Announcement: Informatik kolloquium

Ted Selker

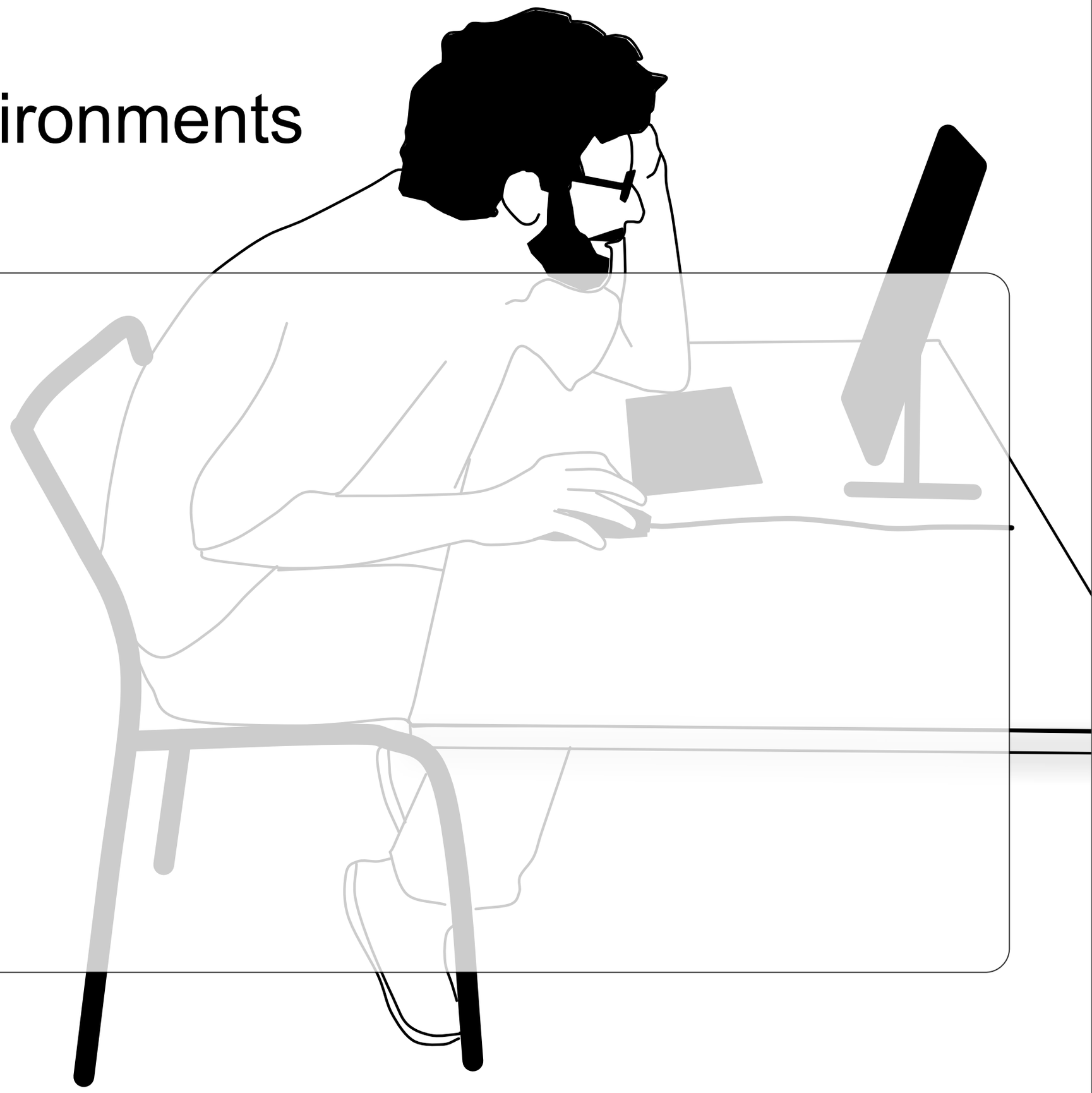
7.November, 2pm

room B U101, Öttingenstr. 67

Title: Activities in Considerate Systems

designing for social factors in audio conference systems

Desktop Environments



context and task

theory

interaction techniques

in/output technologies

Desktop

context and task

theory

interaction techniques

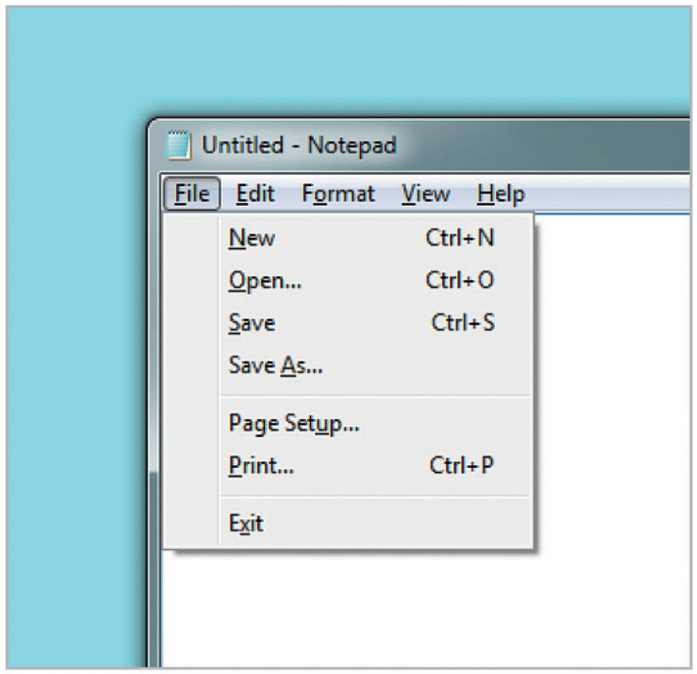
in/output technologies

Let's Recap

- Fitts' law inspired pointing techniques
  - decrease movement time by
    - reduce D
    - increase W
    - both
- self-revealing interface
  - communicate a potential (inter)action
  - learning

Keyboard Short-cuts

- communicating an alternative way to access the command.
- what might be the problem with this type of communication regarding the gulf of competence?



Widgor and Wixon, Chapter 20: self-revealing gestures, in Brave NUI World

ExposeHK

- idea: display hotkeys at the position of a button when holding down command key

Literature:
Malacria et al. “Promoting Hotkey Use through Rehearsal with ExposeHK” CHI’13

ExposeHK

- Enable hotkey browsing:
  - use mouse pointing to get short-cut feedback to commit it to memory creates a *performance dip*
  - discourages hotkey use, traps user in pointer-based ‘beginner mode’
  - browse without pointing action.

Literature:
Malacria et al. “Promoting Hotkey Use through Rehearsal with ExposeHK” CHI’13

ExposeHK

- Enable physical rehearsal:
  - "*guidance should be a physical rehearsal of the way an expert would issue a command*" (Kurtenbach)
  - use the same modality for browsing and rehearsing hotkeys.

