



<http://www.moma.org/interactives/exhibitions/2008/elasticmind/#/244/>

## BIID10 Lektion 3 Teoretisk grund

Lone Malmberg / [malmberg@itu.dk](mailto:malmberg@itu.dk)

# Læringsmål

2

- Redegøre for forholdet mellem interaktionsdesign og experience design vs interface design
- Forklare hvorfor vi bruger skitser i design
  - Buxton s. 95-137 & 207-19
- Forstå den historiske baggrund for aktuelle digitale interaktionsparadigmer
  - Dourish (kap 1)
- Kunne begrunde hvordan vi kontekstualiserer teknologi i et interaktionsdesignparadigme (embodiment)
  - Dourish (forord+kap 1)

# Indhold

3

- Experience design / interaktionsdesign vs interface design?
- Om sketching
- Where the Action is - intro
- 9:50 Pause
- Exemplarium 1-4
- 10:55 Pause
- Historisk udvikling bag interaktionsdesign
- Embodiment-begrebet
- Introduktion til Øvelse 3
- Startevaluering

# Hvilken rolle spiller design for produktudvikling?

4

- One of the most significant reasons for the failure of organizations to develop new software products in-house is the absence of anything that a design professional would recognize as an explicit design process.  
(72-73)
- Omkostningen ved at indføre en designproces tidligt i produktudviklingsprocessen er langt mindre end de omkostninger der er for det endelige produkt og dets salg ved ikke at have gjort det.

# Design og sketching - Buxton

5

- Norman: We are all designers ...nonsense!
- Design can be distinguished by a particular cognitive style (Gedenryd). Sketching is fundamental to the design process.

Design is for the real world – the world we live in, which is messy and constantly changing, and where once a product is released, the designer [...] have no control or influence over how or where it is used. (s. 97)

What is the archetypal activity of design:  
Sketching (Fällman, 2003)

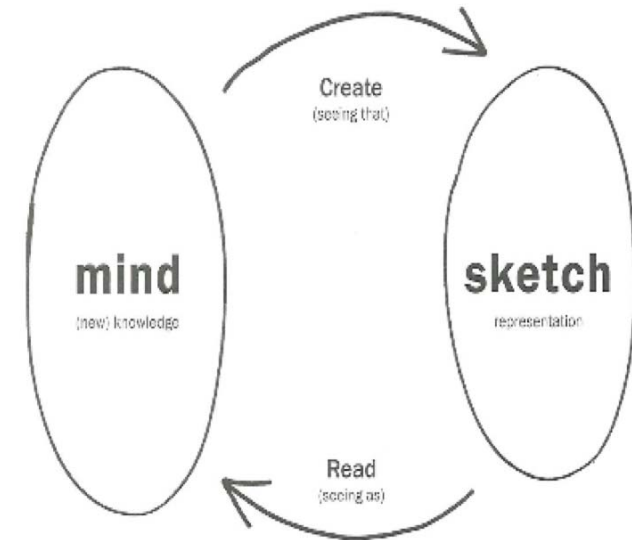
Sketch (5 minutter): det ideelle møbel for  
forberedelser



# Sketches are ...

6

- Quick
- Timely
- Inexpensive
- Disposable (kan smides væk)
- Plentiful (eksisterer i serier – del af en proces)
- Clear vocabulary
- Distinct gesture (åbne / flydende)
- Minimal detail (overflødige detaljer kan ignoreres)
- Appropriate degree of refinement (svarende til det niveau ideen er på)
- Suggest and explore rather than confirm
- Ambiguity (bevidst dobbelttydige)



# Interface design vs experience design

7

?



