

A hand holding a prosthetic hand, which is a complex mechanical device with multiple joints and a blue coiled cable. The background is a light, neutral color.

bruk + undersøkelse av bruk

in1060 Bruksorientert design

bruk

Målet med dette kapitlet er at du skal kunne

- forklare hva bruk er, på ulike analytiske nivåer
- beskrive bruk som prosess over tid, med særlig vekt på læring
- forklare hva brukskontekst er, og hvordan den påvirker bruken
- diskutere mulige effekter av IT og deres betydning

Kapittel 4

Bruk i kontekst

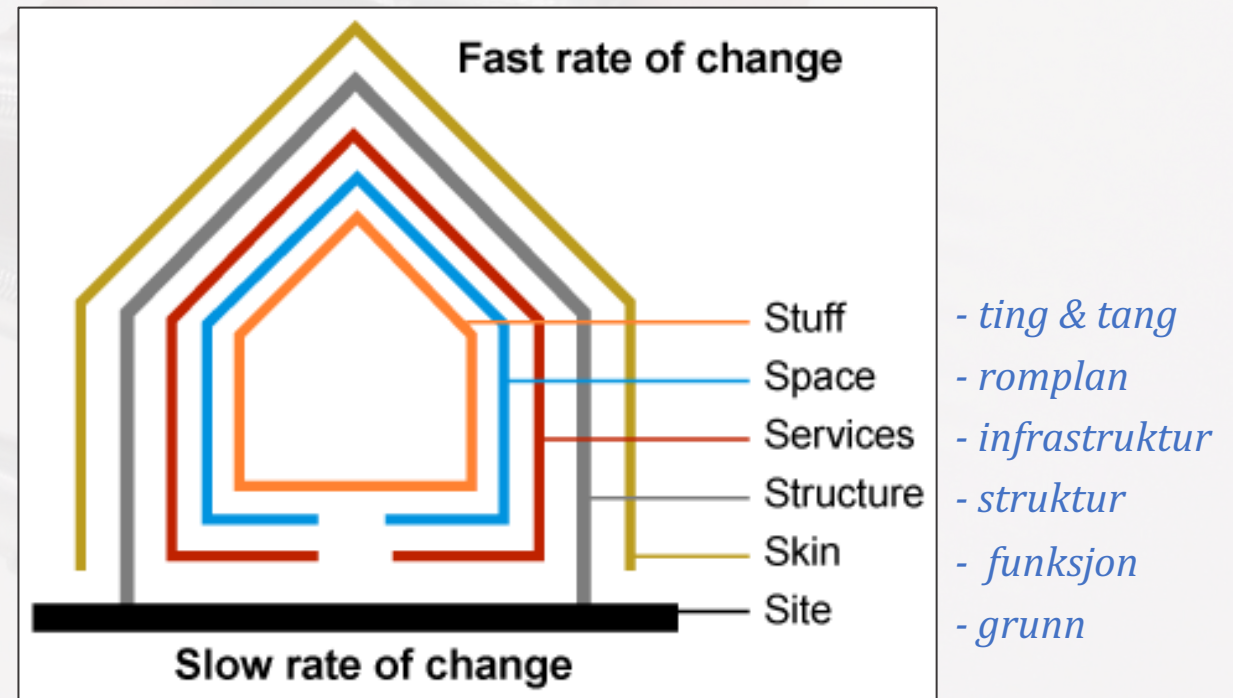
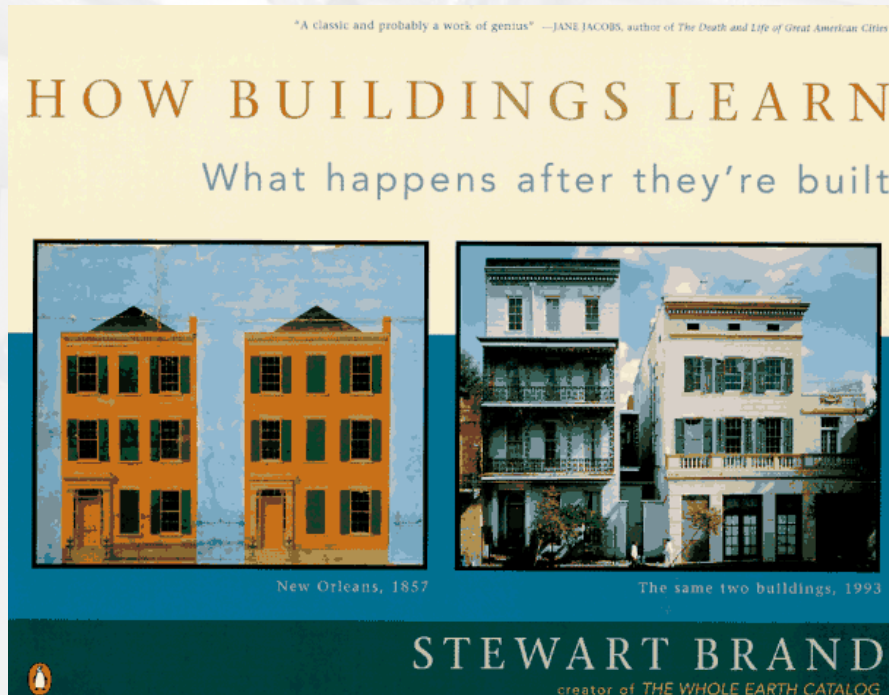
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bruk = gjøre til sitt eget

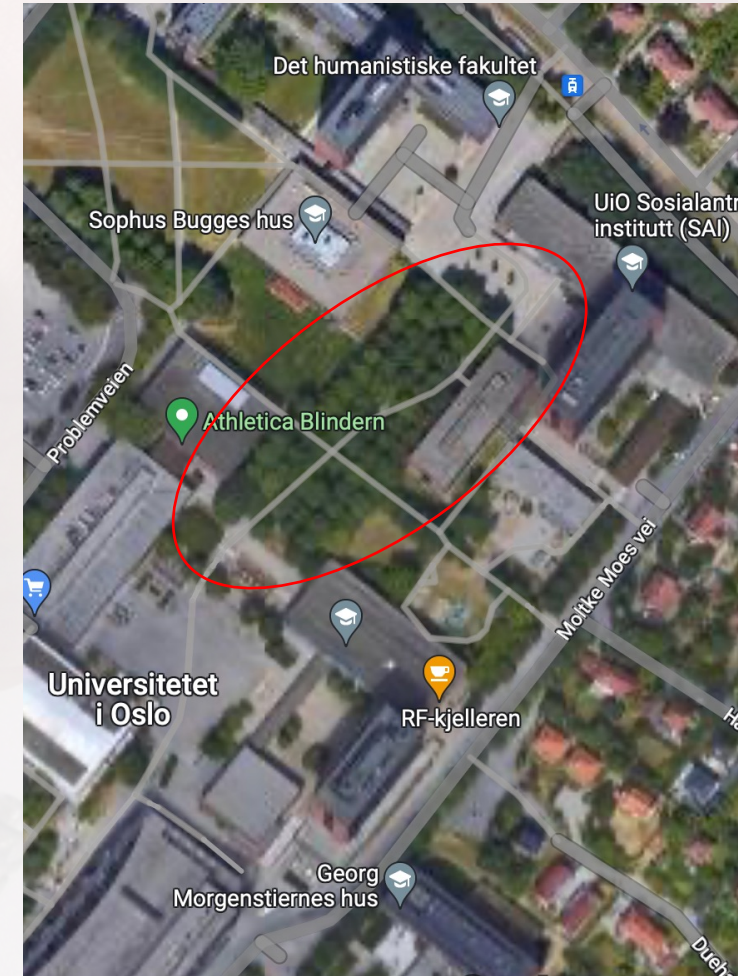
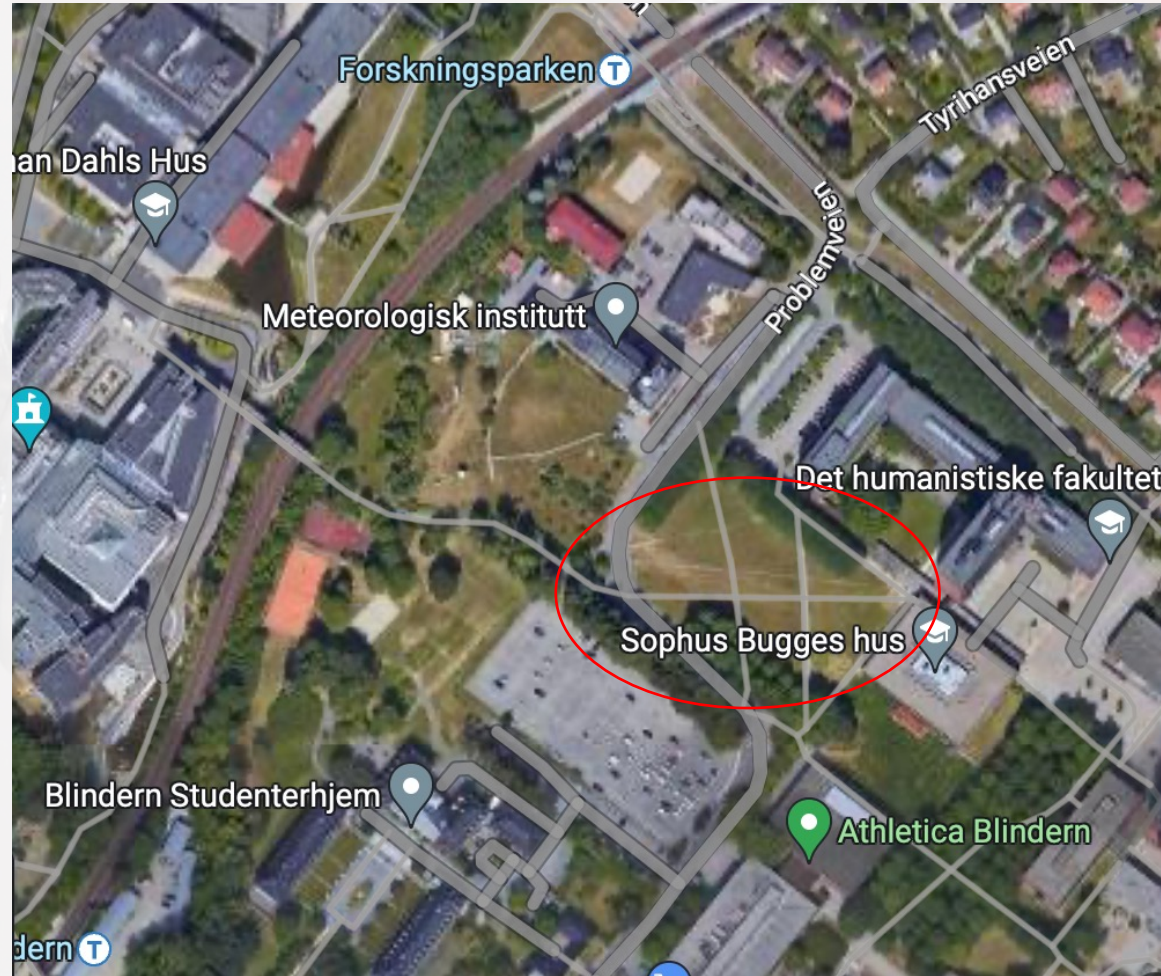
brukeren inviterer artefakten inn i sitt liv, i sine aktiviteter, og gjør den til sin egen