Literature:
Malacria et al. "Promoting Hotkey Use through Rehearsal with ExposeHK" CHI'13

ExposeHK

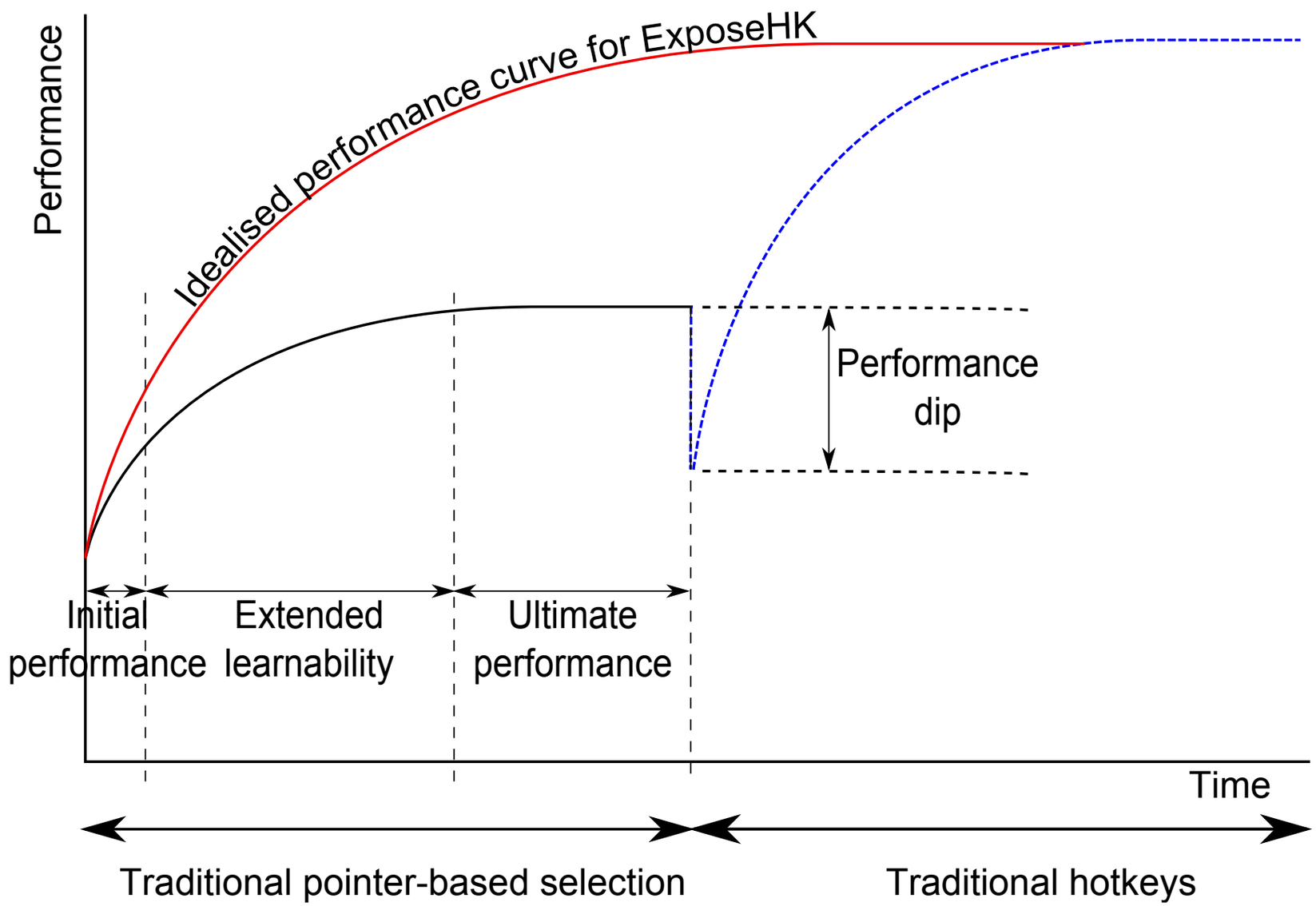
- Rapid hotkey identification for intermediate user:
  - exploit the expert behavior people already have (e.g. spatial memory and knowledge about virtual environment)

Literature:
Malacria et al. “Promoting Hotkey Use through Rehearsal with ExposeHK” CHI’13

Desktop

- context and task
- theory
- interaction techniques
  - pointing
  - menu
  - **revelation techniques**
- in/output technologies

ExposeHK

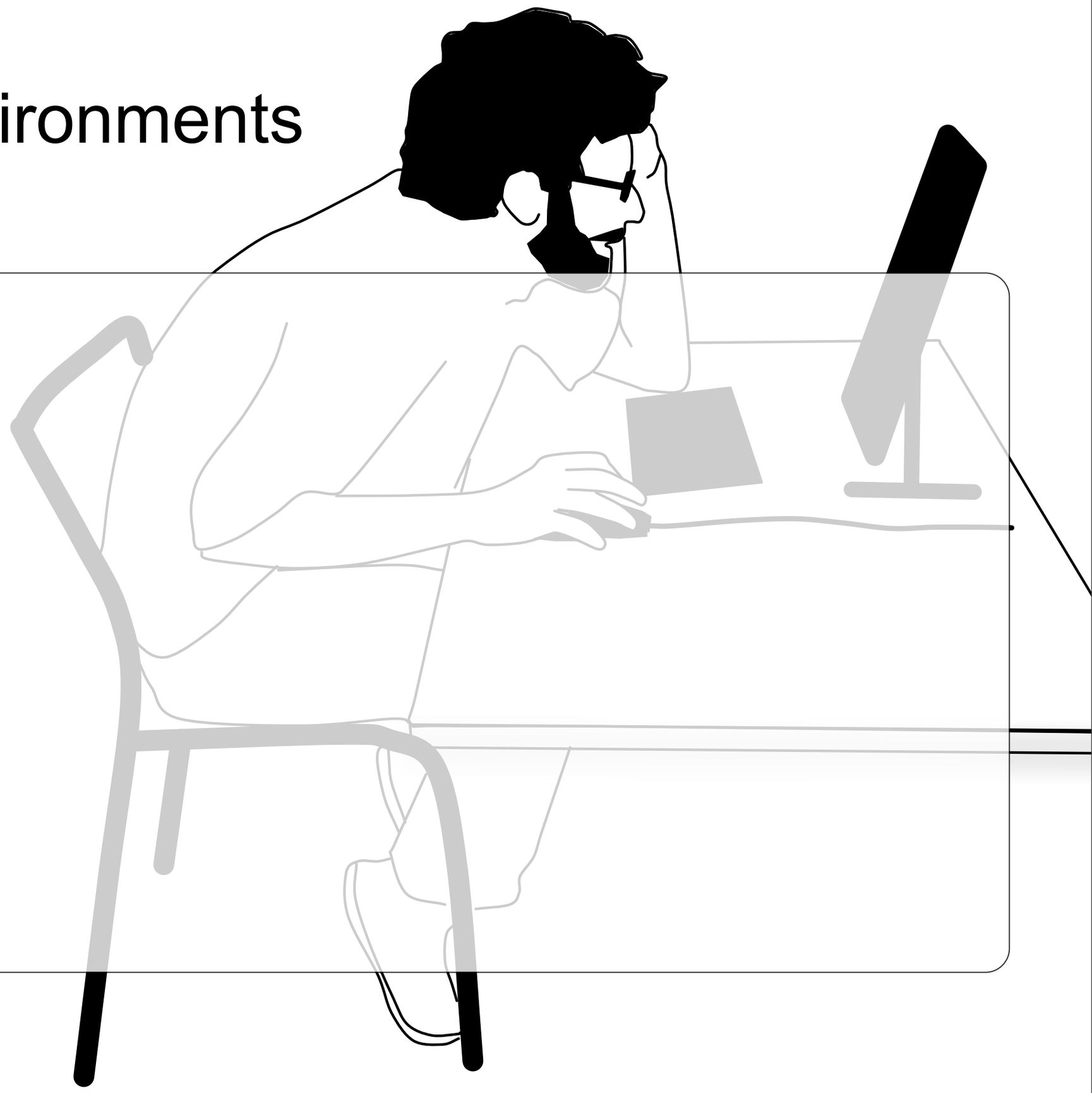


Literature:
Malacria et al. “Promoting Hotkey Use through Rehearsal with ExposeHK” CHI’13

take-away message

- Models
  - inspire a whole set of novel techniques
  - opens a new perspective
    - e.g. the separation of motor vs. display space
  - apply knowledge to all other pointing devices similar to a mouse or understand the difference to other input devices to spark new techniques to enhance input.
- Concepts enable you to have new perspectives on interaction design.
  - reapply concepts in different interfaces!

