http://farm4.static.flickr.com/3478/4051986189_588fa57e44_m.jpg

Designing Interaction between Man and Machine

For Master Psychology/Learning Sciences:
"Learning in Computer Science"

For Master Media, Management, and Digital Technologies (MMT):
"Interface Design"

Heinrich Hussmann
Ludwig-Maximilians-Universität München
Winter Term 2016/2017

Welcome!

Heinrich Hussmann

Institut für Informatik
Lehrstuhl Medieninformatik

Heinrich.Hussmann@lmu.de

Background:

- Computer Science
- Software Engineering
- Industrial practice (broadband networks)

Research areas:

- Human-computer interaction
- Usable privacy and security
- Technology support for collaborative meetings
- Interaction in Mixed Reality

Please introduce yourself!

Heinrich Hussmann

Axel Hösl

Tutorials for psychology students

Ceenu George

Tutorials for MMT students

Chapter 0 - Introduction

- Organisation & Materials
- Learning & Design & Human-Computer-Interaction
- Experiments on Intuitiveness

- Chapter 1 upcoming!

Organisation

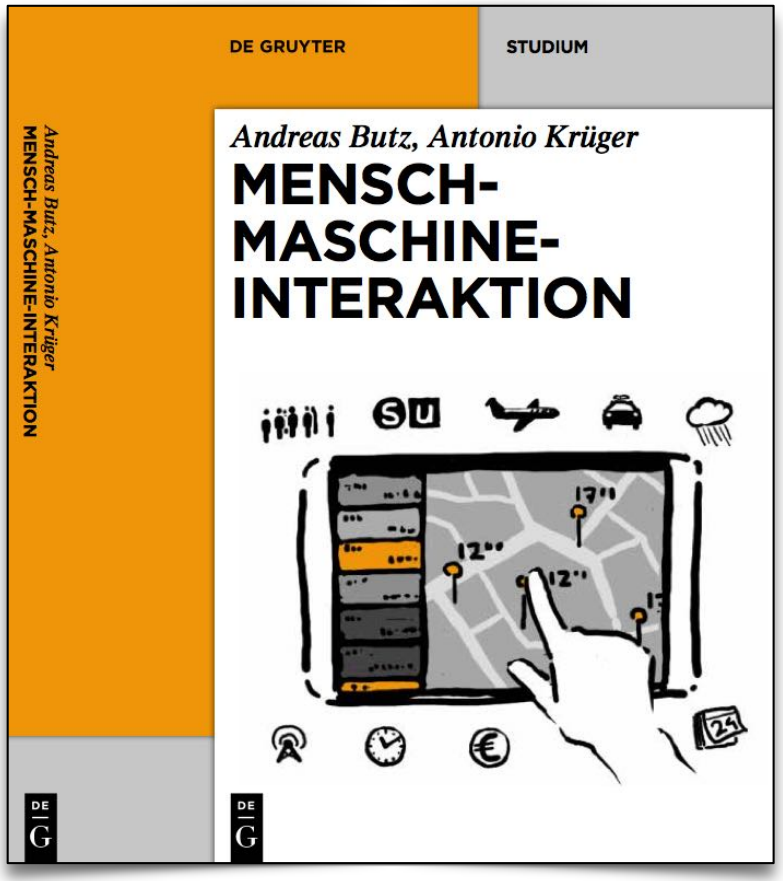
- Seven (interactive) lectures (Tuesday 10ct)
  - Two times 45 minutes = 90 minutes each
  - Oct 25, Nov 08, Nov 22, Dec 6 *for all students*
  - Jan 10, Jan 17, Jan 24 *for MMT only*
- *Only for psychology students (3 ECTS credits):*
  Four (very interactive) case study sessions (Tuesday 10ct)
  - Nov 15, Nov 29, Dec 13, Dec 20
  - Examination based on case study presentation, no grades
- *Separate tutorials for MMT students (6 ECTS credits)*
- Information:
  - *For psychology students:* edupsy moodle
    https://www.edupsy.moodle.elearning.lmu.de/
  - *For MMT students:* Web page
    http://www.medien.ifi.lmu.de/ifd/