- tilpasning
- design-etter-design

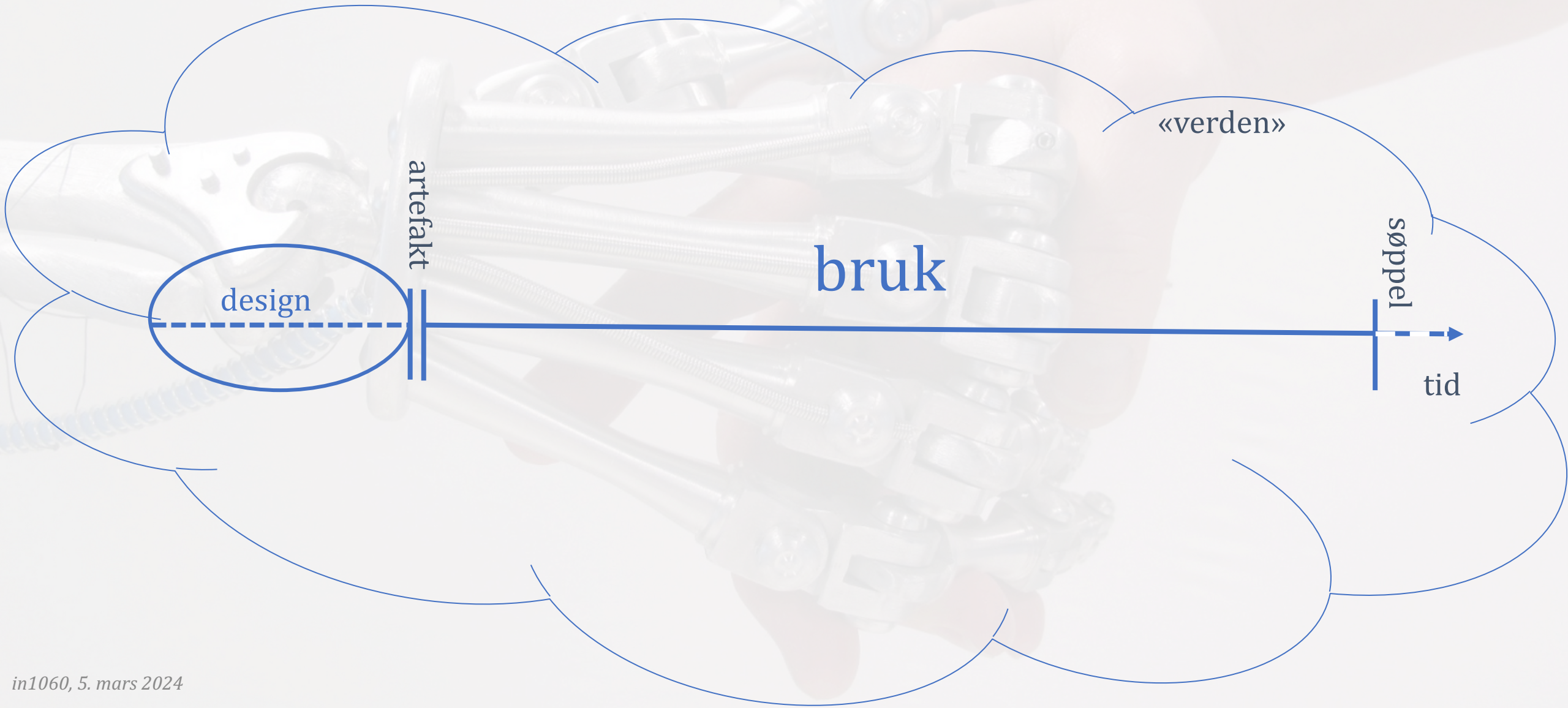


endringer i bygg: forskjellige tidslinjer & kompetansekrav

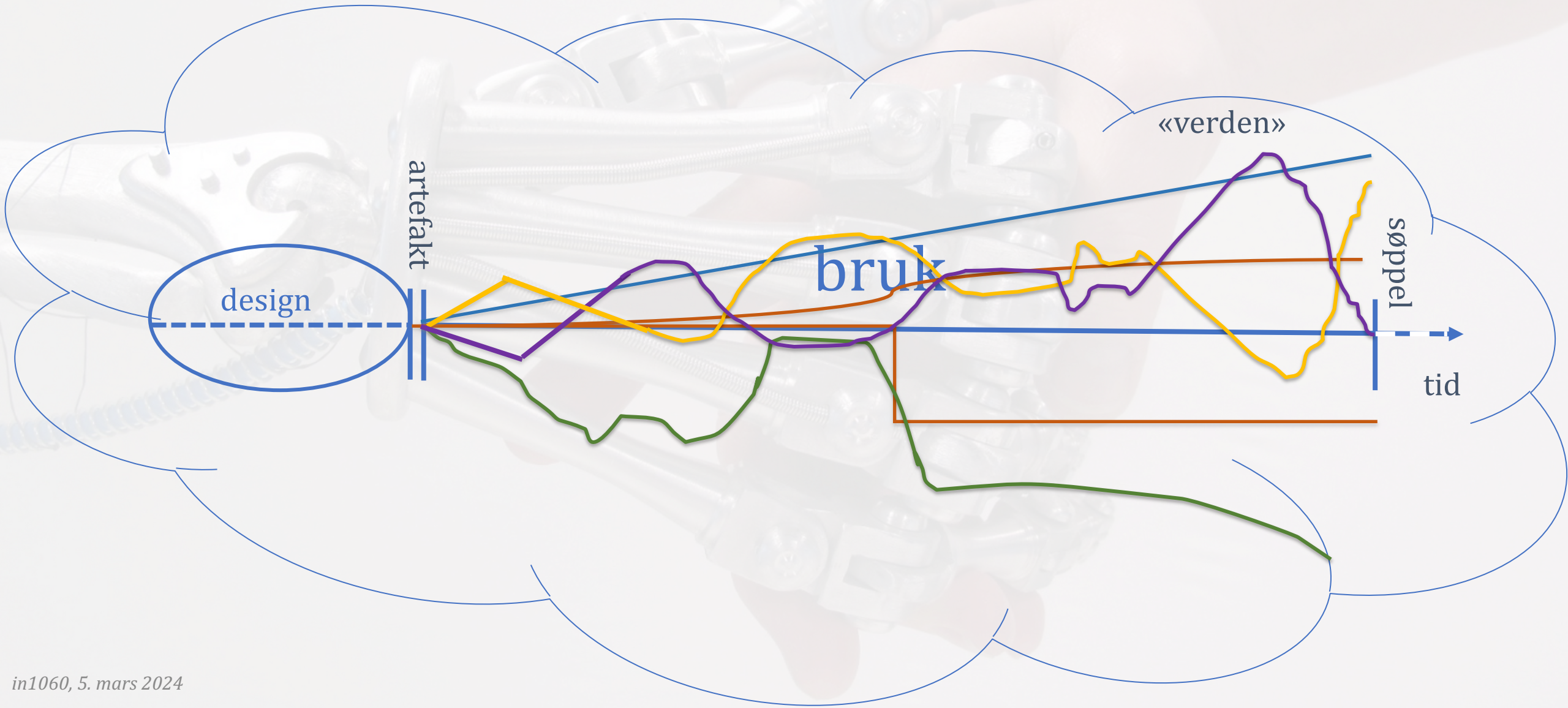
bruk og design har forskjellige mål



hvorfor bruk – «livsløpet» til en artefakt



bruk er mange forskjellige prosesser



bruk er mange forskjellige prosesser (2)



hva er bruk – hva snakker vi om?

= gjøre seg nytte av, anvende / ha for vane, pleie å gjøre ...

bruk er en (del av en) aktivitet
der artefakten som brukes er viktig
for hvordan vi gjør aktiviteten



hva er bruk – og hvor viktig er artefakten?

= gjøre seg nytte av, anvende / ha for vane, pleie å gjøre ...

bruk er en (del av en) aktivitet

der artefakten som brukes er viktig

for hvordan vi gjør aktiviteten

og noen ganger definerer den aktiviteten



ill. Tegnehanne