Desktop Environments



context and task

theory

interaction techniques

in/output technologies

Overview

- Pointing devices
  - light-gun
  - light-pen (sketch pad)
  - mouse
  - pointing stick
- Alternative shapes
  - curved displays
    - Curve
- Alternative interaction styles
  - free-hand whole body interaction
    - Videoplace
- Bridging the gap between digital and physical world

Light Gun: Robert Everett

- early 1950s
- reads the position of a dot on the screen of the Whirlwind
- identified aircrafts on the CRT of SAGE air defense computer (1956)

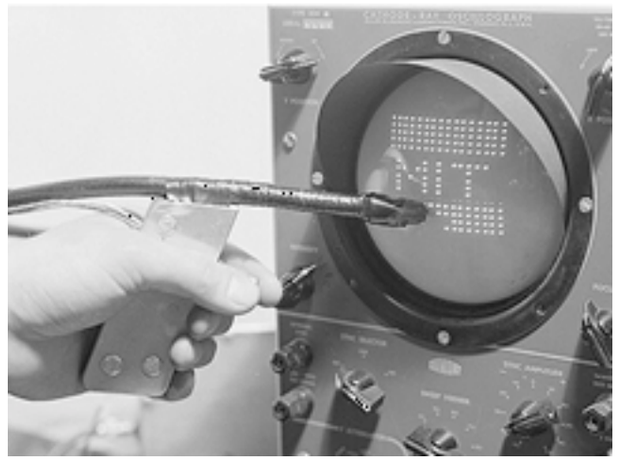


Photo from Computer Desktop Encyclopedia, © 2000 The MITRE Corporation Archives.

http://www.computerhistory.org/collections/catalog/102645102

Desktop

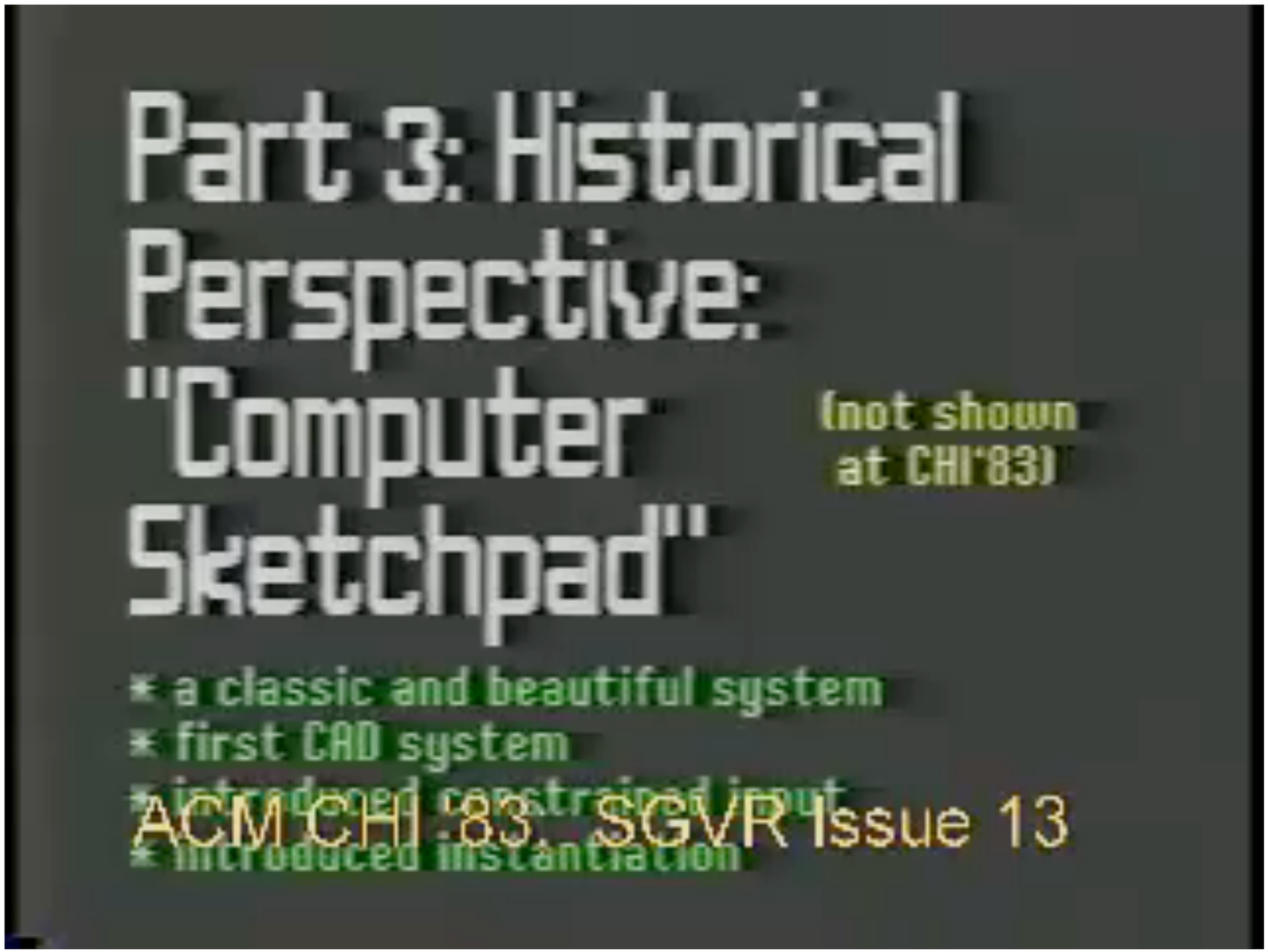
- context and task
- theory
- interaction techniques
- **in/output technologies**

Lightpen (1957)

http://www.billbuxton.com/inputTimeline.html

- stylus shaped follow-up of a Light Gun
- first interaction with a pen-shaped device on a screen

Lightpen (Sketchpad by Ivan Sutherland)



https://www.youtube.com/watch?v=USyoT_Ha_bA

key concepts introduced by Sketchpad

- buttons, knob, switches for commands and constraints
- light pen
- pointing technique: cursor snaps to line
- bimanual interaction
- Innovation of problem solving

Key Innovation of Sketchpad

- traditional computers:
  - understand the problem well
  - identify steps necessary to solve problem
    - punch cards
    - literal minded
  - very elaborated calculating machine
- Solving a problem step-by-step
  - begin investigating a problem and its solutions
  - human-computer cooperation, human assistance
    - computer seems to have intelligence

Do computers today support problem solving?

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<font size=4 face="Helvetica" color=99CCFF> <b><i>Pierre Dragicevic</i></b>
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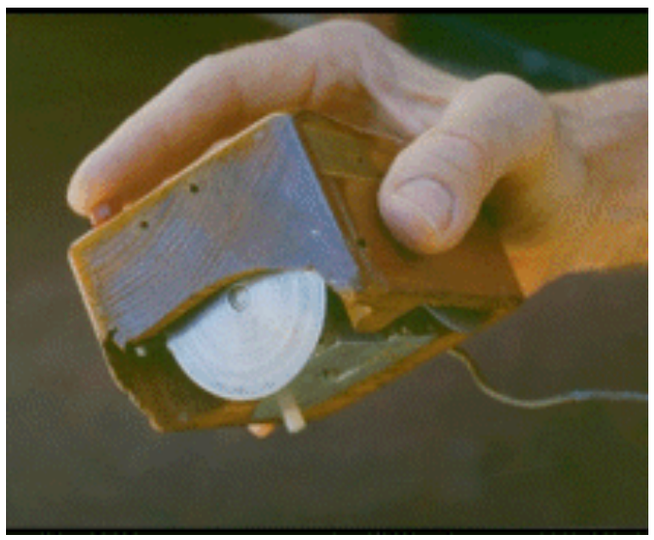
https://www.youtube.com/watch?v=UK42Hont3to

Mouse (1964)

- Douglas Engelbart
- patented in 1967
- demoed in 1968
- integrated in the computer system NLS (oN-Line System)



http://www.billbuxton.com/inputTimeline.html

Mother of all Demos (1968) - Introduction

- augmented intellect research center
  - what value can we derive from machine assistance
- live demo

http://dougengelbart.org/events/1968-demo-highlights.html

Desktop

context and task

theory

interaction techniques

in/output technologies

The Basics

- Word processing
  - copy
    - pair of words
    - sentences
    - paragraph
    - groups of statements
- View control
  - collapse text, get overview
- Formatting
  - hierarchical categorization of items
  - hyperlinks

http://dougengelbart.org/events/1968-demo-highlights.html

The Devices

- pointing device
- keyboard
- key set (chord keyboard): pressing a combination of keys produces a character

