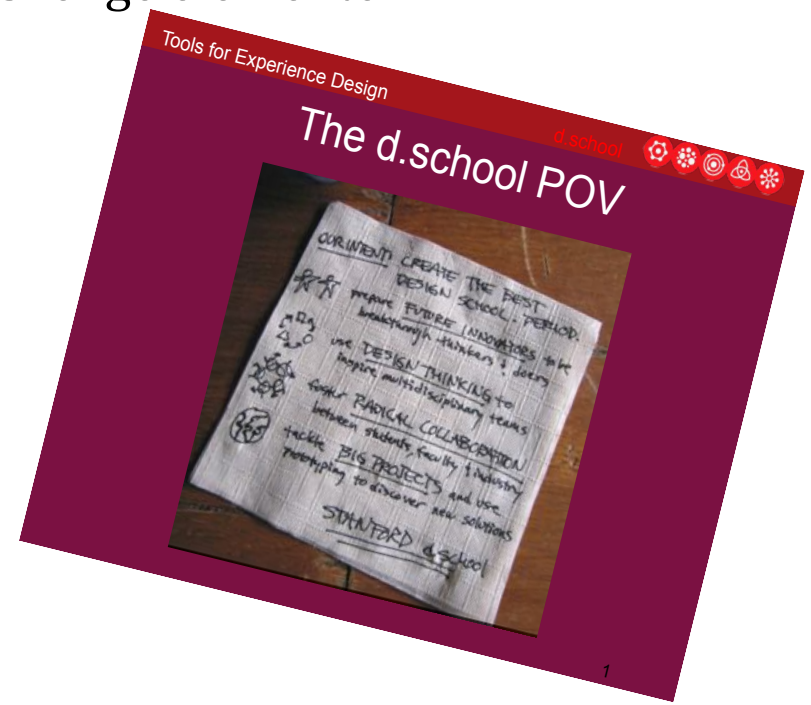


| Kritikkfase  | Drømmefase  | Implementasjonsfase  |
|--|---|--|
| Vanskelig å få oversikt<br>Vanskelig å finne frem<br>Vanskelig å finne brev<br>Vanskelig at bankene er ulike<br>Å lete i en liste (meny) | Bankene burde ha ett system for innlogging<br>Bankene burde ha samme nettbank<br>Ha faste knapper å gå inn på, alt bør synes med en gang. | Betale regning er primæroppgaven,<br>Må ha med: Betale, saldo, kontoutskrift, overføre, eFaktura og avtalegiro |

Tabell 11: FW-faser for «Startside»

# skisser

- et utkast, kladd eller foreløpig forslag til en komposisjon, en enkel og raskt utført tegning ...
1. for å forstå eller prøve ut uløste, vanskelige elementer
  2. for å kommunisere med andre







- quick**
  - timely** (*ved behov*)
  - inexpensive**
  - disposable**
  - plentiful** (*lages i en sammenheng*)
  - clear vocabulary** (*syns at det er en skisse*)
  - distinct gesture** (*upresis, åpen & fri*)
  - minimal detail** (*ikke svar på spørsmål som ikke er stilt*)
  - appropriate degree of refinement** (*passe presisjonsnivå*)
  - suggest and explore rather than confirm**
  - ambiguity**
- s 112-113**