hva er bruk – og hvordan bruker vi artefakten?

= gjøre seg nytte av, anvende / ha for vane, pleie å gjøre

bruk er en (del av en) aktivitet
der artefakten som brukes er viktig
for hvordan vi gjør aktiviteten

ill. tur.digital



i en aktivitet kan artefakten være

- redskap
- gjenstand eller objekt

= en forutsetning eller **betingelse**
for aktiviteten

bruk er en aktivitet og bruk er en del av en aktivitet

bruk er en (del av en) aktivitet der artefakten som brukes er viktig for hvordan vi gjør aktiviteten



hvordan aktiviteten utføres kan karakteriseres ved: 1) **betingelsene** (artefakten er redskap / objekt)
2) **kunnskapen** hos de som utfører aktiviteten

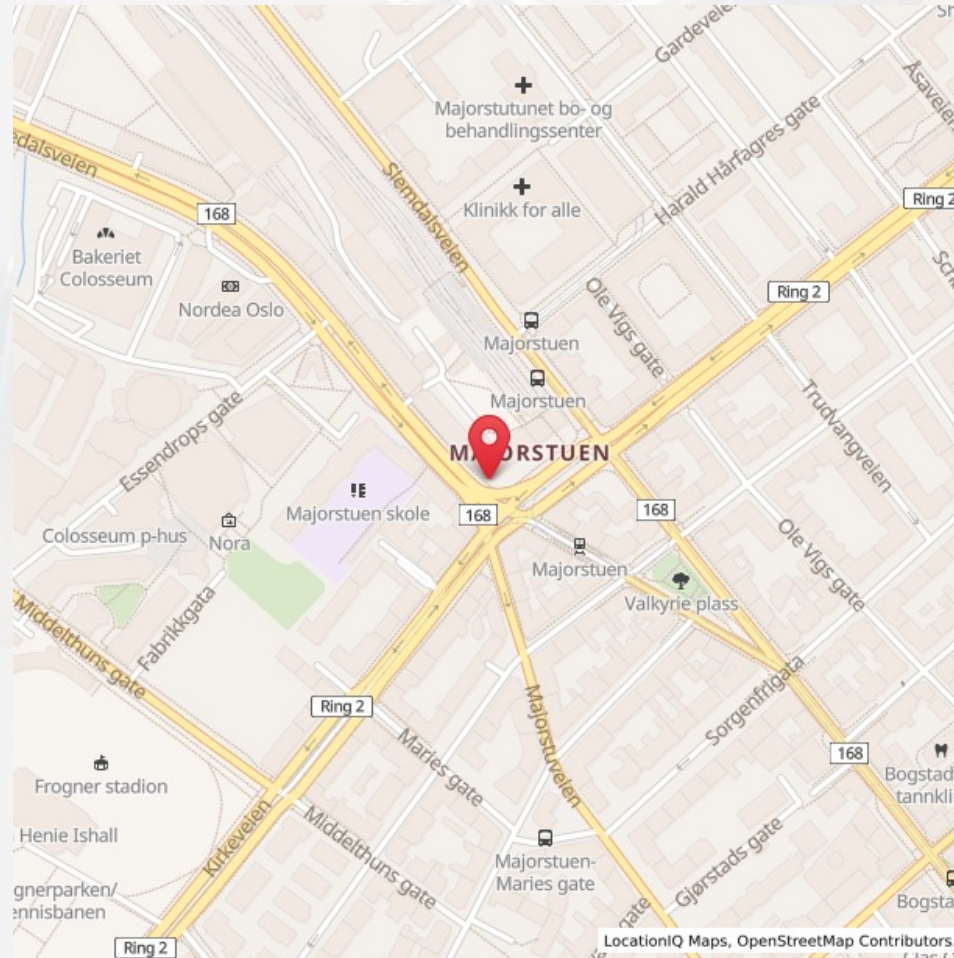
kontekst

= det som omgir teksten, sammenheng,
hvordan artefakten er sammenvevd med omgivelsene