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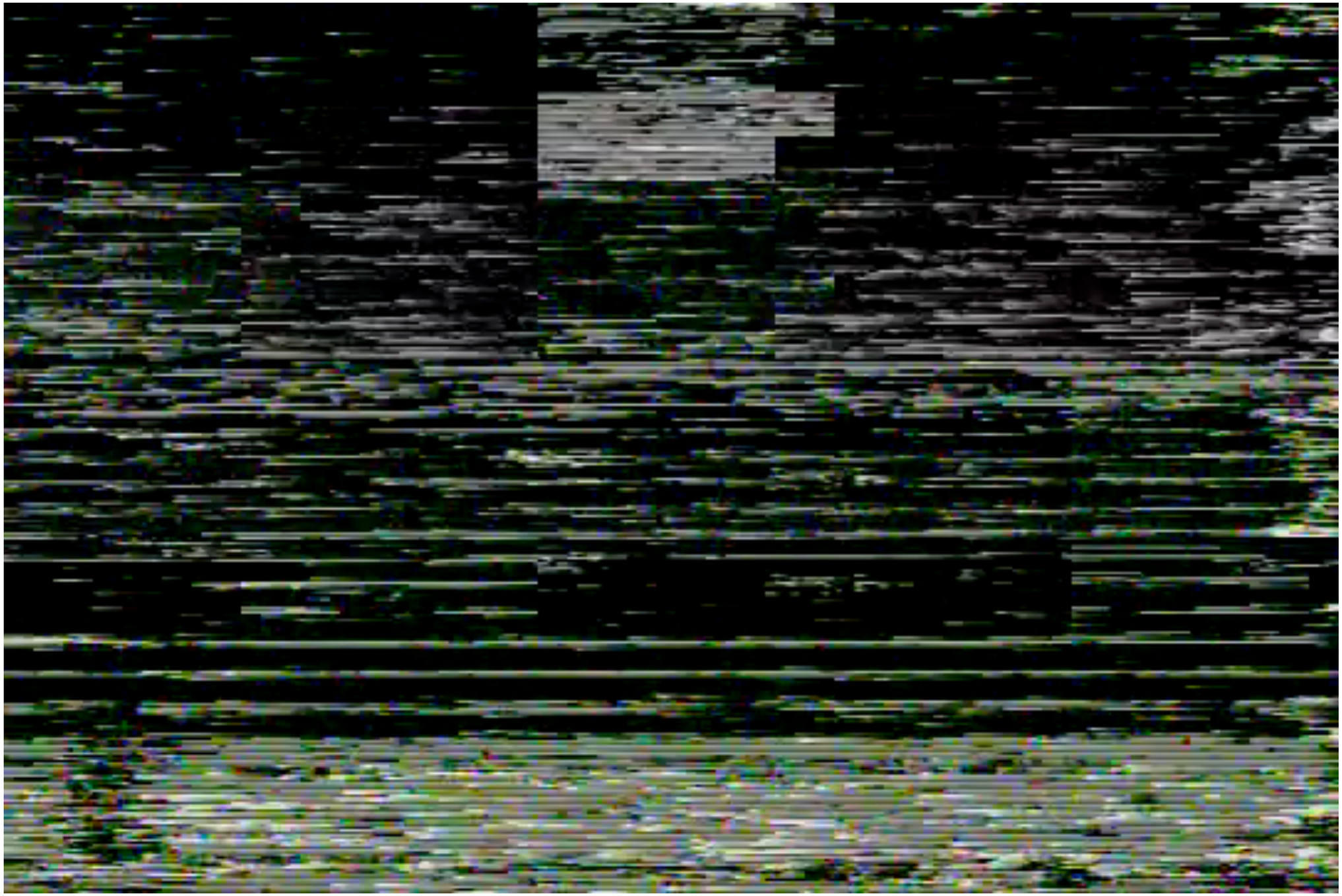
further key aspects of NLS

- shared-screen teleconferencing system
- real-time collaboration over distance
- collaborative software development

Pointing stick



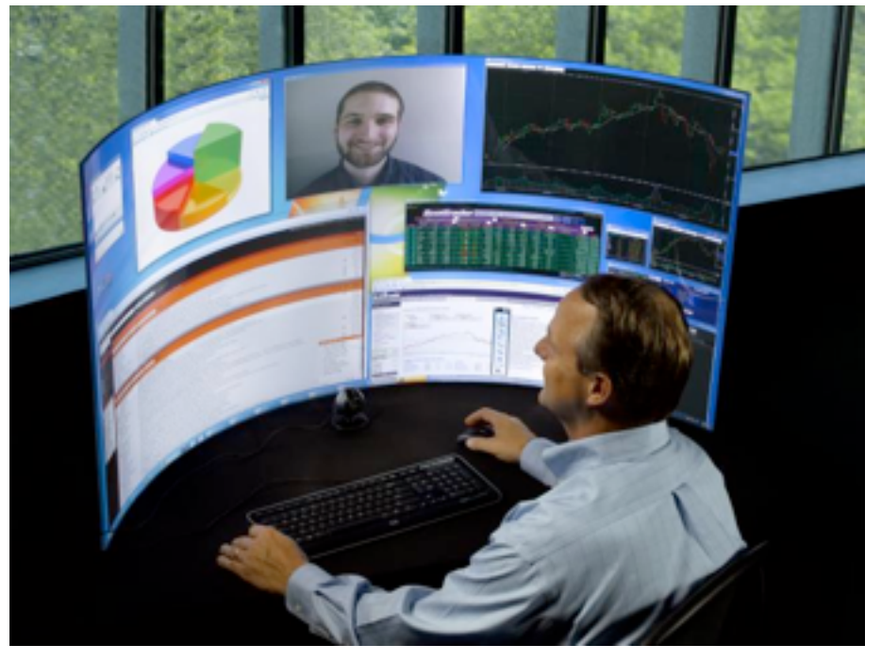
http://www.youtube.com/watch?v=n4Ss6F1qIHU

Question

- what's the difference between the mouse and the pointing stick?

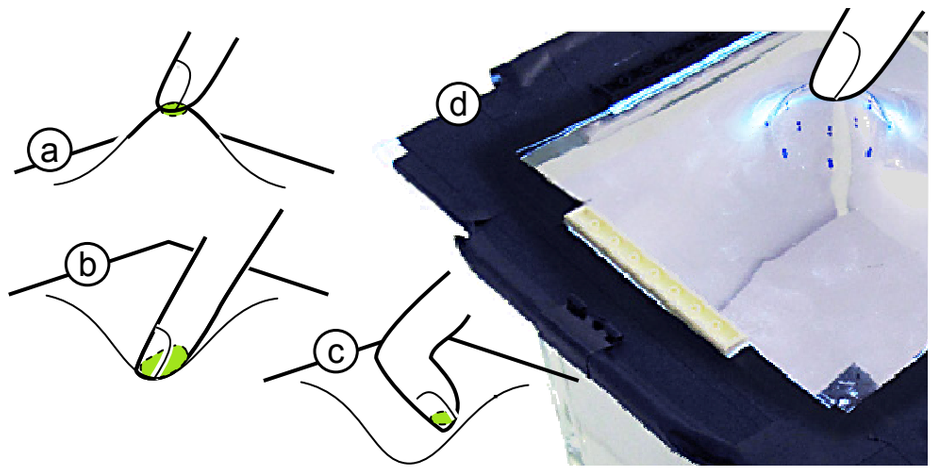
Alternative Shapes - Curved Displays

contact: Henri Palleis



http://fireuser.com/images/uploads/ScalableDesktop_-_trade_station.preview_.jpg

Literature:
Wimmer et al. “Curve: Revisiting the Digital Desk” CHI’10



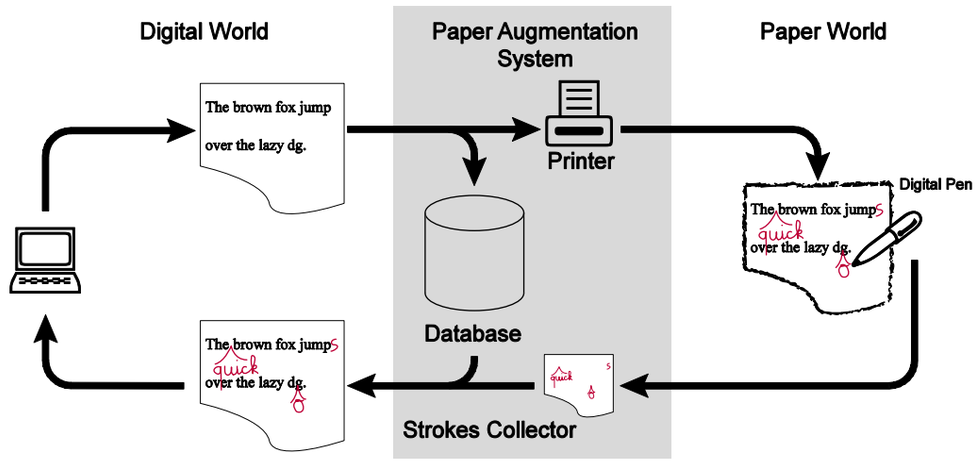
Literature:
Roudaut et al. “Touch Input on Curved Surfaces” CHI’11