4 ferdighetsgrader i tegning

pensiero – et løst idéutkast,

schizzo (skisse) – en mer utarbeidet figuttegning,

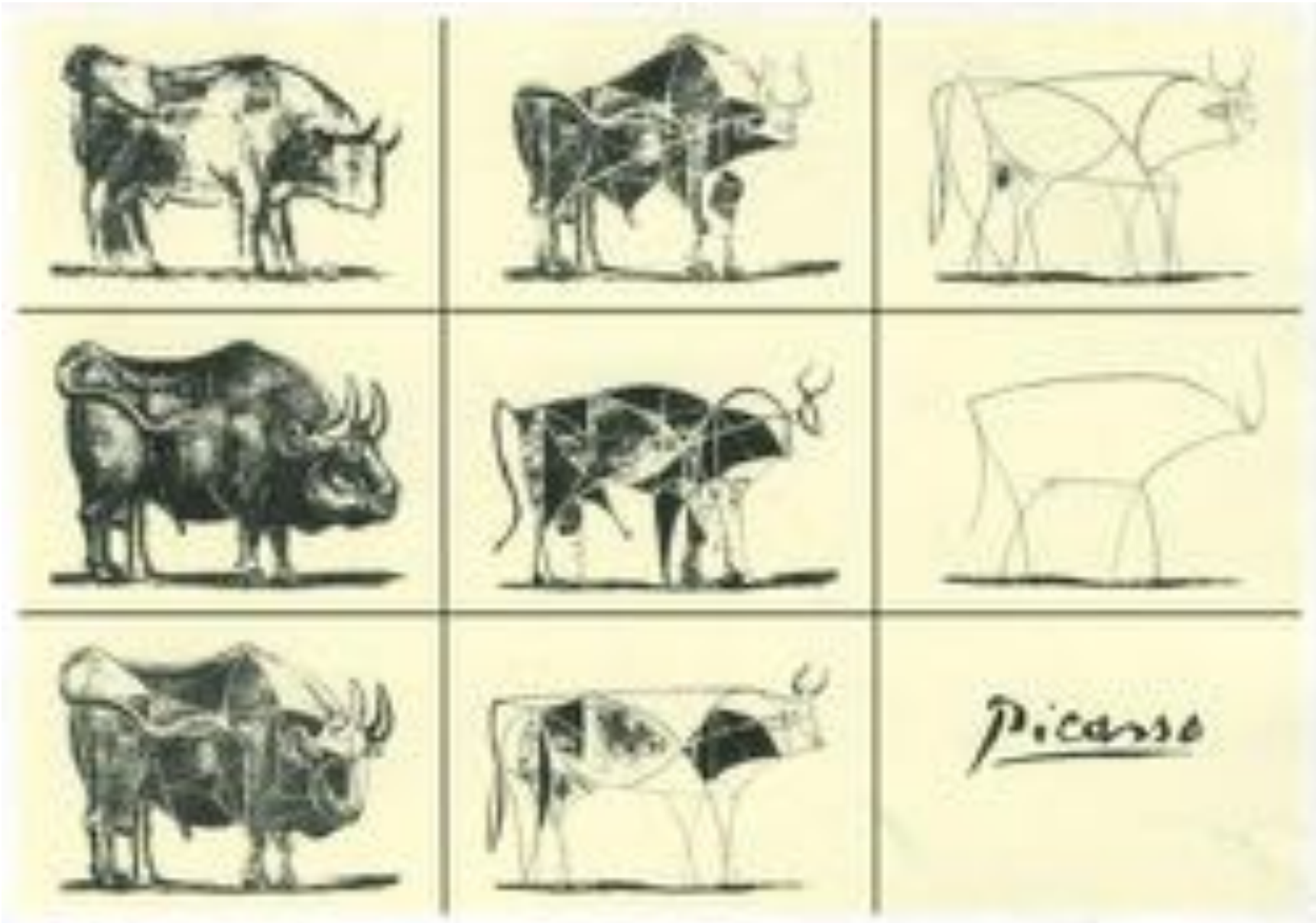
studie (studie) – med nærmere angitte detaljer,