samme artefakt – forskjellige kontekster & situasjoner

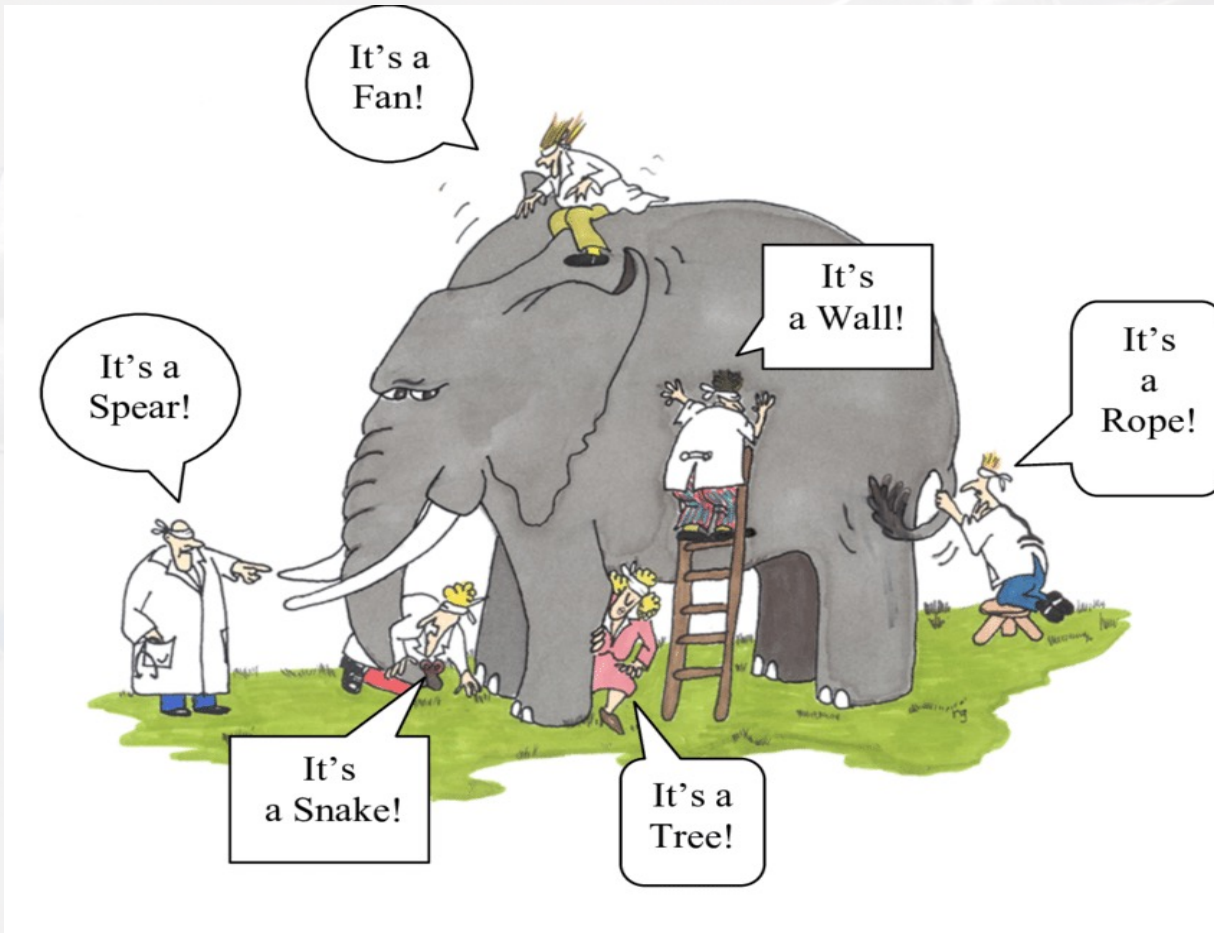


kontekst – den større helheten



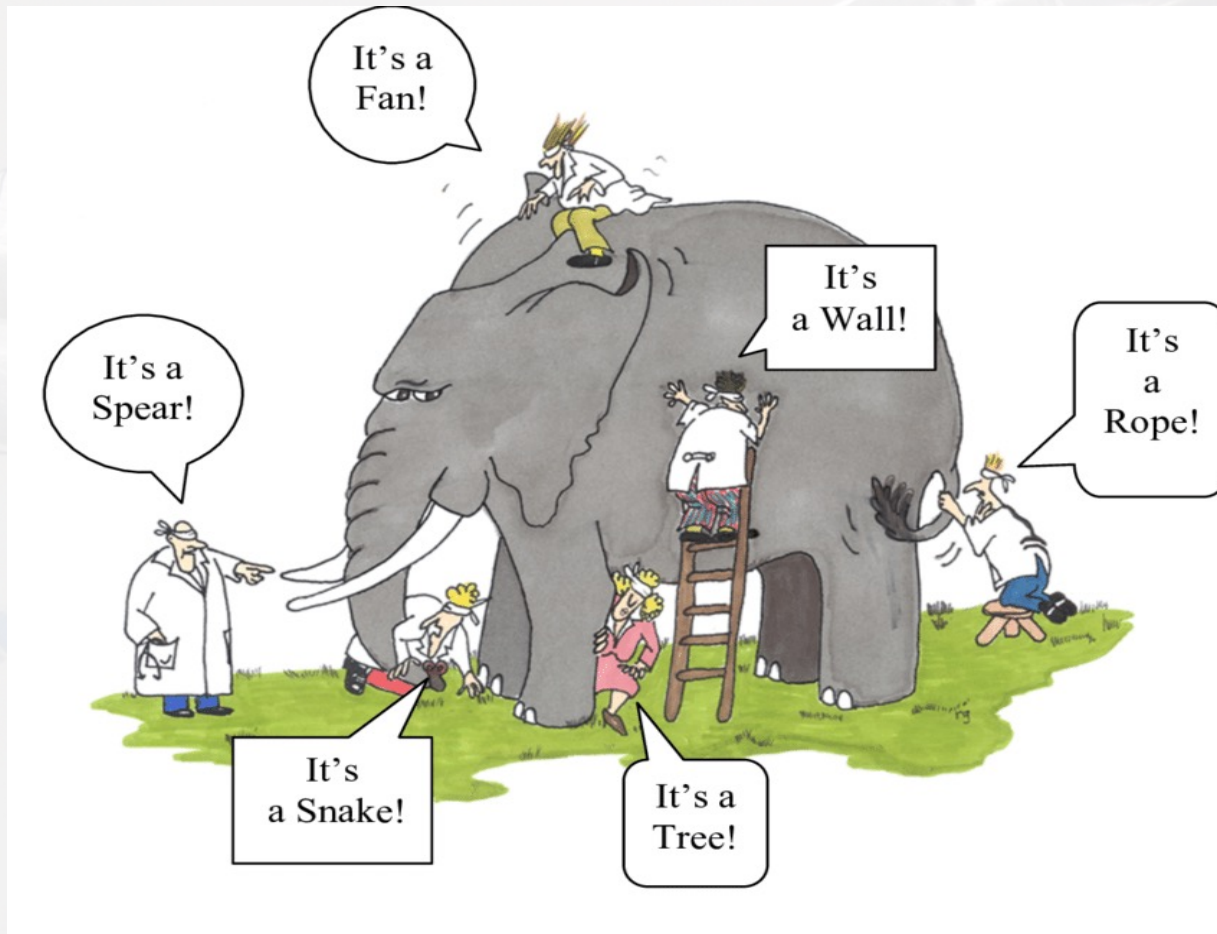
- kontekst er relasjonen mellom aktiviteter / objekter
 - konteksten oppstår fra aktiviteten
 - konteksten forandrer seg med det som skjer
 - konteksten defineres kontinuerlig
- = kontekst er noe folk gjør

kontekst – den større helheten



ingen kan ha oversikt over alle sider

kontekst – den større helheten



ingen kan ha oversikt over alle sider

artefakter og aktiviteter inngår ofte i en større helhet

- økologier
- systemer
- nettverk
- infrastrukturer
- ...



systemtenkning for å forstå hele konteksten

i dag er alle digitale artefakter en del av et system av artefakter

THE METHODOLOGY AND PRACTICE OF SYSTEMS ORIENTED DESIGN

by Birger Sevaldson

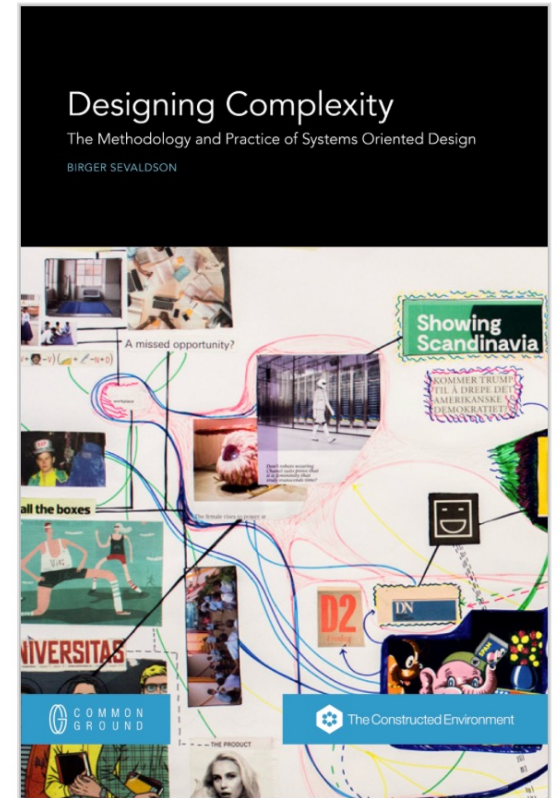
This book changes the way you think about designing. Instead of simplifying you embrace richness. Instead of controlling you learn to live with uncertainty. Enjoy designing within a complex world.

This book is for designers in the widest sense including any individual or organisation that is involved in change processes. It is addressing one of the most pressing issues of our time. It is addressing one of the most pressing issues of our time: How can we design for, with, and in service of the complex world we live in? How can we be useful as designers in a world that is rapidly changing due to technological, political and social processes as well as climate change and nature destruction?

Designers have some very useful skills for planning with complex systems in mind, yet there are also some old habits that need to be overcome. The traditional purpose and role of design has been to solve problems, to find order, to organize, and to simplify. Yet, the concept of designing complexity goes against these established beliefs because complexity is not something that can be designed away. Instead, we present ways to live with, influence and benefit from complex systems.