Outline

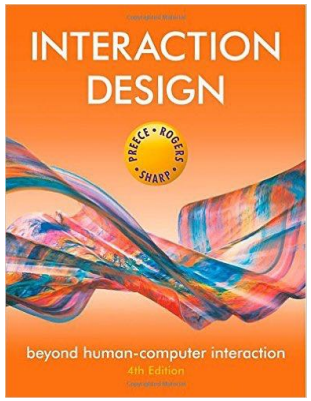
0. Introduction
1. Mental Models
2. Requirements and Scenarios
3. User-Centered Development & Prototyping
4. Basic Design Principles in Human-Computer Interaction
5. Evaluation Techniques in Human-Computer Interaction
6. Basics of Human Perception
7. Basics of Human Cognition

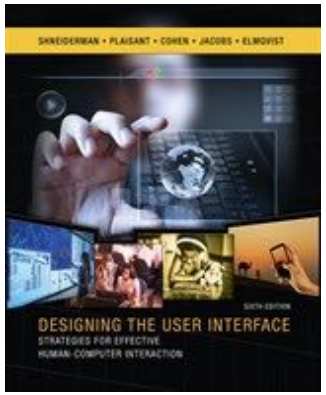
Basis for this Lecture

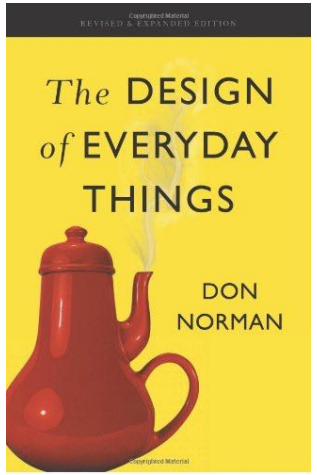
- Andreas Butz, Antonio Krüger: Mensch-Maschine-Interaktion, (2014). Taschenbuch. ca. 220 S. Paperback, De Gruyter Oldenbourg Verlag, ISBN 978-3-486-71621-4, 29,95€
- http://www.mmibuch.de
- June 2014
- In German :-(

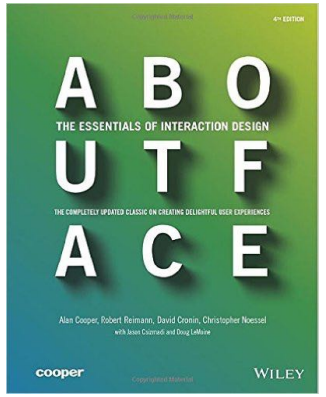


Book Selection









- Jennifer Preece, Yvonne Rogers, Helen Sharp: Interaction Design. 4th ed., Wiley 2015
- Ben Shneiderman, Catherine Plaisant, Maxine Cohen, Steven Jacobs, Niklas Elmqvist, Nicholas Diakopulos: Designing the User Interface, Strategies for Effective Human-Computer Interaction, 6th ed., Addison Wesley 2016
- Donald A. Norman: The Design of Everyday Things. Revised and expanded edition. Perseus Books, Nov 2013
- Alan Cooper, Robert M. Reimann, David Cronin: About Face: The Essentials of Interaction Design. 4th ed., Wiley 2014

Materials for this Course

- Slides as PDF files
  - Available in advance
- Audio recording & screencast
  - Available afterwards

Chapter 0 - Introduction

- Organisation & Materials
- Learning & Design & Human-Computer-Interaction
- Experiments on Intuitiveness

World-Wide Learning of the WIMP Paradigm (1)

- WIMP = Windows, Icons, Menus, Pointer
- **1981: IBM PC**

Operating systems:
IBM PC-DOS,
MS-DOS
CP/M-86


```
Current date is Tue  1-01-1980
Enter new date:
Current time is  7:48:27.13
Enter new time:


The IBM Personal Computer DOS
Version 1.10 (C)Copyright IBM Corp 1981, 1982

A>dir/w
COMMAND  COM    FORMAT   COM    CHKDSK   COM    SYS      COM    DISKCOPY COM
DISKCOMP COM    COMP     COM    EXE2BIN  EXE    MODE     COM    EDLIN    COM
DEBUG    COM    LINK     EXE    BASIC    COM    BASICA   COM    ART      BAS
SAMPLES  BAS    MORTGAGE BAS    COLORBAR BAS    CALENDAR BAS    MUSIC    BAS
DONKEY   BAS    CIRCLE   BAS    PIECHART BAS    SPACE    BAS    BALL     BAS
COMM     BAS
      26 File(s)
A>dir command.com
COMMAND  COM     4959   5-07-82  12:00p
       1 File(s)
A>
```