# Interface design (HCI)

8





# Experience design

9



# Experience / Interaction vs Interface ... Design

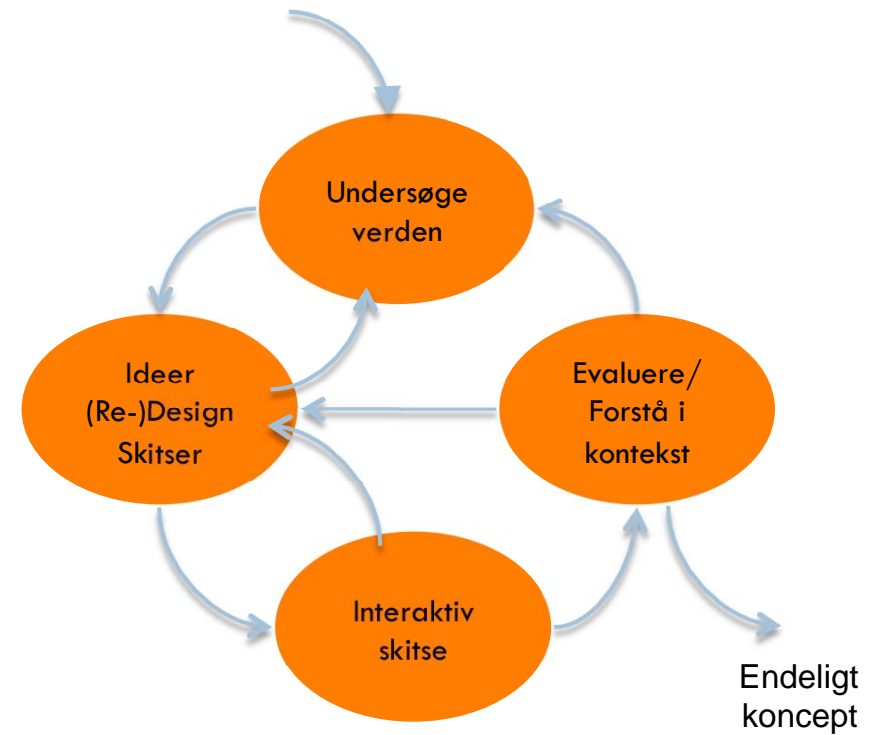
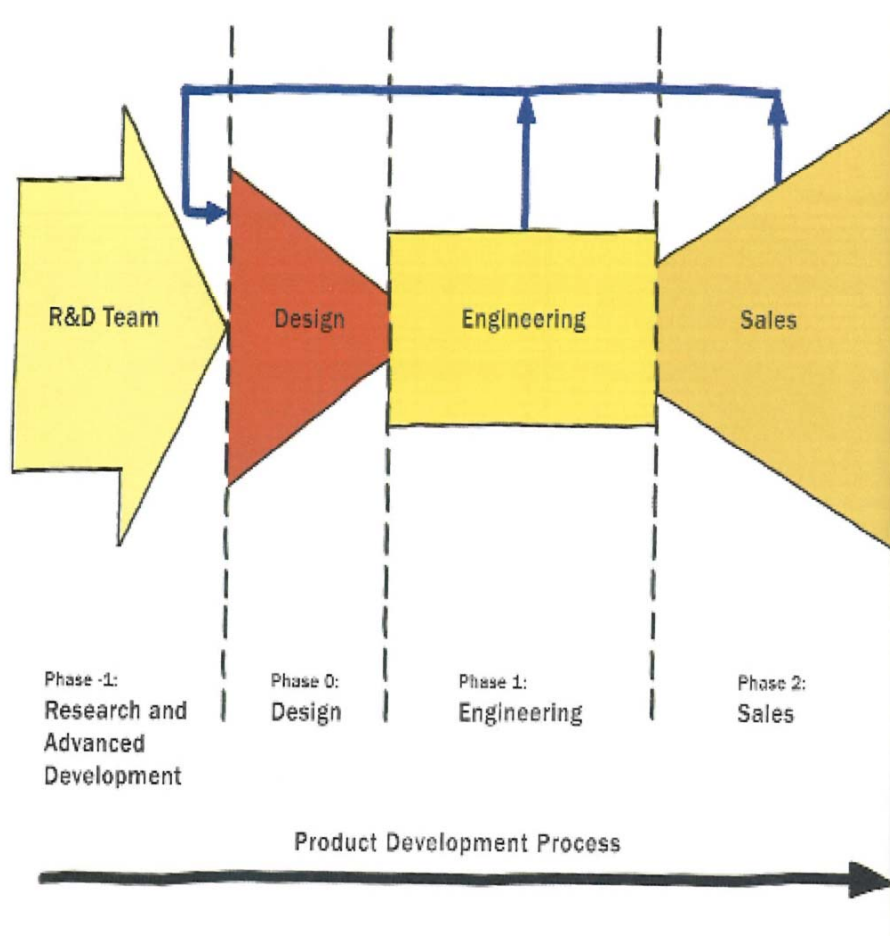
10

- Interaction design = experience design  
... vs interface design
- juicepresser-eksempel
  - CitrusMate ('noisy')
  - Mighty OJ ('silent simplicity')
  - OrangeX ('the feel of the action ...almost musical')
- Oplevelsen er et samspil af MANGE faktorer – subjektivt oplevet
- *Quality of experience*  
- resultat af bevidst design
- Sketching interaction?