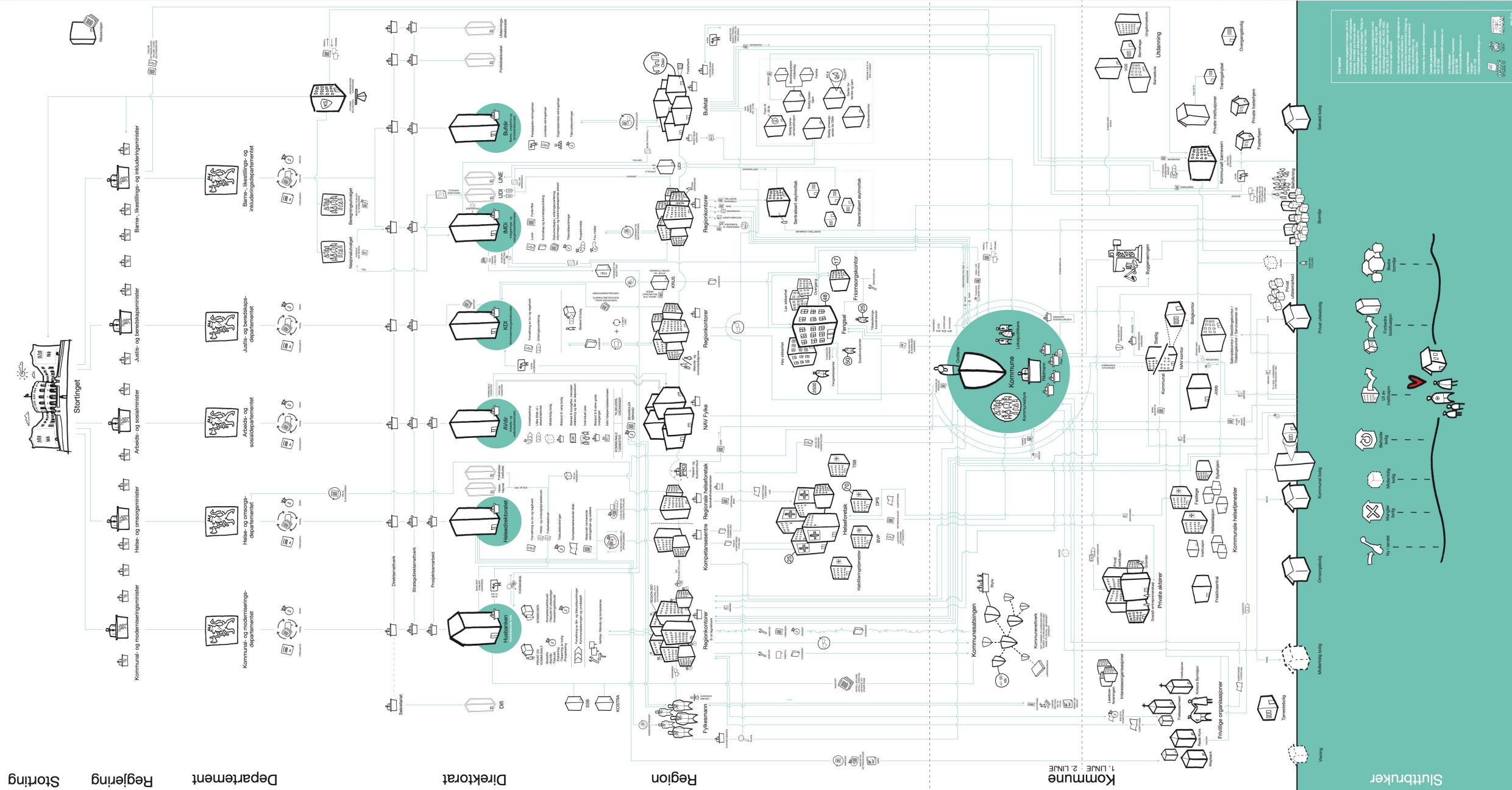
There is no one "right" way presented in this book. Instead, many experiences, approaches, and perspectives are collected and presented throughout the book. The approach this book is presenting is a methodology called Systems Oriented Design (SOD). SOD is a design methodology and design practice especially geared towards understanding and working with complex systems. It is influenced by a number of systems theories yet it remains true to its origin, the core of designing.

SOD is a living and adaptable methodology. Though it is based on design thinking and design methodology, it is easily adapted and applied by anybody who is working with complex change processes.



giga-mapping (figur 6.6 s. 238: fra Halogen)

NÅSITUASJONSKART OVER BOLIGSOSIALT ARBEID



Storting
Regjering
Departement
Direktorat

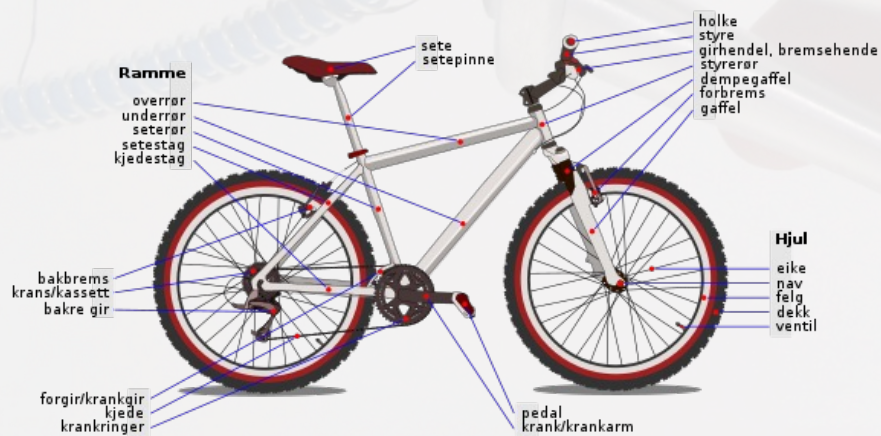
in1060, 5. mars 2024

Om NÅM
 NÅM er et samarbeidsprosjekt mellom Helse Nord, Helse Midt-Norge, Helse Øst og Helse Vest. Prosjektet har som mål å etablere et nasjonalt nettverk for bolig sosialt arbeid, og å utvikle gode praksiser og kompetanse innenfor bolig sosialt arbeid. NÅM er et samarbeidsprosjekt mellom Helse Nord, Helse Midt-Norge, Helse Øst og Helse Vest. Prosjektet har som mål å etablere et nasjonalt nettverk for bolig sosialt arbeid, og å utvikle gode praksiser og kompetanse innenfor bolig sosialt arbeid.