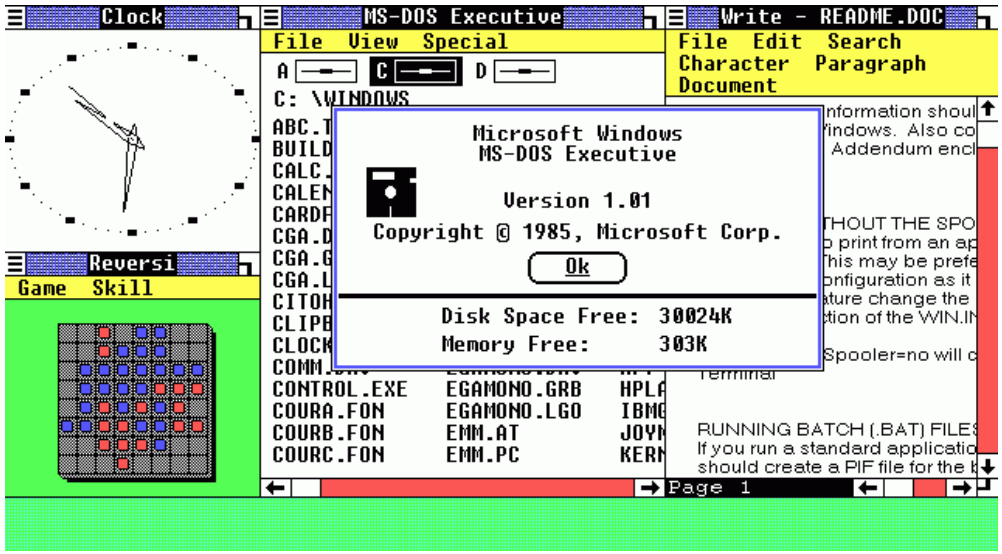
World-Wide Learning of the WIMP Paradigm (2)

Microsoft Mouse, 1983

Jason Chen, gizmodo.com

Apple Macintosh, 1984

Windows 1.0, 1985



Question:
Do you know in which year Microsoft Windows became a mainstream success product?

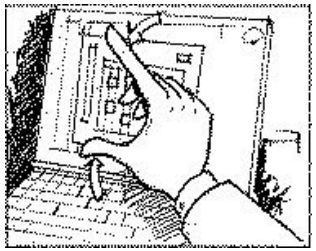
Learning how to use a mouse

Apple Guided Tour of Macintosh, 1984

World-Wide Learning of the Pinch Gesture

Pinch gesture to resize objects:

Myron Krueger 1983



Starfire
Tognazzini 1992

Source Wikipedia

2007/2008:
Apple introduces pinch gesture (and others)
on newly introduced iPhone and MacBook Air

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

Inventing a new paradigm

Myron Krueger, Videoplace. Book 1983 called “Artificial Reality”

Learning how to use multi-touch gestures

Steve Jobs presenting MacBook Air 2008

Where is the Design in it?