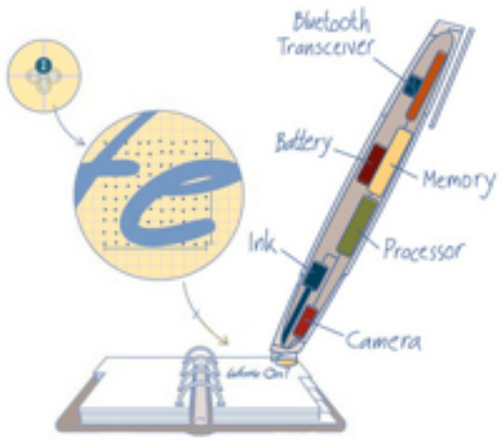
Alternative Interaction Styles - Videoplace 1988

http://www.youtube.com/watch?v=dmmxVA5xhuo

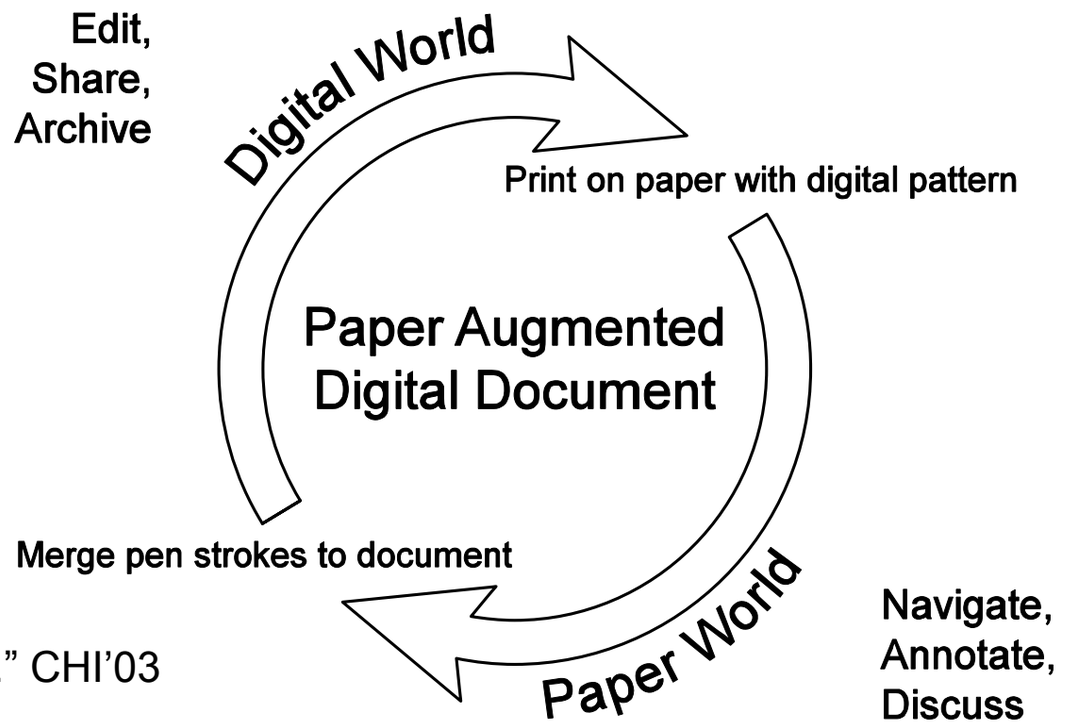
Bridging the Gap...

- ...between physical and virtual world
  - interactive paper





http://www.inphoactive.com/wp-content/uploads/2012/07/3465589846_8044768042.jpg



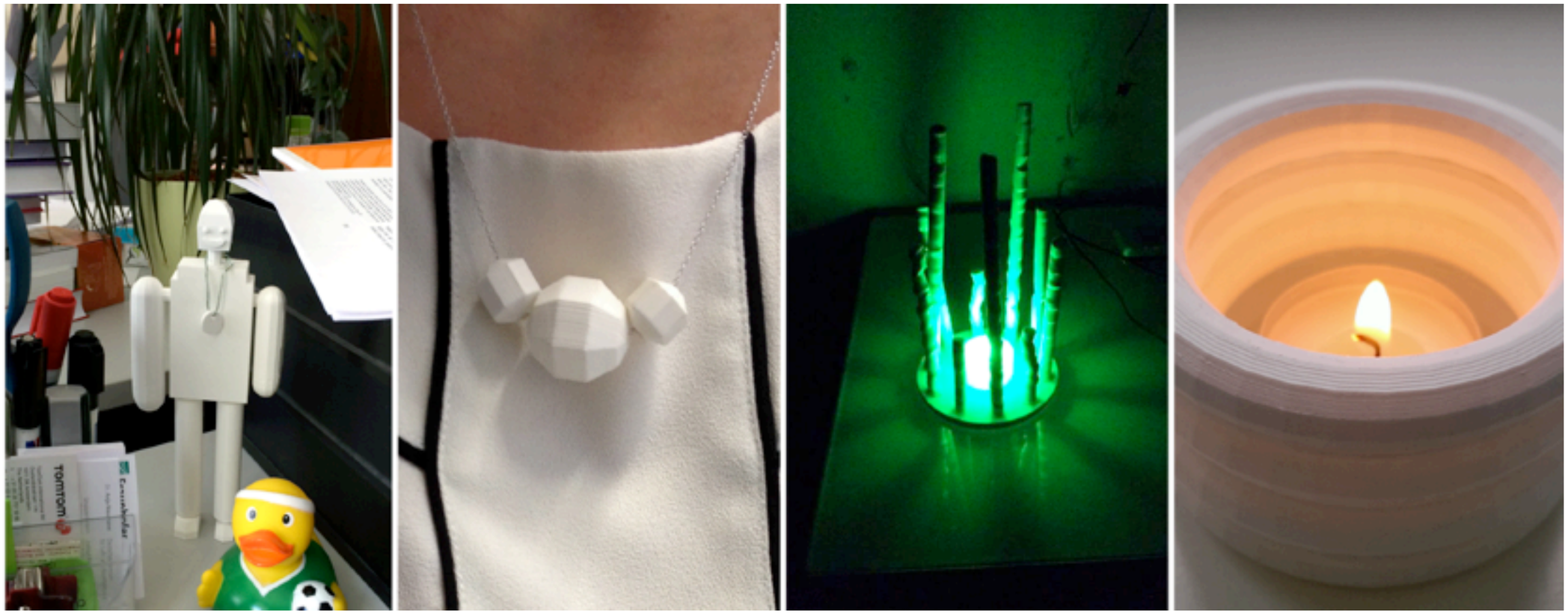
Literature:
François Guimbretière “Paper Augmented Digital Documents.” CHI’03

Bridging the Gap...

- ...between physical and virtual world
  - interactive paper
  - 3D printing
    - reduced costs: currently $1,500.00
    - increased speed: currently too slow
    - increased possible complexity of objects
- How could such a cycle of physical print-in the future?