disegno (tegning) sammenfatter de tre gradene ovenfor



*Linea*





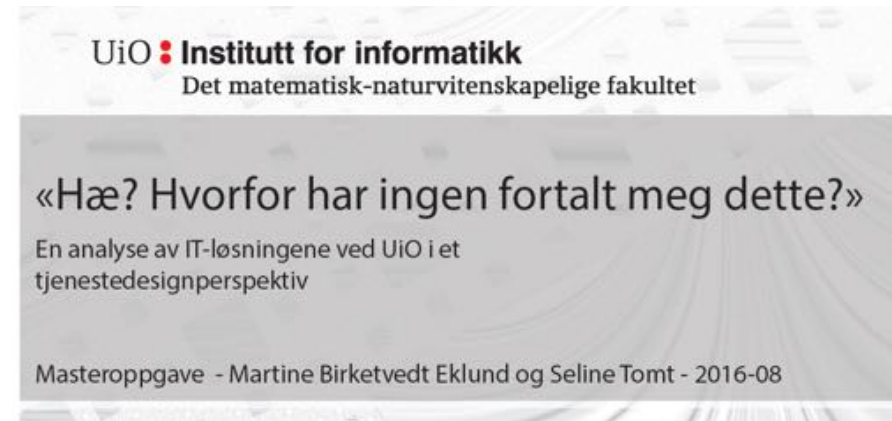
# storyboard

prosess-skisser

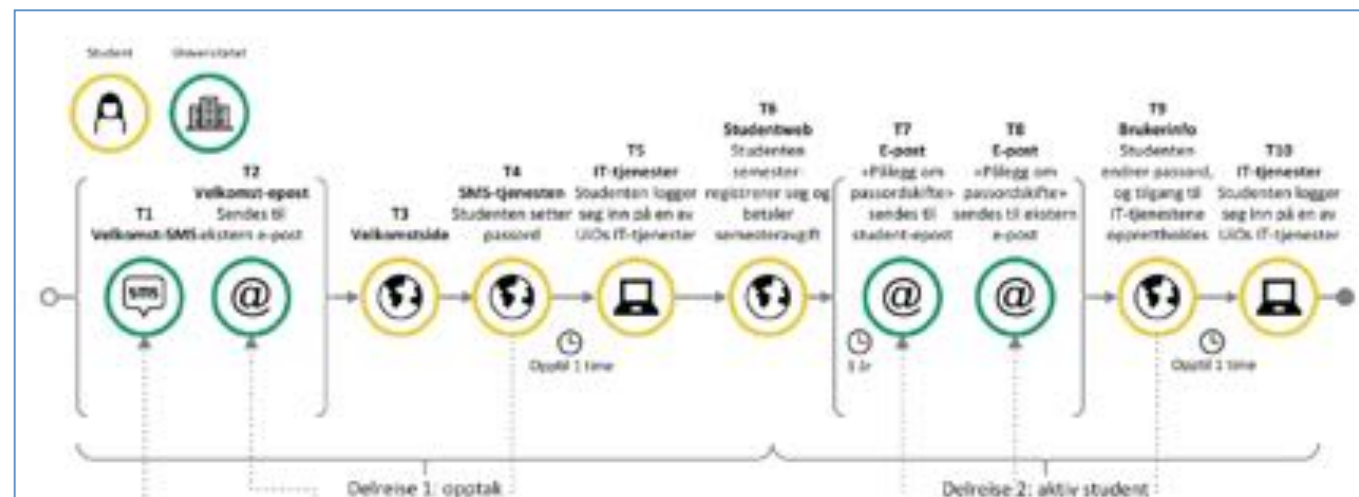
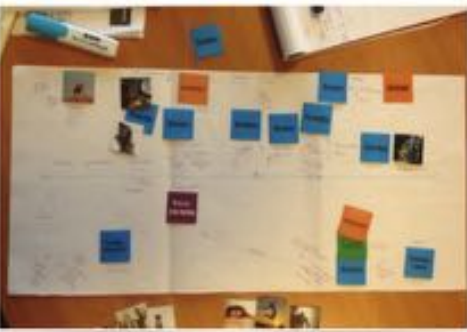


# customer journey

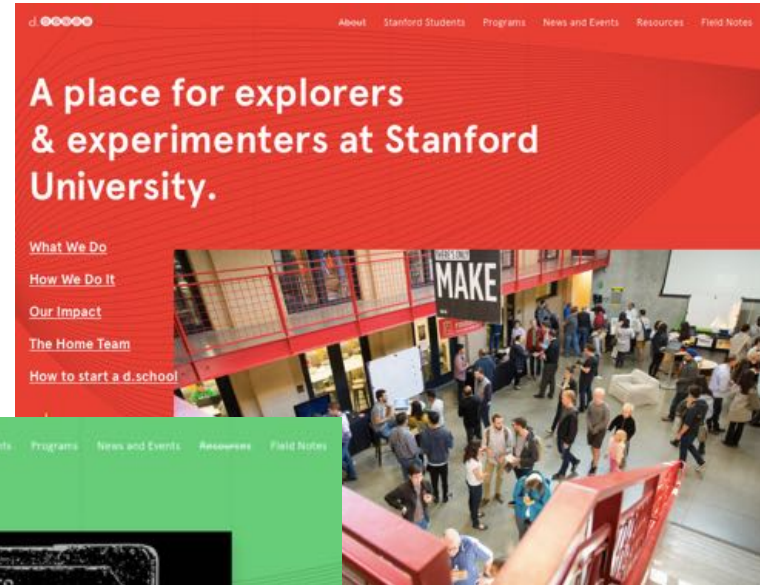
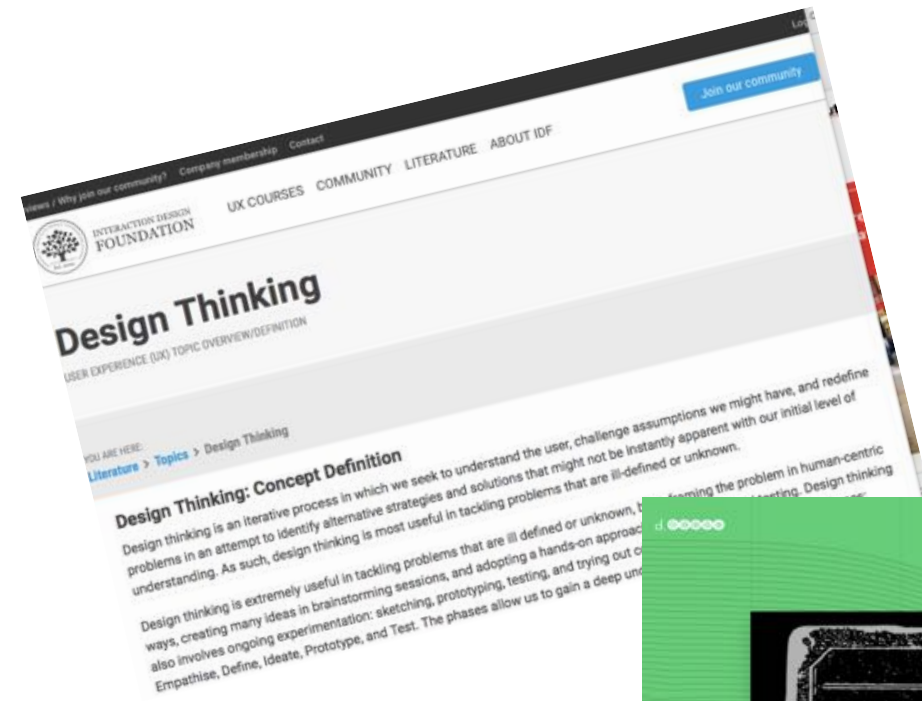
prosess-skisse