Sluttbruker

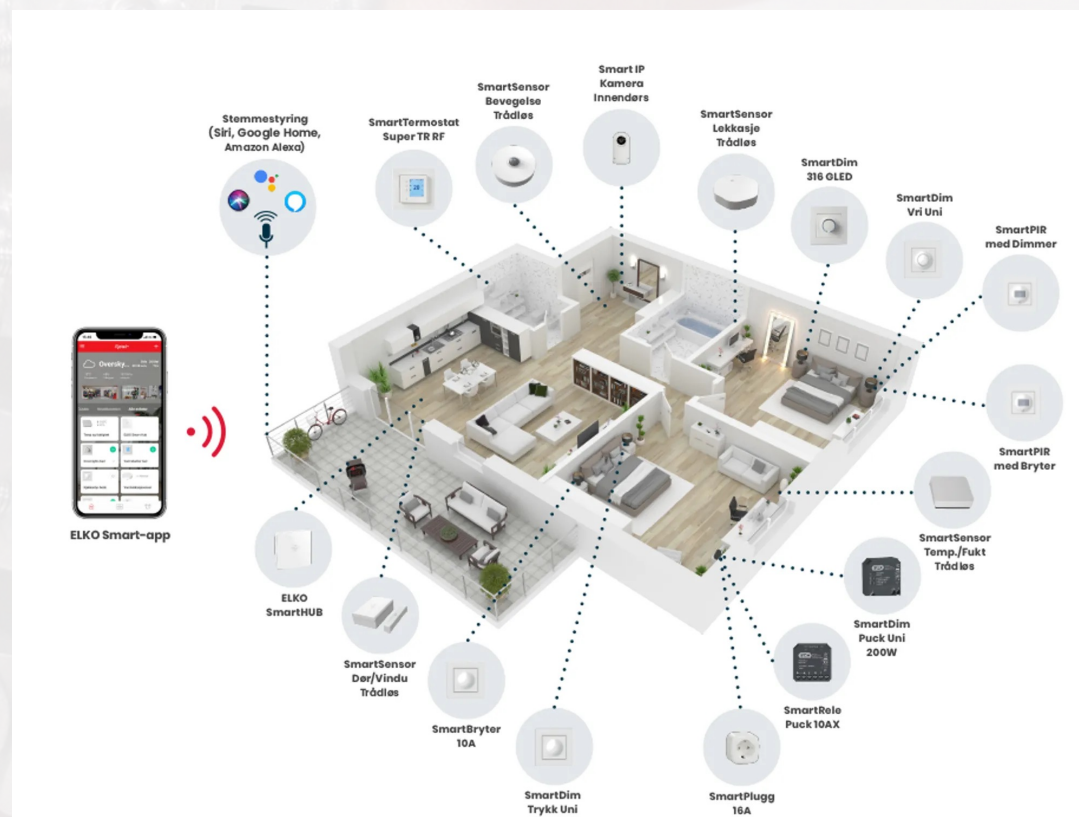
systemtenkning

artefakt som system



ill. wikipedia

artefakt som del av system



ill. Teknisk Ukeblad

teorier om bruk dvs. menneskers aktiviteter

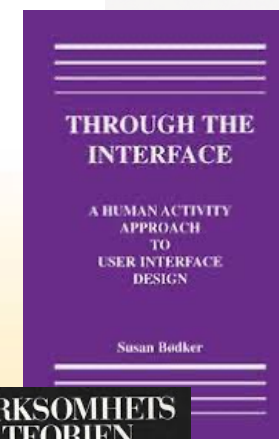
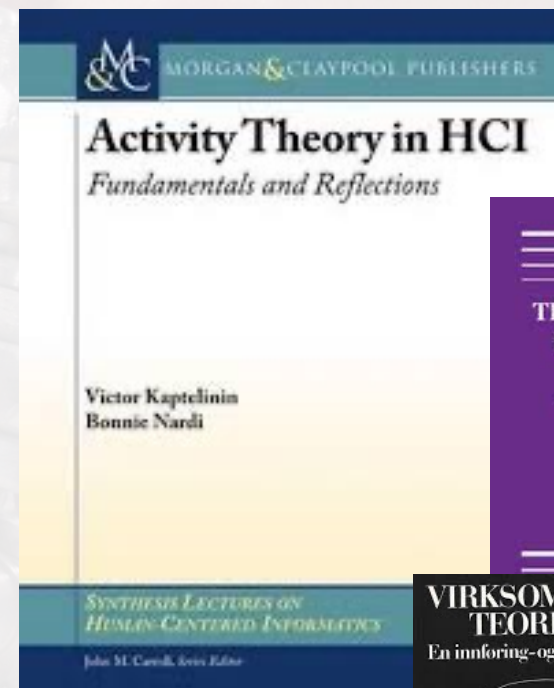
analytiske nivåer

- 3) overordnet aktivitet rettet mot et mål
- 2) handlinger som bidrar til aktiviteten og målet
- 1) operasjoner på detaljnivå i handlingene



trykke på et tastatur (operasjon)
for å skrive en rapport (handling)
for å bestå et kurs (aktivitet)

- bruksproblemer skyldes ofte vanskeligheter på operasjons-nivået
- problemer på operasjonsnivå kan stoppe overordnede handlinger og aktiviteter



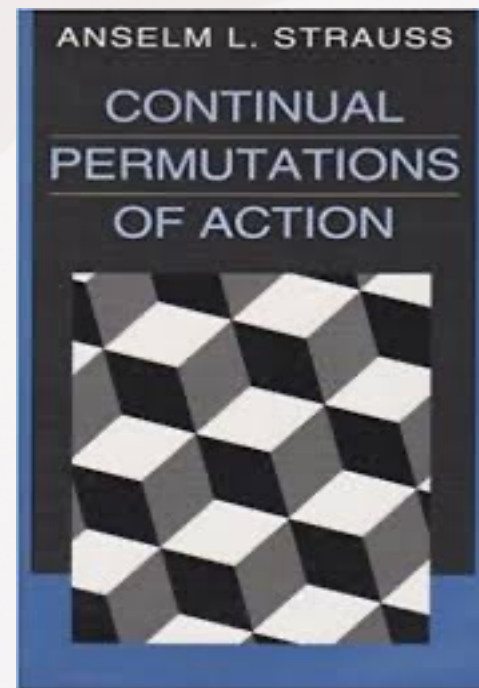
teorier om bruk dvs. menneskers oppgaver

- aktiviteter kan deles i oppgaver
- oppgaver kan ordnes i oppgavekjeder
- som er sammenvevde
- og som krever sammenføyningsarbeid «*articulation work*»
- og der mange av de utførte oppgavene er usynlige

alle aktiviteter kan ses som arbeid



*leger og sykepleiere på sykehuset utfører arbeid for å få pasienten frisk
men pasienten gjør også masse arbeid for å bli frisk
og de pårørende gjør også masse arbeid som bidrar og fyller ut de andre ...*



teorier om bruk dvs. menneskers oppgaver (2)

- aktiviteter kan deles i oppgaver
- oppgaver kan ordnes i oppgavekjeder
- som er sammenvevde
- og som krever sammenføyningsarbeid «*articulation work*»
- og der mange av de utførte oppgavene er usynlige

alle aktiviteter kan ses som arbeid

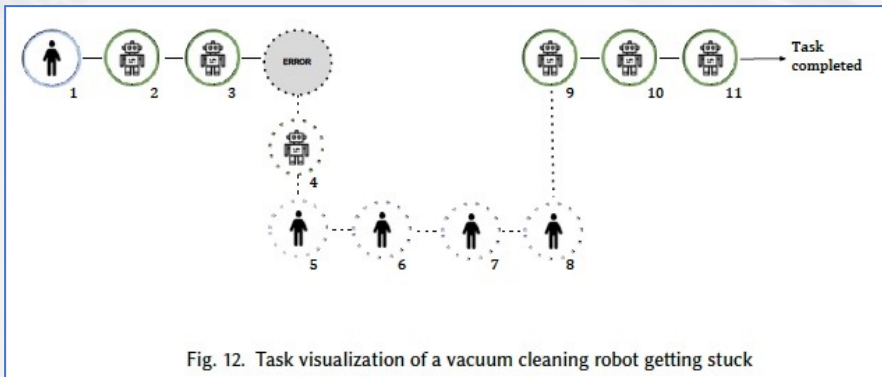
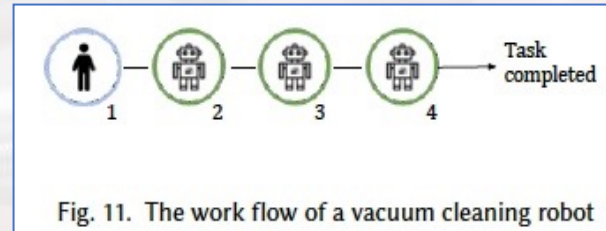


Fig. 1. An AGV



Fig. 2. An AGV picking up a cart

Human-supported robot work

A case study on mobile robots in hospital environments

Johanne Svanes Oskarsen



Thesis submitted for the degree of
Master in Informatics: Design, use, interaction
60 credits

Department of Informatics
Faculty of mathematics and natural sciences

UNIVERSITY OF OSLO

Spring 2018

bruk krever kompetanse

forutsetningene for aktiviteten

- hos personen: fysiske og psykiske forutsetninger (f.eks. kompetanse)
- hos omgivelsene: materielle og sosiale forutsetninger
- samarbeid og koordinering:
oppmerksomhet (awareness)

kompetanse for bruk av artefakten

- forstå
- lære
- lage vane
- mestre (kunnskap i & gjennom bruk)