Physical Visualizations

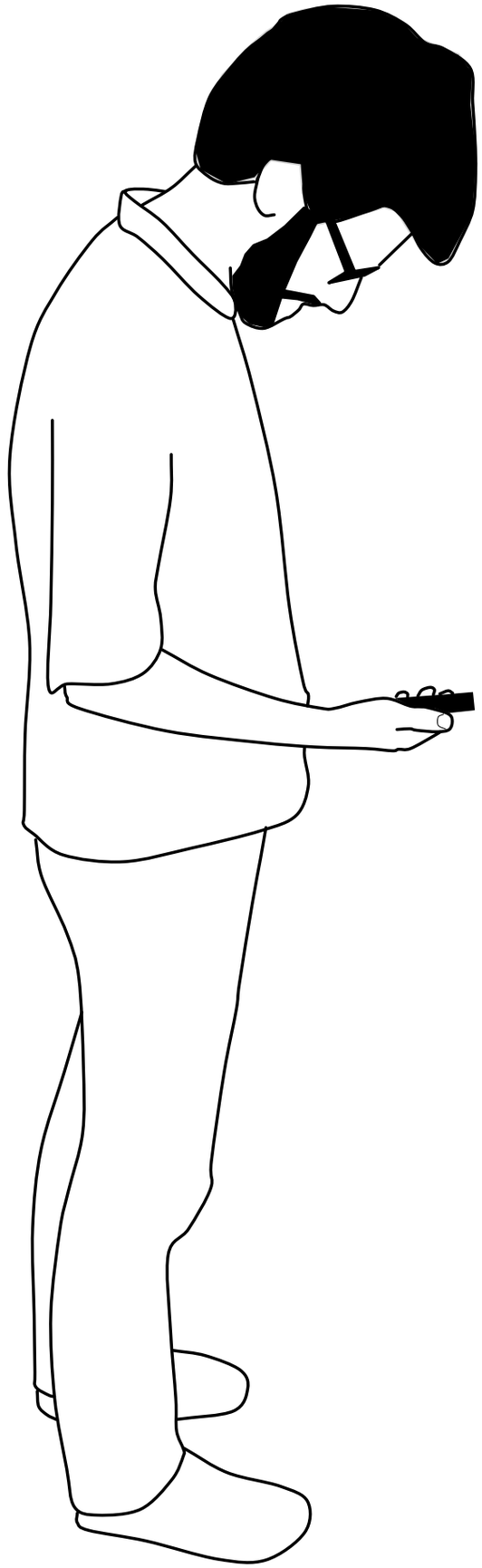
- Simon Stusak
  - physical visualizations
  - effect on behavior (quantified self) and group dynamics.



Human-Computer Interaction 2

Mobile Technologies

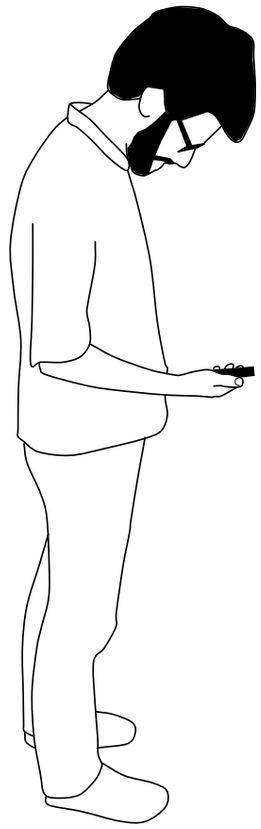
Prof. Dr. Andreas Butz, Dr. Julie Wagner



Human-Computer Interaction 2

Interactive Environments

Mobile Technologies



Desktop Environments

Human-Computer Interaction 2

Interactive Environments

Mobile Technologies

Desktop

Desktop Environments

- context and task
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- in/output technologies

Mobile

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Interactive Environments

- context and task
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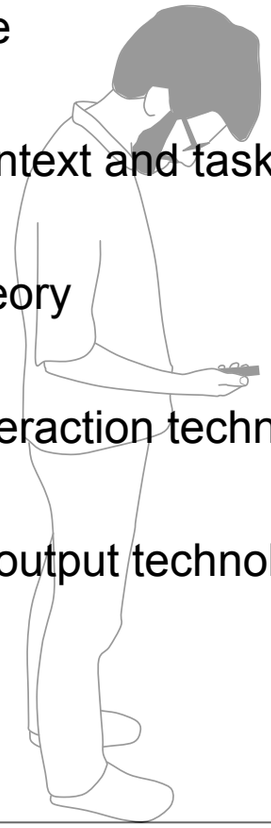
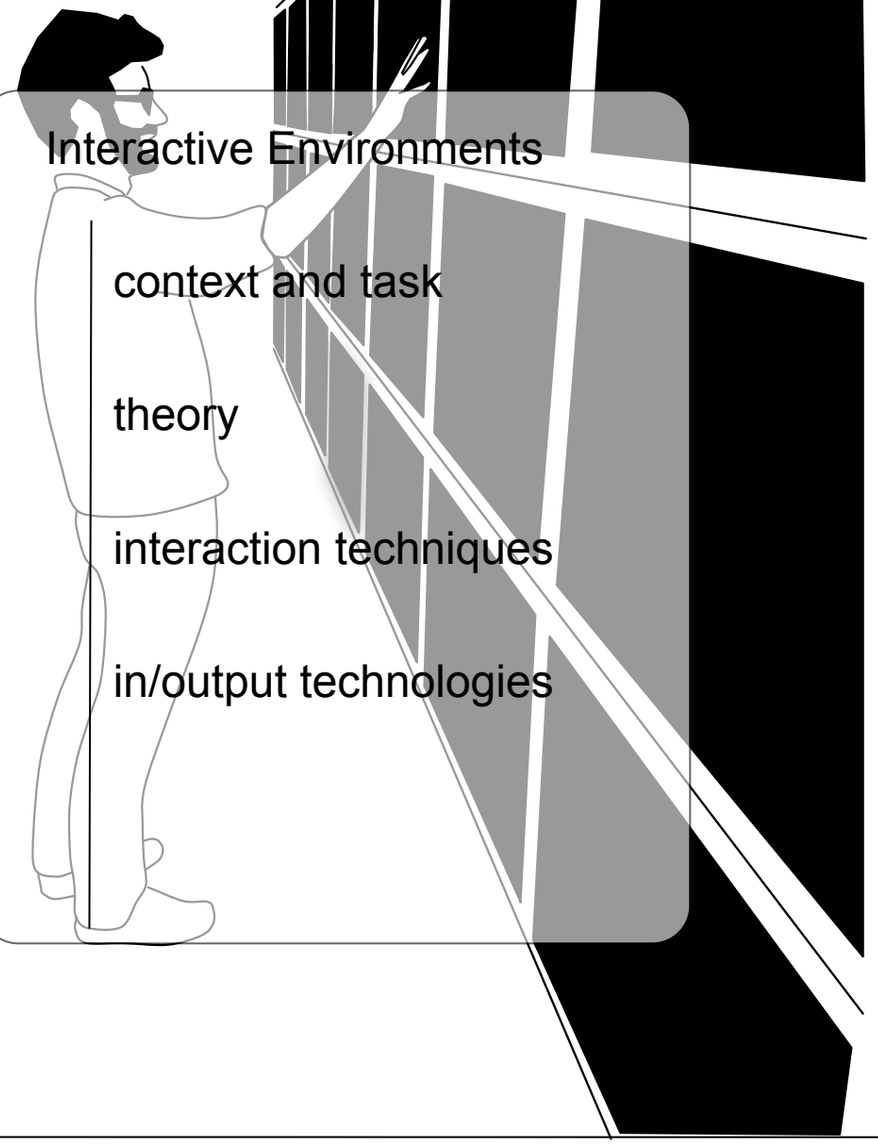
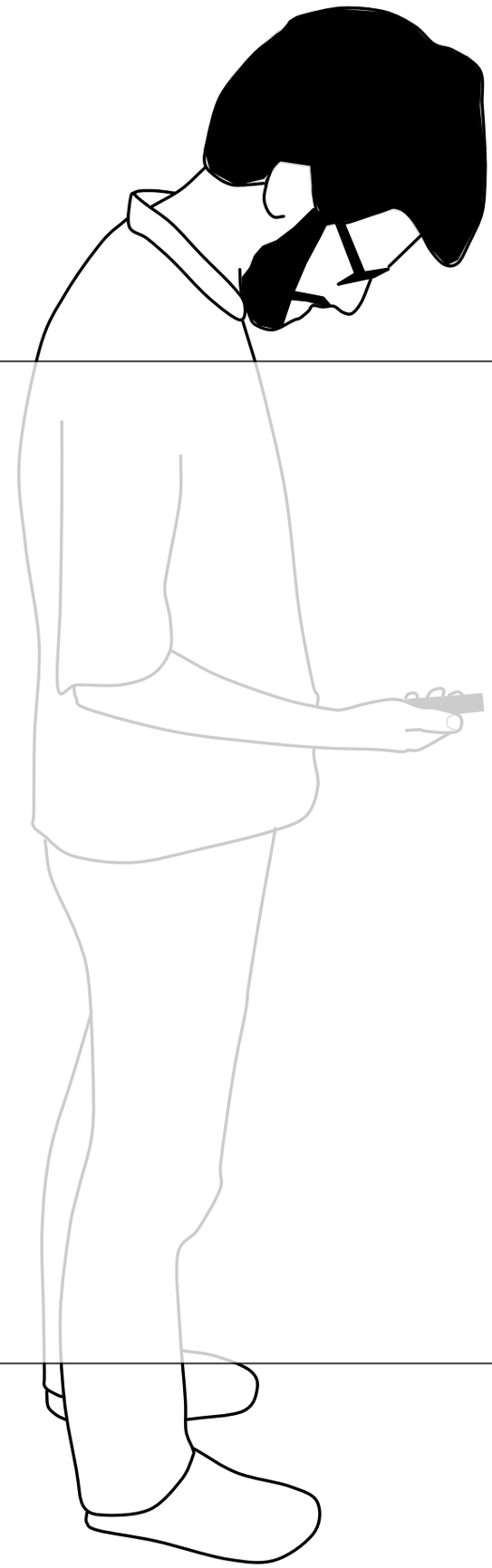