# Designprocessen

11



# Titlen: Where the action is ??

12

- Hvordan skal den forstås?

# Where the action is

13

- First, it is about a perspective that places the action of embodied agents center stage (ix)
- Rather than take action to be generated from or subservient to abstract reasoning, the perspective I will explore here sees embodied practical action in the world as the foundation for our conscious experience (ix)
- Second, this approach is "where the action is" in the sense that it provides a way to understand the contributions and opportunities emerging from dynamic new forms of technological practice (ix)

# Hvad handler Dourish's bog om?

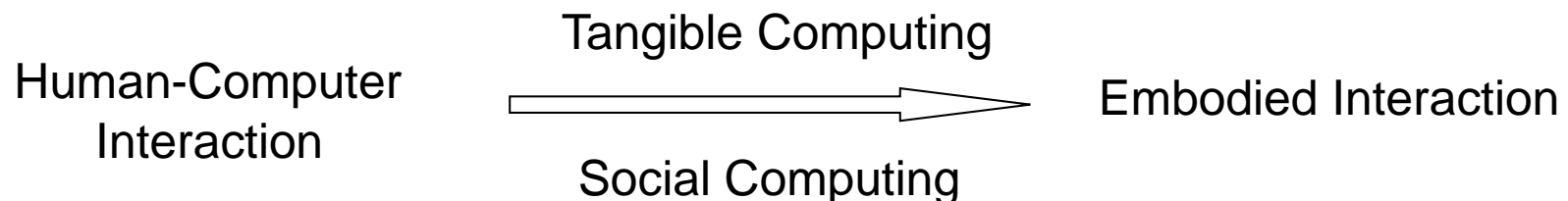
14



# Hvad handler Dourish's bog om?

15

- Embodied Interaction
- A Theoretical Foundation for Embodied Interaction
- Going from the starting point Beyond the desktop and HCI to the new developments Tangible and Social Computing to Embodied Interaction in four steps
  - Tangible and social computing have a common basis
  - Embodiment is the core element
  - Embodiment is not new, can be informed by phenomenology
  - Phenomenology can help provide a foundation for embodied interaction

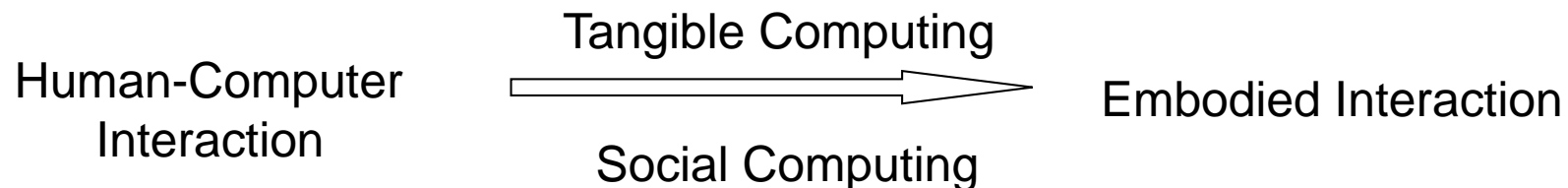


# Hvad handler Dourish's bog om?

(omslag)

16

- In this book Paul Dourish addresses the philosophical bases of human-computer interaction. He looks for what he calls "embodied interaction" - an approach to interacting with software systems that emphasizes skilled, engaged practice rather than disembodied rationality - reflects the phenomenological approaches of Martin Heidegger, Ludwig Wittgenstein, and other twentieth-century philosophers.
- The phenomenological tradition emphasizes the primacy of natural practice over abstract cognition in everyday activity.