Martine Ekdal & Seline Tomt: student-IT som tjeneste



# metoder & teknikker



WHAT IS THIS?

Overview

FROM: D.SCHOOL,  
THOMAS BOTH

RESOURCES

LATEST RESOURCE

How to Run Off a Crash Course

Course

WHAT'S THIS ABOUT

This is an online version of one of our most frequently sought after introductory learning experiences. Using a video, worksheets, and facilitation tips we will take you step by step through the process of design thinking.

## Digital Technology has changed the way we interact with everything from the games we play to the tools we use at work.

Designers of digital technology products no longer regard their job as designing a physical object—beautiful or utilitarian—but as designing our interactions with it. In *Designing Interactions*, Bill Moggridge, designer of the first laptop computer (the GRiD Compass, 1981) and a founder of the design firm IDEO, tells us stories from an industry insider's viewpoint, tracing the evolution of ideas from inspiration to outcome.

Moggridge and his interviewees discuss why a personal computers have windows in desktops, what made Palm's handheld organizers so successful, what turns a game into a hobby, why Google is the search engine of choice, and why 30 million people in Japan choose the i-mode service for their cell phones. And Moggridge tells the story of his own design process and explains the focus on people and prototypes that has been successful at IDEO—how the needs and desires of people can inspire innovative designs and how prototyping methods are evolving for the design of digital technology.



### CHAPTER OF THE WEEK // Chapter 6: Services

A pdf of Chapter 6, Services, and videos of the interviews with Live|Work, Fran Samalonia and Takashi Natsuno are available for download.

[Download Chapter](#) | [Go to Chapter](#)

# hva gjør vi når vi designer?

- 1) **FORMULATING**  
UNDERSTANDING – IDENTIFYING – FRAMING
- 2) **REPRESENTING**  
EXTERNALIZING – CONVERSING –  
USING MULTIPLE REPRESENTATIONS
- 3) **MOVING**  
CREATING PRIMARY GENERATORS –  
KINDS OF MOVING – MOVING THE PROBLEM
- 4) **EVALUATING**  
OBJECTIVE / SUBJECTIVE REFLECTING-IN-ACTION –  
JUDGING ON 3 QUALITIES – SUSPENDING JUDGMENT
- 5) **MANAGING**  
REFLECTING-ON-ACTION – BRIEFING –  
PURSUING PARALLEL LINES

5 lessons from design

1)co-evolution av problem-definisjon og problem-løsning

2)utvikle problemsituasjonen, både reformulere problem & finne løsning

3)creating frames: frame & reframe – rammer er bilder, metaforer, posisjoner, perspektiver som gir ideer til former (både what & how)

4)exploring themes: temaer som er mer allmenne (empati, dybdekunnskap)

5)dyrke debatt og diskusjon:  
“the discourse is embodied in the physical space where the designers are working”



# bruksorientert design