Mobile Technologies



context and task

theory

interaction techniques

in/output technologies

Designing for mobile technologies

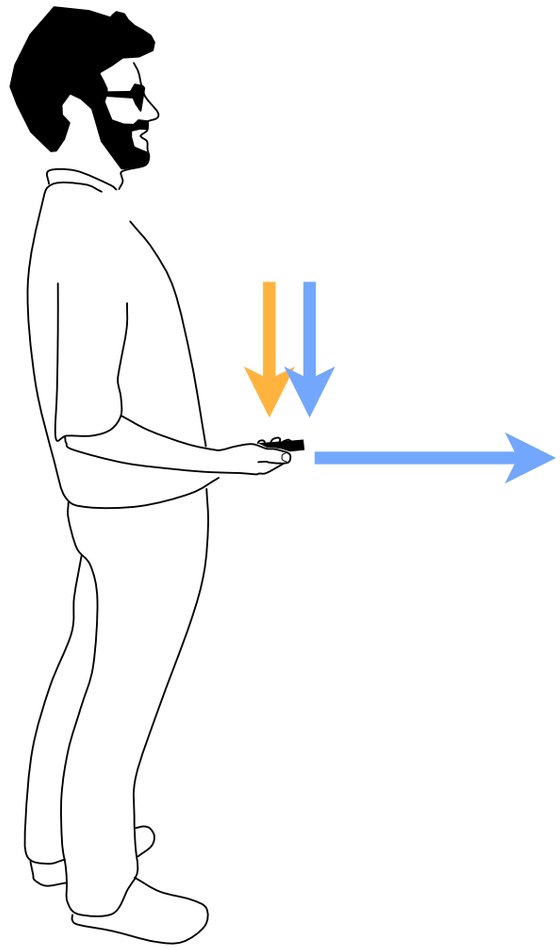
- technological perspective:
  - It's technology that we can carry around (portable)
    - phones, smart watches, google glasses, interactive cloth, etc.
- body-centric perspective
  - It's an interface where input/output is performed *relative to the body*.
    - same technology needs to be designed depending on its position on the body
    - same technology can be controlling objects fixed in the world

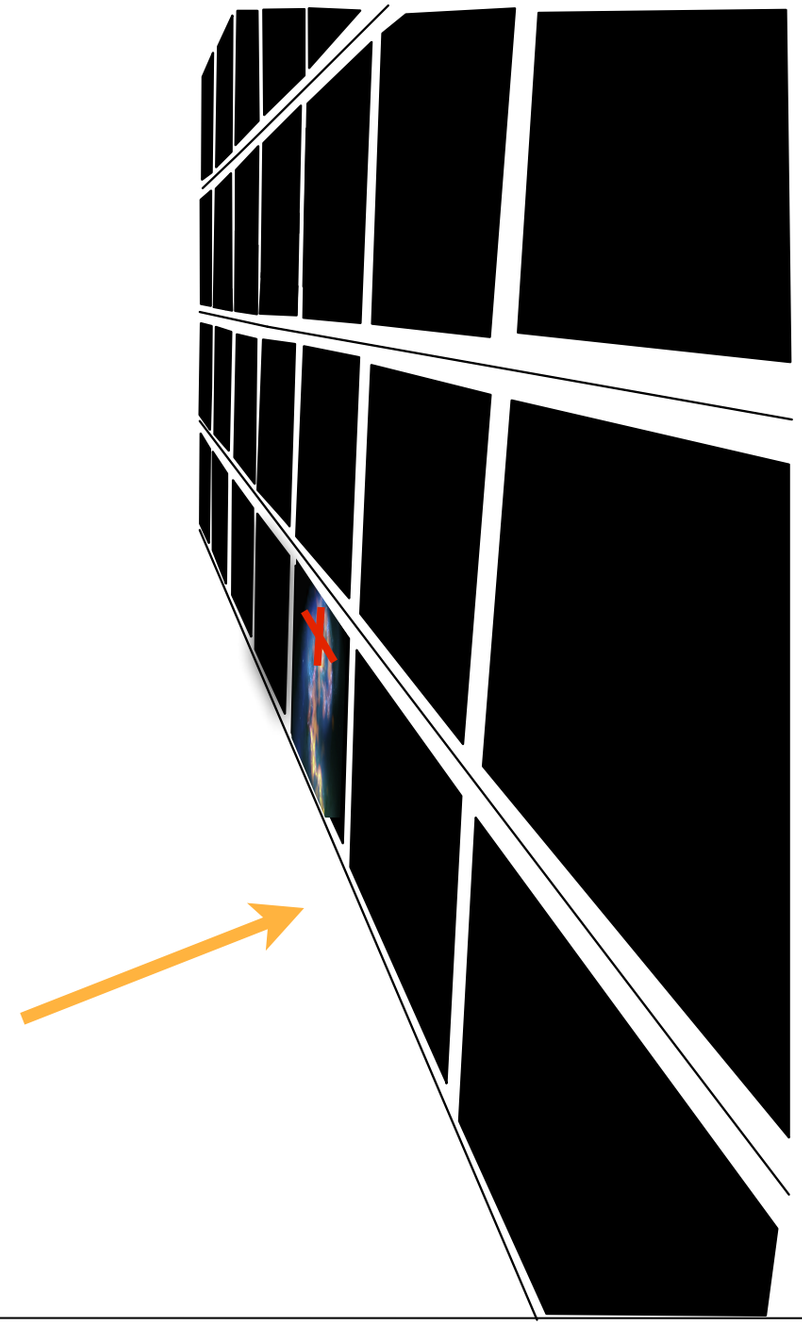
The body's spatial relationship with an input device effects interaction design (how you hold a phone effects touch interaction)