# Forord

17

- Filosofi og computer science?
- Datalogi er baseret på før-1930-filosofi
- Datalogisk praksis reducerer høj-niveau adfærd til lav-niveau, mekaniske forklaringer, formaliserer dem gennem ren videnskabelig rationalitet
- Datalogi afslører herved sin historie som en positivistisk, reduktionistisk tradition
- Kognitionsvidenskab er baseret på en rigid Cartesiansk adskillelse mellem ånd og materie, mellem tænkning og handling
- Under angreb siden 1930'erne: Heidegger og Wittgenstein
  - ny position inden for tænkning, sprog og mening
  - erstattes af en model af situerede agenter, der handler og interagerer frit i verden

# Dourish kap. 1 overordnet disponering

18

- 1. A historical model of interaction
  - Electrical
  - Symbolic
  - Textual
  - Graphical
- 2. New models for interactive system design:  
Tangible and social approaches to computing
- 3. From tangible and social computing to  
embodied interaction

# A History of Interaction

19

- Hvad er hovedpointen i kapitel 1?

# Baggrund

20

- Computeres udvikling: Moore's lov
  - antallet af transistorer pr. arealenhed fordobles hvert 2. år
  - computerens kapacitet fordobles hver 18. måned
- We talk about how fast it is changing, but we talk less about the ways in which it is not
- Many things about computers are not changing at all
  - Our basic idea about what a computer is, what it does, and how it does it, for instance, have hardly changed for decades
  - Nor have the difficulties we encounter actually using computers



# Baggrund

21

- Computeren var en sparsom ressource: effektivitet & økonomi
- "It gave rise to a model that favors performance over convenience, and places a premium on the computer's time rather than people's time. This model is largely still with us today". (s. 2)
- På tide at genoverveje denne afvejning - to udviklingstendenser
  - informations-overload og computerne står stille i 95% af tiden
  - computeren indlejret i dagligdags brugsgenstande
- Leder til
  - nye måde at interagere med computeren orienteret mod menneskets behov og evner
  - nye måder at begribe interaktion: "beyond HCI & desktop"

# Baggrund

22

- "Over the last few years, research into HCI has begun to explore ways to control and interact with a new breed of computer systems" (s. 2)
- Hvilke, for eksempel?
- "This book is a contribution to the emerging literature on this new approach to interacting with computers, one I call 'Embodied Interaction'".
- "Embodied Interaction is interaction with computer systems that occupy our world, a world of physical and social reality, and that exploit this fact in how they interact with us." (s. 3)

# Hvad er embodiment?

23

# Hvad er embodiment?

24

- Embodiment: legemliggørelse; inkarnation
- Embodied Interaction - Interaction with computer systems that occupy the world, a world of physical and social reality, and that exploit this fact in how they interact with us.
- Embodiment: Not a property of systems, technologies, or artifacts, it is a property of interaction. It is rooted in the ways in which people (and technologies) participate in the world. (189)
- Wikipedia
  - In essence embodiment as an idea binds two worlds of substance and spirit, contrary to a duality (Descartes).
  - Thus body and mind are fused into a single being.

# Afviger fra (andre) HCI fremstillinger

25

- Mere om
  - interaktion end interfaces
  - computation end computers
  - representational power end om Gigabytes and Megahertz
  - foundational end technical
- Ikke en bog om design-løsninger eller en "how-to-do-it"
- "The goal of this foundational exploration is to provide resources to designers, by giving them tools they can use to understand and analyze their designs."
- Interaktion i centrum: ikke hvad der gøres, men hvordan det gøres

# Pause

26



# Exemplarium

27

# Pause

28



# Den historiske udvikling

29

- Kontekst: de historiske evolution af ideerne om interaktionens og HCI teknologien
- Hvorfor vælger Dourish et historisk perspektiv?
- Var computeren en evolution eller en revolution ?
- Fokus på færdigheder (skills) gennem fire interaktionsformer
  - electrical
  - textual
  - symbolic
  - graphical

# Electrical

30

- Computeren var ikke en revolution, men en evolution
- Hvad ser I på billedet?
- Analog beregningstradition
  - vejrudsigter
  - skydetabeller
  - planlægning af vandledninger
  - styring af jernbanegods
  - Folketælling
- Administrativ databehandling baseret på hulkort