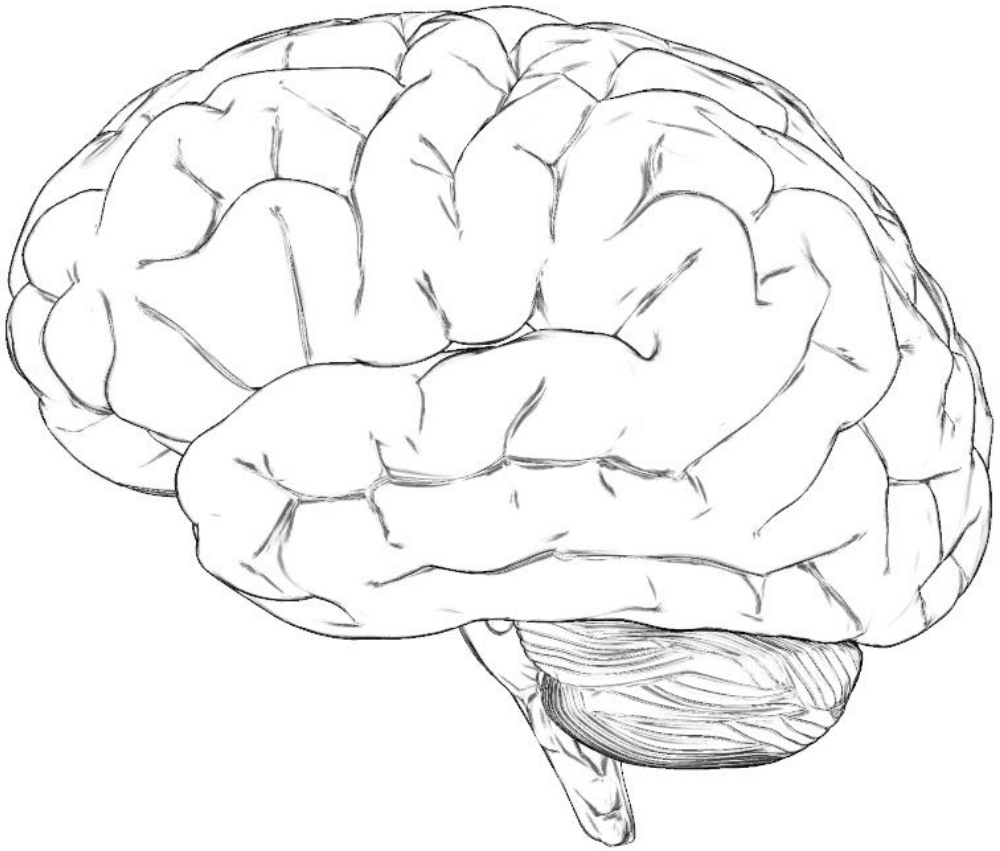
- OK, there is *learning* going on…
- How does this relate to *design*?
- Any ideas?

Chapter 0 - Introduction

- Organisation & Materials
- Learning & Design & Human-Computer-Interaction
- Experiments on Intuitiveness

Simple and Obvious?

- Let us build user interfaces, which are ***intuitive***!



What is Intuitive? Example 1

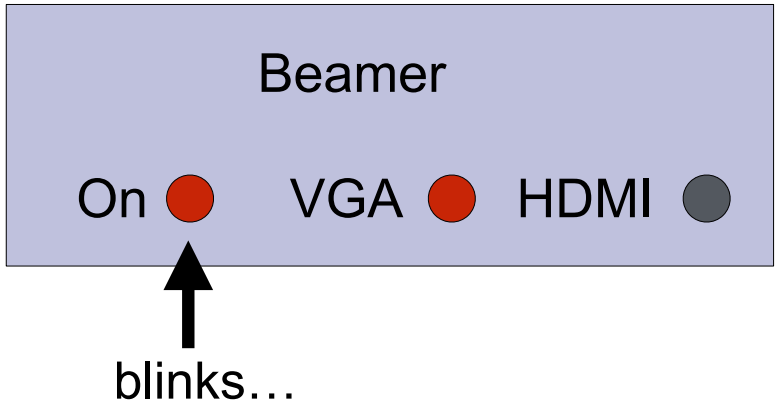
- Given: Water Faucets
  - 2 valves, 1 outlet
  - cylindrical, side-to-side
  - left warm, right cold
- Question: In which direction do I have to turn the left and the right knob for closing the outlet?

What is Intuitive? Example 2

http://www.elevatorbobs-elevator-pics.com

- Given: Elevator car
  - Moving up and down
  - Current position
  - Direction
- Question: Does the arrow refer to the car or to the floors we are passing?
- Have a look at LMU elevators in Theresienstr.

What is Intuitive? Example 3



- Given: Control panel for lecture room
  - Beamer on and off
  - Input selection
- Question: What does the blinking light at “on” position actually mean?

Group Exercise!

- Form groups of 2 to 4 people
- Try to mix the backgrounds
  - Study program
  - Background experience
  - Nationality
- In each group try to find out:
  - Who has experienced a counter-intuitive interface?
  - Was it clear in this case what “intuitive” actually means?
  - Were there reasonable explanations for the “counter-intuitive” interface?
- Report to the plenary in 10 minutes from now!