<https://www.youtube.com/watch?v=1mklnqAjVmI>

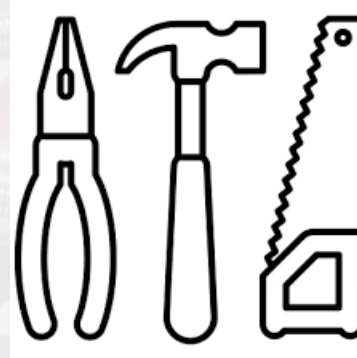
relasjon mellom menneske & artefakt

artefakten kan være redskap i aktiviteten

redskap: norrønt *reiðskapr* = krigsutstyr

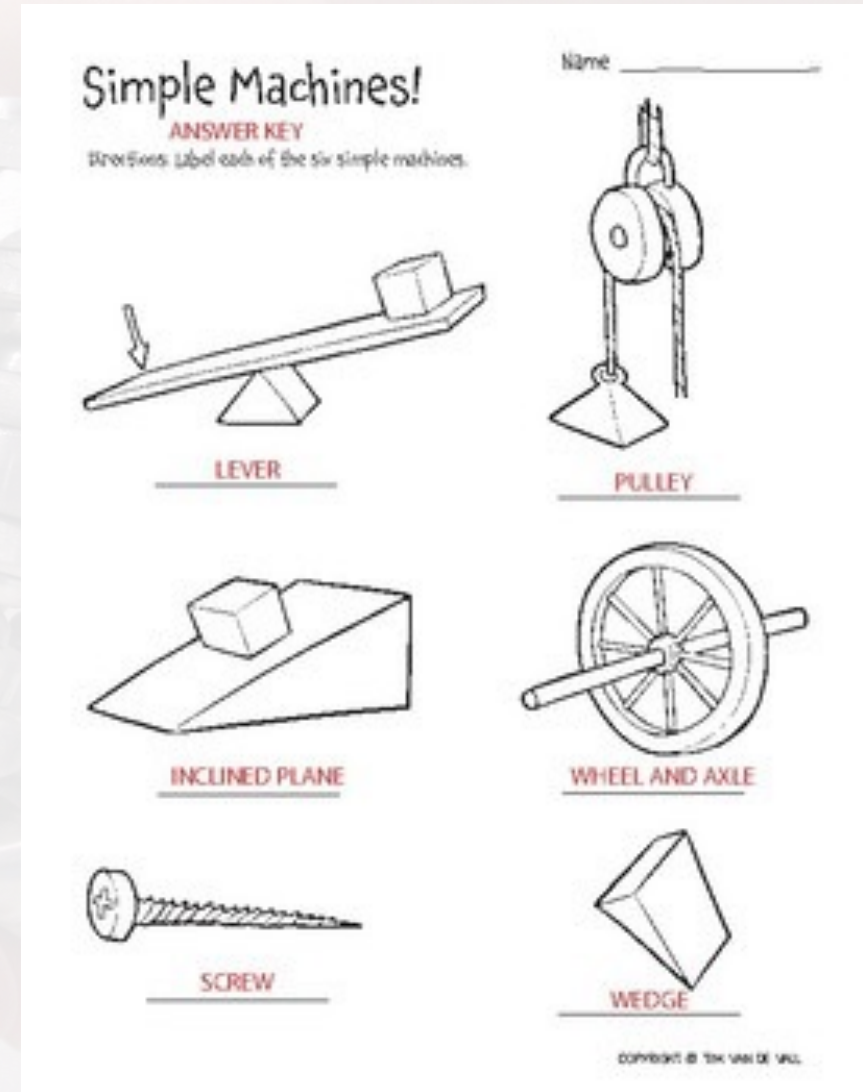
verktøy: redskap som brukes til å framstille et resultat (hammer, sag, blyant)

instrument: et spesialisert verktøy som gjør en vanskelig oppgave mulig (skalpell)



spreadshirt.no

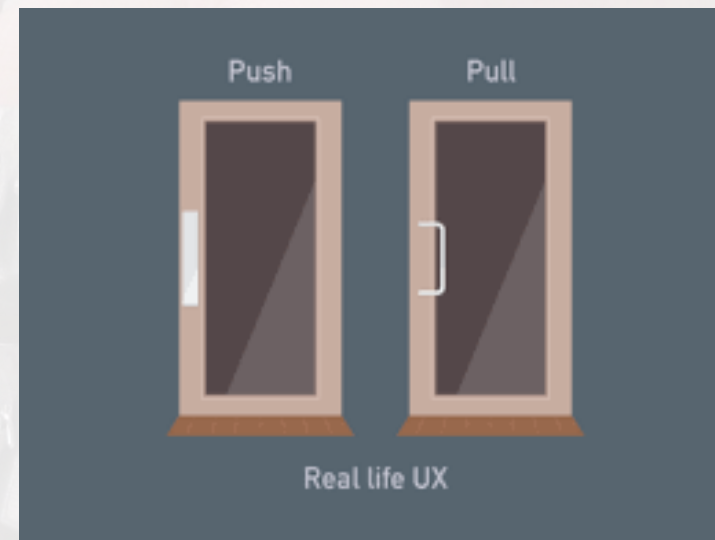
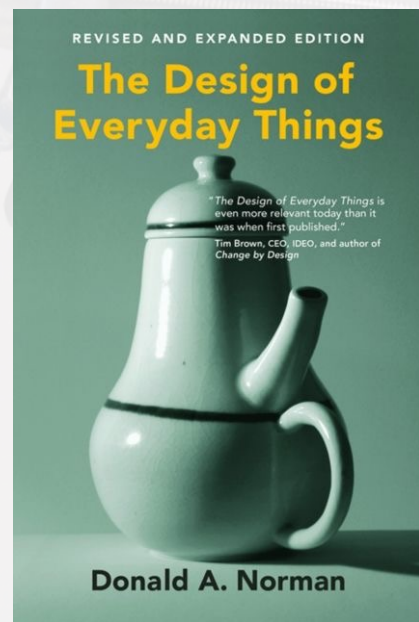
maskin: menneskeskapt innretning som kan utføre en oppgave hvis den tilføres energi



relasjon mellom menneske & artefakt (2)

hva brukeren kan

- erfaringer
- kunnskap (f.eks. fra opplæring)



relasjon mellom menneske & artefakt (3)

hva brukeren kan

- erfaringer
- kunnskap (f.eks. fra opplæring)



performativitet: hva artefaktene «gjør»

Guri Verne:

hvem bestemmer
hvordan hagen blir ...



undersøke bruk før bruk

= undersøke aktivitetene som den framtidige artefakten skal bli en del av

- **se** hva folk gjør – observer
 - **snakke** med folk – intervju
 - **tenke** over hva det betyr – analysere, reflektere
- } **feltarbeid**, etnografi

Kapittel 6

Å undersøke bruk før bruk

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undersøke bruk før bruk

feltarbeid i praksis

- se hva folk gjør
- se hvilke redskaper folk bruker og hvordan
- se etter problemer
- følge en person
 - en ting / et dokument
 - et sted
 - en prosess over tid
- hva sier folk mens de gjør ting
- hvordan snakker de om det de gjør
- skift perspektiv / ståsted

«looking for trouble»



«show, don't tell»

- dokumenter!
 - noter underveis
 - skriv referat rett etterpå
 - skriv sitater (transkriber)
 - ta bilder
- feltnotater
- observasjons-skjema ?
(NB må være enkelt å fylle ut)

Husk samtykkeerklæring!

undersøke bruk før bruk: observere

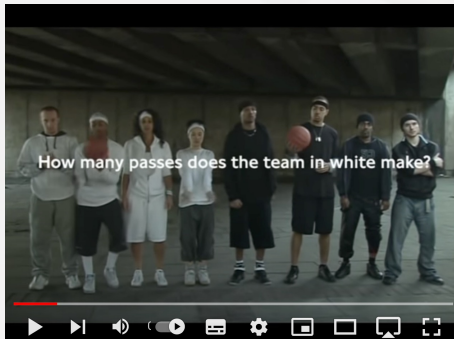
observere = se hva folk gjør

observatør

- uten å delta / fra sidelinjen
- som deltaker (f.eks. lærling, frivillig), dvs. deltakende observasjon

åpen eller lukket observasjon

- relasjonen til de observerte (rolle)
- etikk



<http://www.youtube.com/watch?v=Ahg6qcgoay4>

undersøke bruk før bruk: intervju

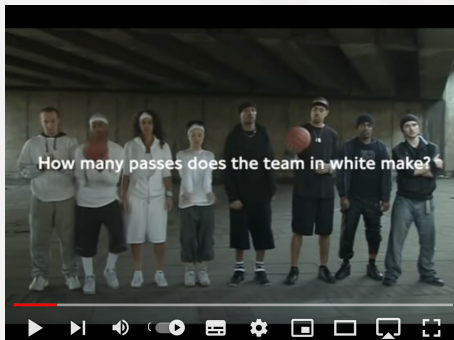
observere = se hva folk gjør

observatør

- uten å delta / fra sidelinjen
- som deltaker (f.eks. lærling, frivillig), dvs. deltakende observasjon

åpen eller lukket observasjon

- relasjonen til de observerte (rolle)
- etikk



<http://www.youtube.com/watch?v=Ahg6qcgoay4>



intervju = snakke med folk

struktur:

- lik eller forskjellig
- kvalitativt intervju: delvis strukturert
- dybdeintervju
- en person eller en gruppe

intervjuguide («som man spør får man svar»)

balanse

- respons – framdrift (utdypings spørsmål)
- lytte – observere (kroppspråk mm.)
- støttende – vurderende

<http://www.youtube.com/watch?v=hcwTgEC7IM>



The boundaries between 'the digital' and our everyday physical world are dissolving as we develop more physical ways of interacting with computing. This forum presents some of the topics discussed in the colorful multidisciplinary field of tangible and embodied interaction.