25. Computing room at the U.S. Department of Agriculture

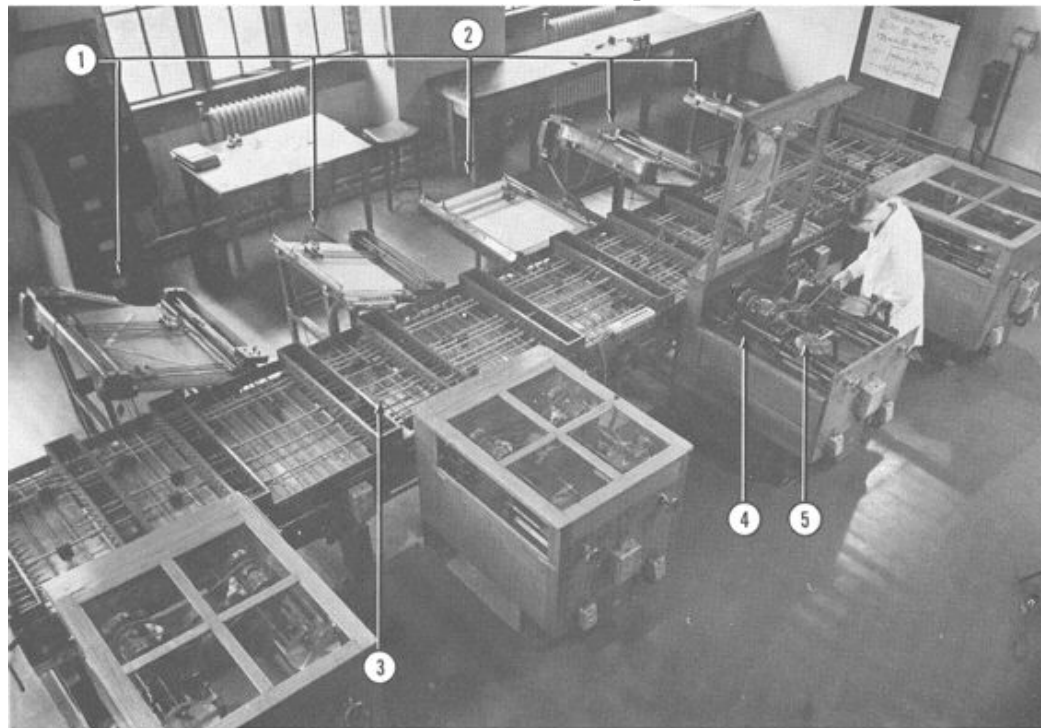
# Kender I Vannevar Bush: As We May Think?

(1945)

31

<http://www.theatlantic.com/doc/194507/bush>

## □ Differential Analyzer



- |                |   |                    |
|----------------|---|--------------------|
| 1 Input table  | 3 Shafts and gears used for interconnection | 4 Torque amplifier |
| 2 Output table |   | 5 Integrator disk  |