http://turkeytamam.com/wp-content/uploads/2014/04/Smart-Phones.jpg

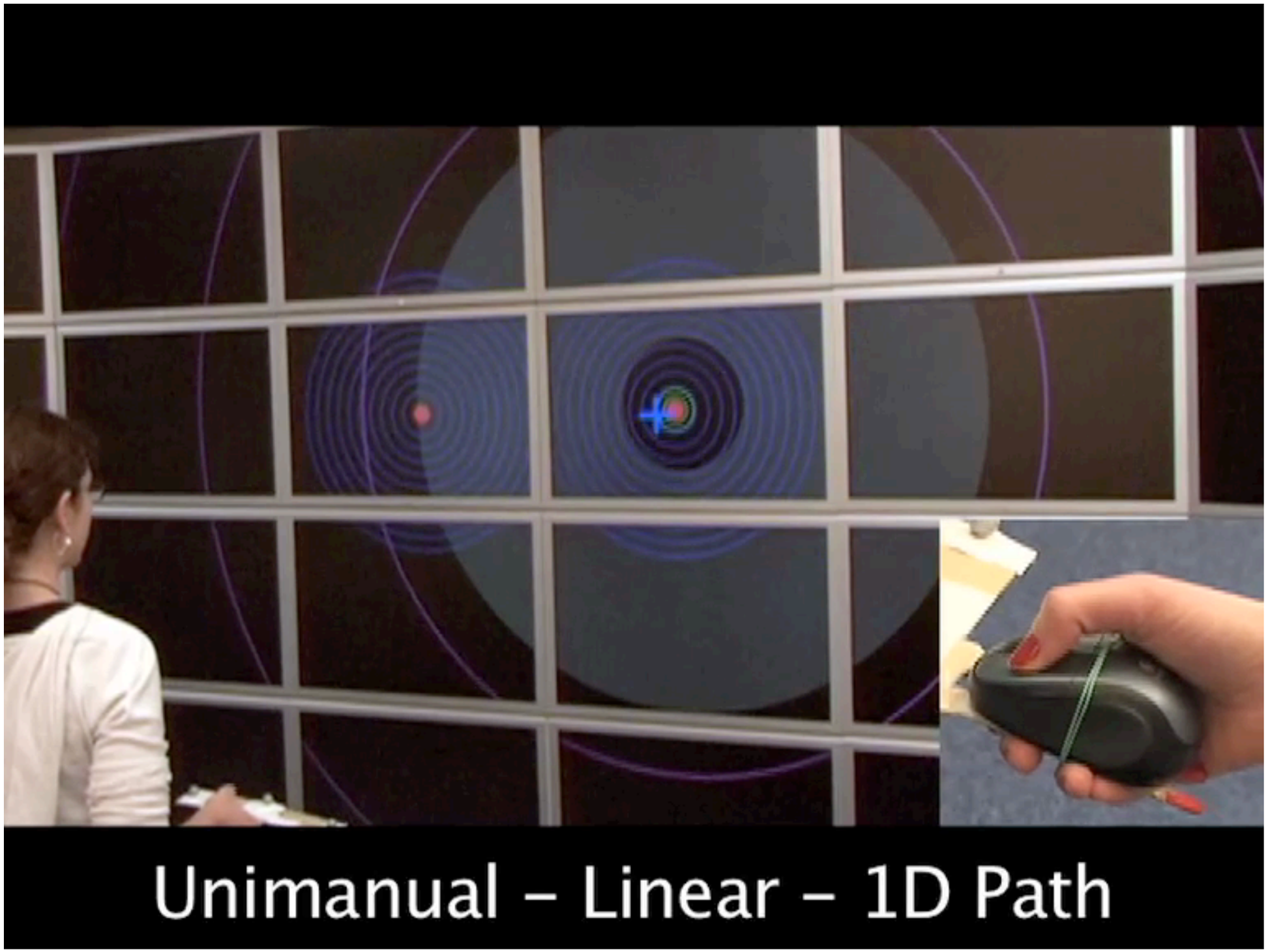
do you think of your phone as stand-alone device?

- input and output distributed in the environment.
- how to design interaction techniques for such environments?





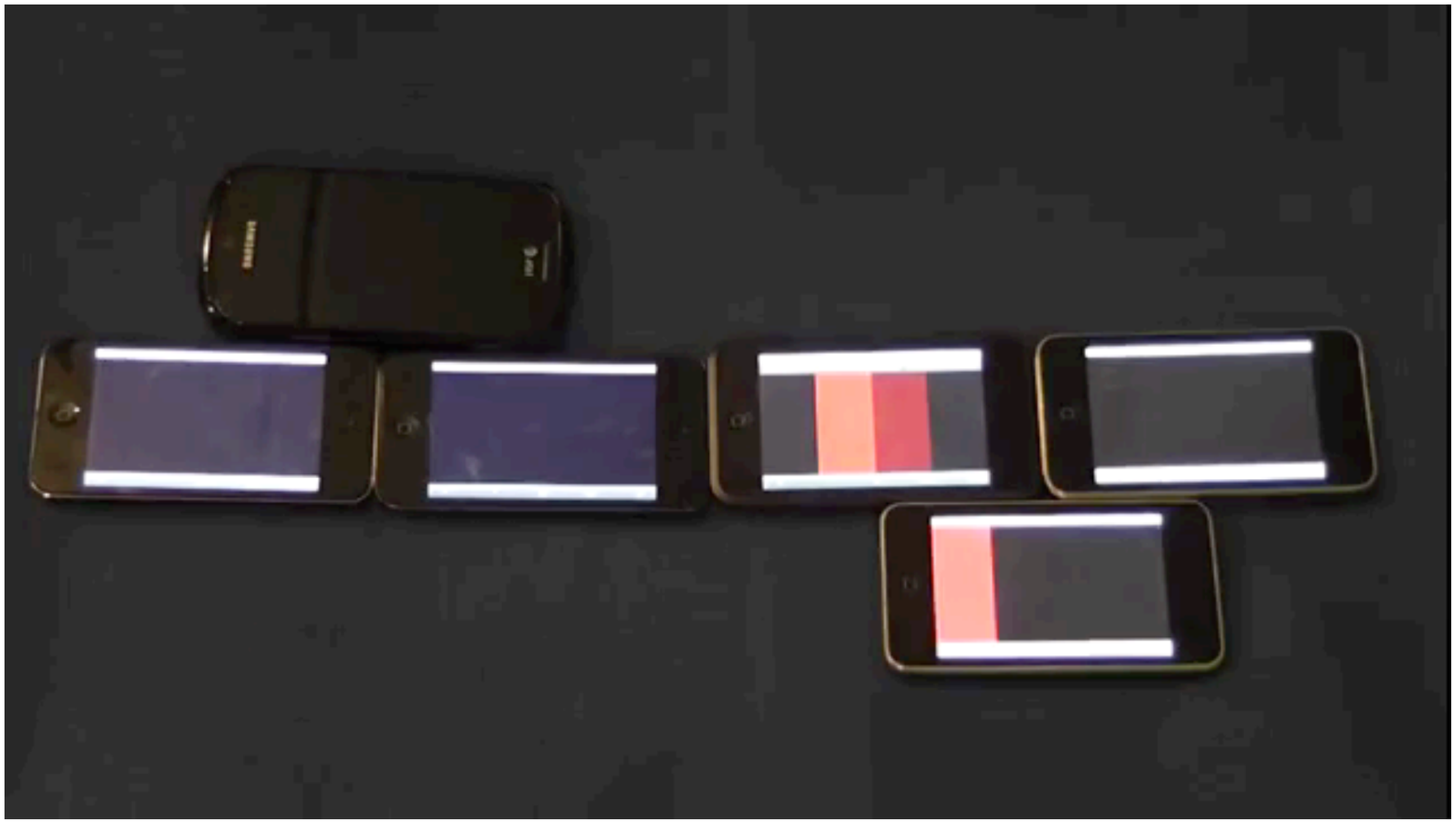
Pan-Zoom on Large Displays



- http://mathieu.nancel.net/videos/CHI_11_CamReady_GoodRes_SD.mov

do you think of your phone as a unit?

- it’s a collection of resources we can make use of....



https://www.youtube.com/watch?v=zuFIUXfS1kU

Desktop

context and task

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designing for...

- support
- bimanual interaction
- midas touch
- occlusion
- precision
- limited screen real estate
- precision
- social issues
- fatigue effects