Eva Hornecker, Editor

Habituated Objects Everyday Tangibles That Foster the Independent Living of an Elderly Woman

Margot Brereton

Queensland University of Technology | m.brereton@qut.edu.au

I recently visited an 82-year-old woman, Maria, the mother of a good friend whom I have known over the years. This visit got me thinking about tangible and embodied interaction in a different way: from the perspective of the everyday objects that inhabit and augment our lives and how they support independence and agency as we age. Maria is partially sighted and still getting used to living with an artificial hip she had implanted about a year ago. Still, she seems to navigate her fairly cluttered home with remarkable ease. And, like many of us, she wants to maintain her independence and control her own destiny for as long as she can. Many discussions about supporting independent living for the elderly begin with monitoring, and yet the concepts of monitoring and independence are rather uneasy bedfellows. I began to contemplate just how she lives with and fosters her own independence through all of her things and what we might learn from that for designing for the emerging Internet of Things.

Maria has many objects, devices, and technologies she has adopted and adapted to support her living, and these in turn shape how she

lives. I call these things *habituated objects* because she has incorporated them into her routines and her home, and they have in turn played a role in shaping how she lives in her home. I asked her what she thought were her most important and favorite objects. It's a diverse and interesting list: magnifying glasses, shoes, tea-bag squeezer, big-screen TV, computer, key-on-a-string, free bus pass, sturdy shoes, and so on.

These important things might give a little insight into tangible and embodied interaction design, not from the perspective of the young and healthy visiting museums and collaborating in workplaces, but from the perspective of one older woman in her actual aging body with all of its specific capabilities and time-worn habits in the home she has adapted to suit her living for the past 15 years.

Maria grew up during World War II in the U.K. and knows what it was like to live on rations. She doesn't like to waste anything. There is a paper bag on the kitchen counter that I would be tempted to throw out, but is there in case she buys bananas—they keep better in a paper bag like that. There



► Figure 1. (a) The kettle, tea, and tea-bag squeezer by the bed are all used for the habitual morning tea in bed. (b) The marmite jar that holds two portions of milk is taken upstairs at night in preparation for the morning tea in bed.

► Figure 2. Magnifying glasses are placed in strategic locations around the house. (a) The magnifying glass with built-in light is placed on a small table near where the bus timetables are kept. (b) A large magnifying glass kept in the kitchen for reading labels. (c) A magnifying glass placed near the couch.

► Figure 3. A key on a string by the windowsill is let down to welcome visitors.

► Figure 4. The computer monitor is often switched off and covered when not in use.

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These important things might give a little insight into tangible embodied interaction design from the perspective of an elderly and healthy woman who collaborates with her environment from

There is a small Marmite jar next to the kettle.
I would recycle that one, but she tells me it's
the perfect size for about two servings of milk
(s. 20-22)

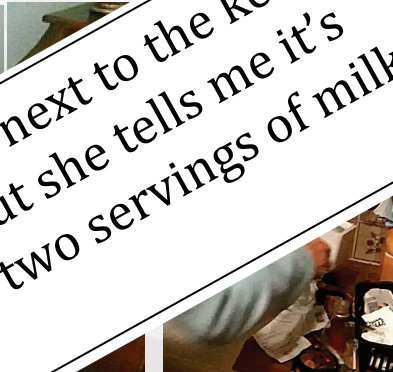


Figure 3. A key on a string by the windowsill is let down to welcome visitors.
Figure 4. The computer monitor is often switched off and covered when not in use.

ref. bl.a. til
Hornecker & Buur
(Tangible Interaction)

The Messaging Kettle: Prototyping Connection over a Distance between Adult Children and Older Parents

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Figure 1 The Kettle Mate and Tea Box. When the connected remote kettle (in another house) is switched on, the kettle mate displays a dynamic orange/red show of lights as shown.



Figure 2 Tea Box during in-home demonstrations showing a message sent from another continent.

Old Habits as a Resource for Design: On Learning and Un-learning Bodily Knowledge

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Abstract—There are many reasons why artifacts and systems are difficult to use in practice. In this paper, we investigate such difficulties as a basis for ease of use. Difficulties may stem from the artifact or system itself, or from the artifact or system in use in its real use context. Technology introduces new tasks, and both learning new tasks and unlearning old habits can be challenging. We discuss how users' previous knowledge and habits can be used to understand how and why an artifact is difficult to use. This understanding is useful for designing artefacts that are easy to use. We end the paper with presenting a conceptual framework for design for coherence and simplicity from the users' perspective, where users' habits and bodily knowledge act as resources for design.

Keywords—usability; habits; automated behaviour; automation; participatory design.

I. INTRODUCTION

Usability is often defined as the ease of use and learnability of an artifact, sometimes narrowed down to specific users in a specified use context having specific achievement goals (e.g., ISO 9241). But what does “ease of use” mean more precisely? We have tried to find out what it is that makes some artifacts difficult to use for some users. This paper builds on an earlier paper [1] and expands the empirical material as well as the depth of discussion of possible reasons why some things turn out to be difficult to use. Our aim is that knowledge about how a piece of technology is difficult to use can be used as a basis for designing solutions that are easy to use.

Much of the research on artefacts that are easy – or difficult – to use is based on Nielsen [2], who lists five aspects of usability: learnability, efficiency, memorability, low error rate, and satisfaction. A more elaborate list is given by [3], who present eight aspects: consistency, universal design, feedback, closure of dialogs, reversal of action, control, error prevention, and memory load. Except for universal design, all the aspects are general and concern the design of the artifact seen as a stand-alone context-independent thing. Our research shows, however, that it is difficult to achieve a total independence of contextual design elements – it is impossible and even unwanted: “All products make some reference to either products extant during

previous generations or products from different companies or product families.” [4]. Such references are important to build on when trying to understand how to use the product. Even well-designed stand-alone artifacts can be difficult to use for users not sharing the contextual competence pre-supposed in the design. We have seen this in our and our colleagues' research, where we focus on elderly people and the technological support that is supposed to enable them to live independently in their homes longer [5].

The paper is structured as follows: Section II gives a review of literature about problems in using technologies. In Section III, we present two studies of use of technology: the use of public services like tax, and the use of common home artifacts like remote controls or mobile devices that need charging. Section IV summarizes the challenges we have identified in our research. In Section V we discuss the competencies users need to use an artifact, and how such competencies are experienced and embodied. Section VI summarizes what we have found to make things difficult to use. In Section VII, we turn to design for ease of use: we discuss how we can go from knowing about the difficulties people have using an artifact to design of an artifact that is easy for them to use. We divide the discussion in two parts, addressing first how designing with users can end up with design results that are easy to use, and lastly we discuss a more general approach to automation that addresses how the design itself creates user problems and how these can be resolved. Section VIII concludes the paper.

II. PROBLEMS WHEN USING TECHNOLOGY

A close study of people using IT artifacts reveals that they often find technology difficult to use (e.g., [6]). A classic study is Suchman's study of use of a Xerox copy machine [7][8] demonstrating how operating a copy machine was difficult due to the difference between the scripted “plan” in the copy machine and the users' (situated) understanding of copying. Another classic is Gasser's study of how people work around computer systems that do not fit the work they need to do, which shows that people carry out their jobs also with non-supporting artifacts [9]. Even when an IT system works well, it may not work well together with other systems [10][6]. Just using more than one system can

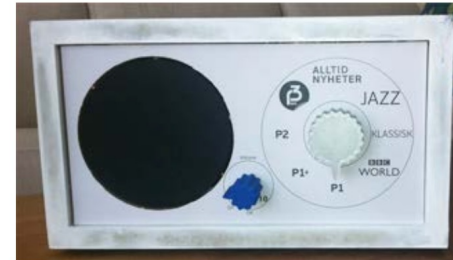


Figure 3. The prototypes for the knob (above) and the digital radio (below).
Photo by Johnsen et al. [43].



Figure 2. A retired woman just laughed about using her large-sized and simplified remote control for her TV set (normal remotes to the left).



Figure 4. Testing several different induction chargers. Photo: Iversen [42].

bruk – oppsummering

- bruk er en aktivitet – og ofte en aktivitet i aktiviteten
- bruk innebærer at en artefakt vil være med på å bestemme hvordan aktiviteten utføres
- bruken av artefakten gjør det mulig å utføre aktiviteten, artefakten øker handlingsrommet
- bruk krever at artefakten fungerer og er forståelig
- bruk krever kunnskap og ferdigheter
- bruk er mange forskjellige aktiviteter, og varierer med tid
- bruk innebærer forandringer, men ulike artefakter forandres forskjellig
- bruk kan analyseres på ulike nivåer: operasjoner, handlinger og aktiviteter
- bruk er ofte en del av en oppgave, i en kjede av oppgaver. NB her inngår det ofte usynlig arbeid og sammenføyningsarbeid
- bruk foregår i en kontekst, en større sammenheng: både aktiviteter og artefakter inngår i konteksten

«verden»

bruk

søppel

tid