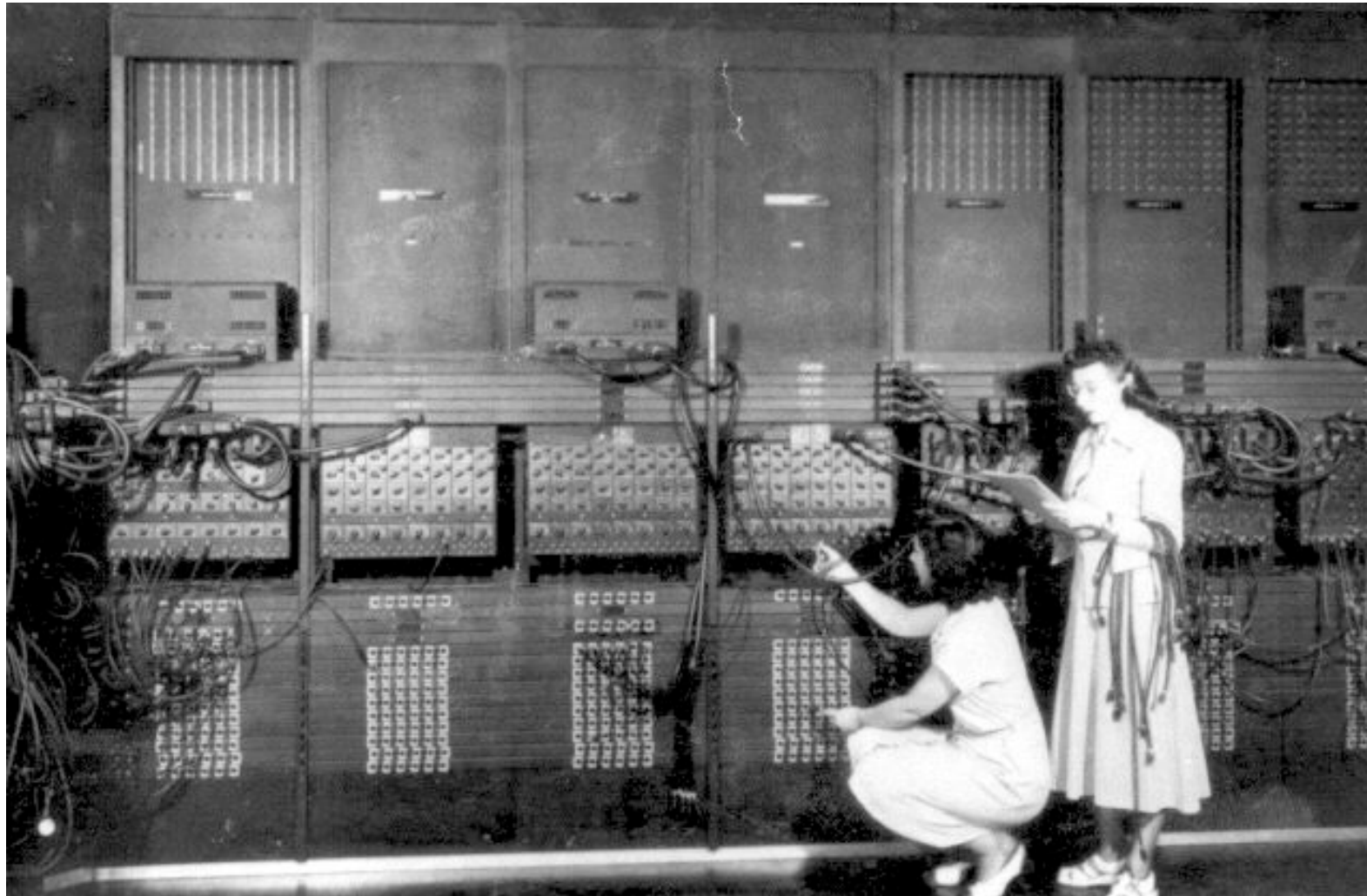


Fig. 10—Bush testing the Profile Tracer near the reservoir at Tufts College.



# Electrical: ENIAC 1945

32

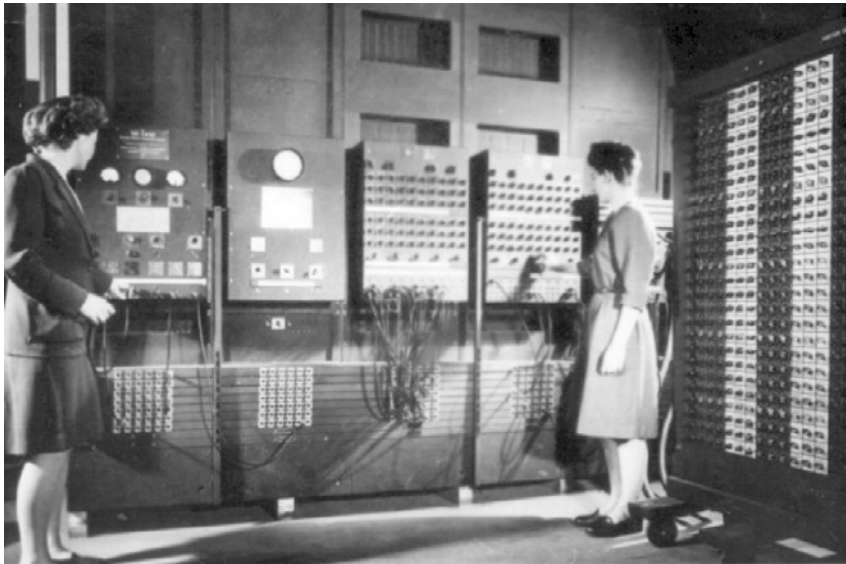




# Electrical

33

- Plugboard programming – maskinnært
- Skills: at bruge maskinen krævede indgående kendskab til dens elektroniske design



# Symbolic

34

- Electrical
  - for besværligt
  - brugeren blev selv programmøren
  - brugeren kende detaljer i maskinens arkitektur
- Symbolske interaktionsformer
- Programmering
  - væk fra maskine
  - højere abstraktionsniveau
  - maskinkode      `a9 62 82 2c`
  - assemblersprog   `mov (r1+), r2`
  - højniveausprog



# Symbolic

35

- Skills: Vi er gode til forskellige former for symbolsk interaktion: sprog og ikke-sproglig kommunikation
- Ikoner, trafiksignaler, flag, kort, ...
- Færdigheder
  - sprog og kommunikation
  - visuelle, kognitive
  - mere naturlig og intuitiv
- Fejlfinding i maskinkode, assembler og højniveausprog
  - maskinkode      `a9 62 82 2c`
  - assemblersprog   `mov (r1+), r2`
  - højniveau      `MOVE SPACES TO D-STORE-CODE.`

# Textual

36

- Sproglige færdigheder - skrevet tekst og interaktion
- Batch-systemer
  - hulkort/strimmel, afleverede sit job ved skranke, operatør kørte det, print 1/2 - 1 dag efter
- Time-sharing systemer med terminaler
  - conversational, dialogue, interactive man-computer communication /systems
  - man-machine communication
- DOS `xcopy h:\*.* /a /e`

Copying everything on the H drive to the current drive (implicit), with the archive attribute set (/a) and directories and subdirectories, including empty ones (/e)
- Skills: interaktion og dialog



# Graphical

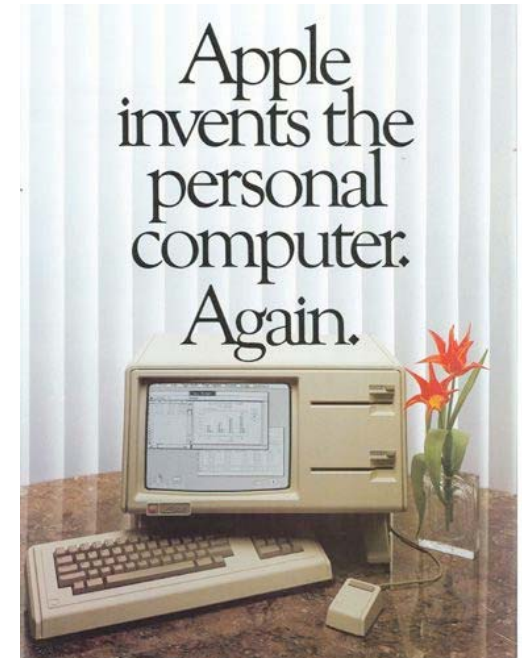
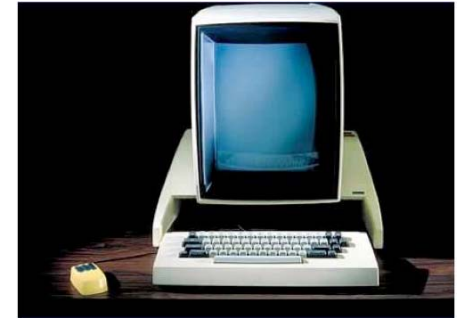
37

- Velkendt
- Flere færdigheder anvendes
  - perifer opmærksomhed
  - mønstergenkendelse og rumlig tænkning
  - informationstæthed
  - visuelle metaforer
- Rum og billeder

# New models for interaction

38

- Xerox Star først med vinduer, menuer og mus
- Apple Lisa 1983
- Apple Macintosh 1984  
får fodfæste på markedet
- Stort set uændret i dag ...  
men nye former



# Tangible and social computing

39

- Tangible: tre tendenser
  - Computere i dagligdags genstande
  - Dagligdags ting "forøges/forstærkes" med computeren
  - Direkte fysisk interface istf. det grafiske - få computeren væk
  
- Social computing
  - increasing attempts to incorporate understandings of the social world into interactive systems
  - sociologiske, antropologiske og etnografiske tilgange
  - "single-user" paradigmet kan "forøges/forstærkes" med information om andre og omgivelserne

# To Embodied Interaction

40

- My reason for viewing the history of interaction as a gradual expansion of human skills and abilities that can be incorporated into interacting with computers is that I believe that it provides a valuable perspective on activities such as tangible and social computing. In particular, it shows that these two areas draw on the same set of skills and abilities.
- Tangible and social computing are arguably aspects of one and the same research program.
- This is the hypothesis that this book sets out to explore.
- The argument comes in four parts
  - Tangible and social computing have a common basis
  - Embodiment is the core element
  - Embodiment is not new, can be informed by phenomenology
  - Phenomenology can help provide a foundation for embodied interaction

# 1. Tangible and social computing have a common basis

41

- Draws on the way the everyday world works or - perhaps more accurately - the ways we experience the everyday world
- ... through directly interacting with the world
- They share an understanding that you cannot separate the individual from the world in which that individual lives and acts.

# 2. Embodiment is the core element

42

- Three arguments
  - interaction is intimately connected to the setting
  - turn to consider work activities and artifacts in concrete terms rather than abstract
  - the artifacts of daily interaction can play many different roles



### 3. Embodiment not new, informed by phenomenology

43

- Embodiment is not a new phenomenon - it plays a special role in a particular school of thought: phenomenology
- Phenomenology is concerned with how we perceive, experience, and act in the world around us
- Argue that the separation between mind and matter has no basis in reality
- Thinking does not occur separately from being and acting
- "See and understand " rather than "understand and see"

## 4. Phenomenology: a foundation for embodied interaction

44

- Build on the phenomenological understandings to create a foundational approach to embodied interaction.
- Such a foundation should do two things
  - Account for the ways tangible and social computing are related to each other and provide a unified model
  - Inform and support design

# Styrker og svagheder ved bogen ?

45

- Styrker ved Dourish's bog
  - Meget stærkt indhold: et teoretisk grundlag for embodied interaction
  - Velskrevet og veldisponeret
  - Klar og forståelig trods højt abstraktionsniveau
  
- Svagheder ...?

# Summary

46

- What is being advocated here is an approach that, while acknowledging the contribution that different disciplines can make to the design process, ultimately depends upon the users themselves to articulate their requirements, with the system design team, composed of a variety of specialists, acting in the capacity of consultants to the project. Design teams and users must be prepared to acknowledge each others competencies .. (s. 13)
- It is in the mutual interaction of these different perspectives, including that of the end users, focused on a particular design project, that good design may emanate." (s. 13).

## ØVELSE 2: FOTOOBSERVATION



Hvem er de ældre?  
Hvordan ser ældres hverdag ud?  
Hvad er ældre sammen om?  
Er ældre enlige og/eller ensomme?

1. Udvælg et eller flere steder, hvor I, igennem jeres observationer, ser mulighed for at kunne svare på spørgsmålene.
2. I skal indsamle information om ældre, deres hverdag, sociale liv, vaner mm ved at observere og fotografere ældre i forskellige situationer.

I har også mulighed for at vælge et andet tidspunkt for jeres observationer – eller flere tidspunkter, hvis det passer bedre til den/de locations, som I har valgt.

Denne uges øvelse hænger sammen med næste uges øvelse. Det er derfor en god idé at have den med I jeres overvejelser, inden I går I felten.



## LIDT OM NÆSTE UGES ØVELSE

I næste uge skal I udpege to vigtige observationer eller aha-oplevelser;

1. En situation, der styrker, støtter eller muliggør sociale møder mellem ældre
2. En situation, der forhindrer sociale møder mellem ældre

De to situationer skal dokumenteres og vises gennem denne uges foto-observation.



# Øvelse 3: Lav en poster

49

- Ud fra sidste uges foto-observationer, skal I udvælge billeder, der beskriver 2 situationer:
  - 1. En situation, der styrker, støtter eller muliggør sociale møder mellem ældre
  - 2. En situation, der forhindrer sociale møder mellem ældre

# Øvelse 3

50

- **Brug billederne til at lave en poster i A2 størrelse.**
- Posterens skal illustrere og forklare de 2 valgte situationer.
- I må gerne, udover brugen af billederne, tegne, udsmykke, illustrere, kommentere og bruge citater til at underbygge og forklare om jeres observationer.
- OBS: Posterens skal være selvforklarende – et eventuelt publikum skal kunne aflæse og forstå jeres observationer uden yderligere forklaring.



# Startevaluering

51

- Udfyld skema og aflever
- Jeres kommentarer behandles og diskuteres næste uge

# Slut.

52

