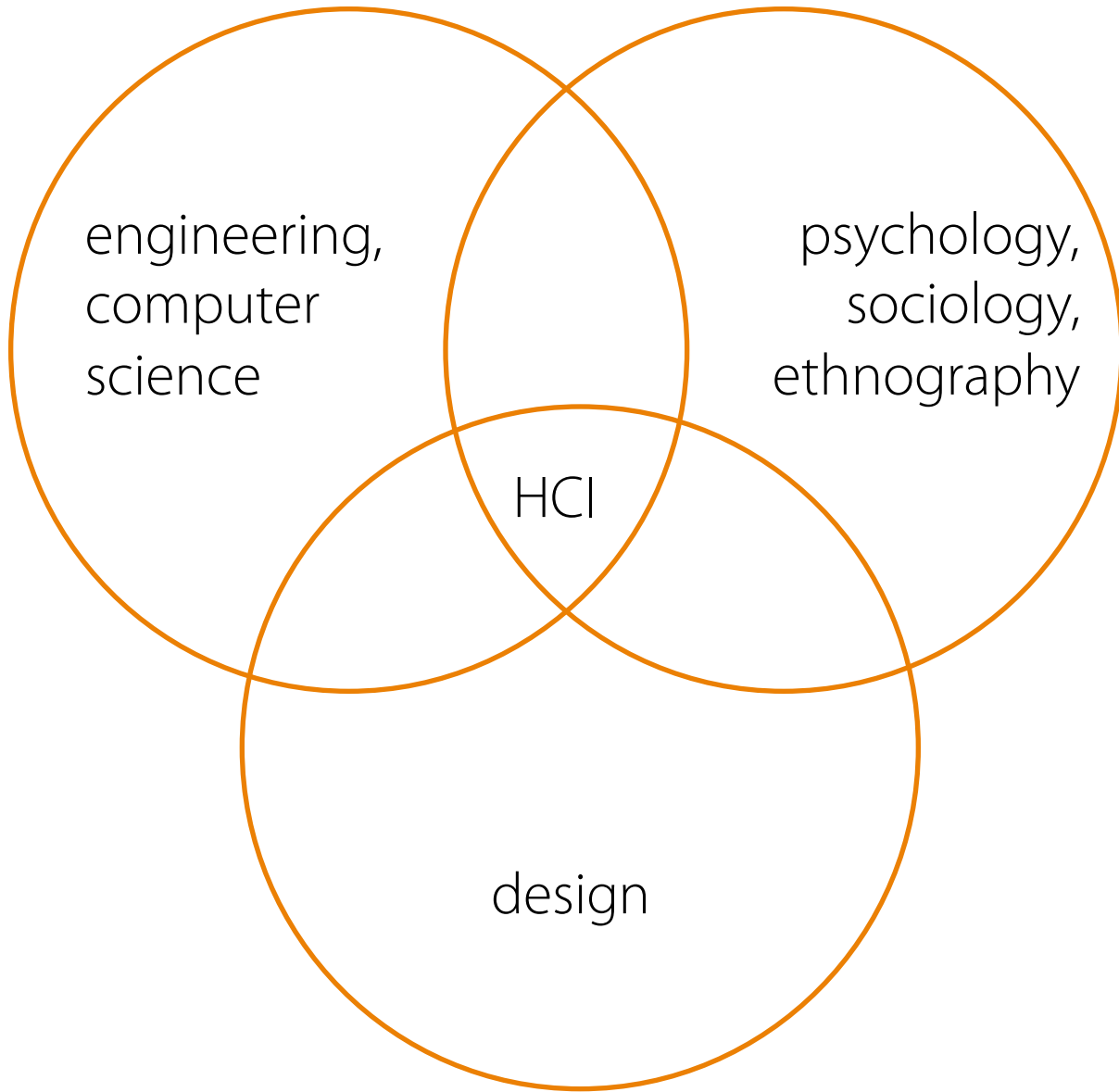
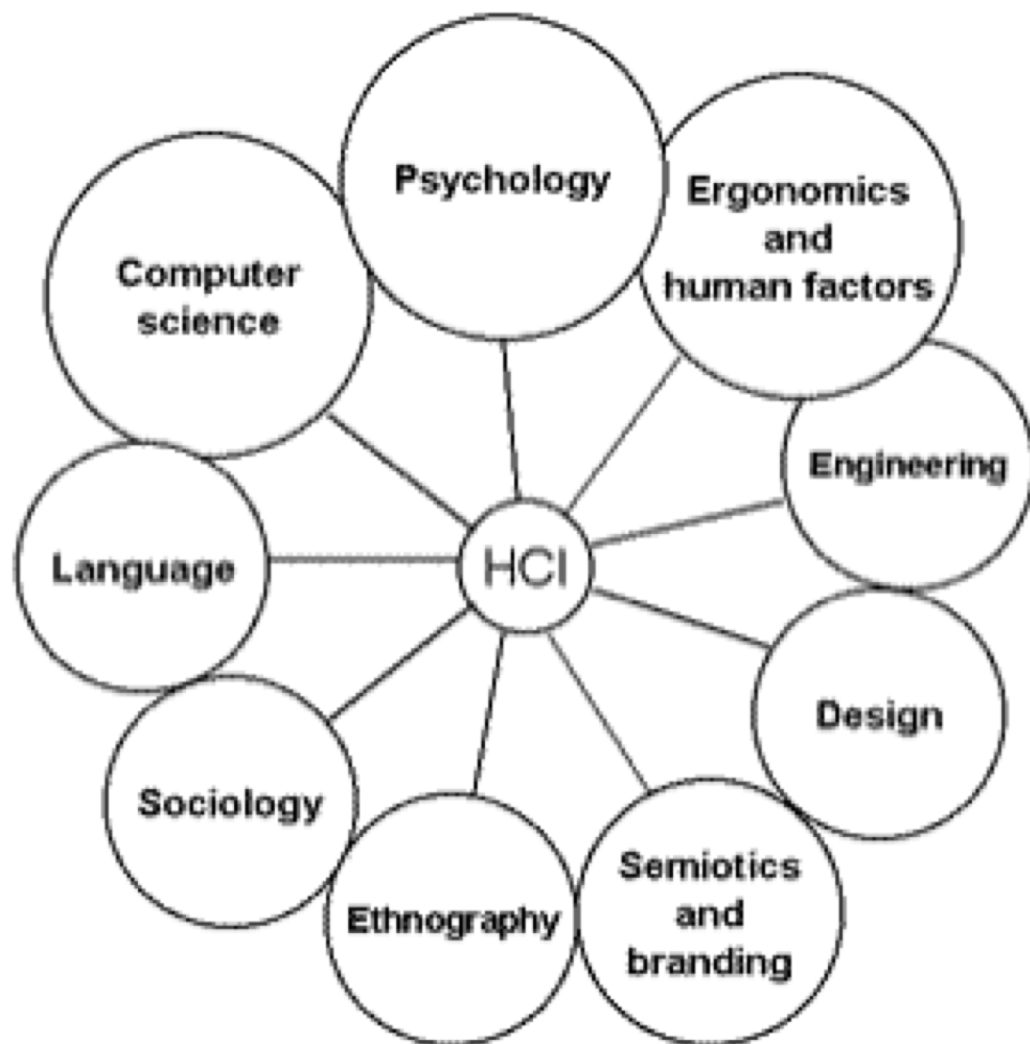


What is
Human-Computer Interaction?





Electrical

First analog computers where operations were directly encoded in its circuits which needed to be configured for each new task.

There were no “users”, only programmers.

Symbolical

First assembly languages appeared that rendered machine level instructions into symbolic expressions.

The actual interaction took still place with encoded punch cards, although the languages could already be considered textual.

Textual

With the appearance of teletype machines and video terminals, the primary form of interaction became textual.

This can be considered the origin of interactive computing - “interactive loop” in which the interaction became an endless back and forth loop of instruction and response between user and system.

Graphical

With the appearance of graphical UIs the interaction moved from the one dimensional stream of characters to a two dimensional space.

The task of managing interaction became the task of managing space.

Tangible

Interaction directly through physical artifacts rather than graphical interfaces or classical input devices

Paul Dourish

Classical theories

Applying basic research.
Cognitive modeling.

Modern theories

Distributed cognition.
Situated action.
Ethnomethodology and
ethnography.
Activity theory.
Grounded theory.

Contemporary theories

Human values.
Research in the wild.
Turn to design, culture, embodiment.

Yvonne Rogers

Fitts Law
GOMS
Visual Perception
Mental Models
Active user
Common Ground
Small Groups
Activity Theory
Distributed Cognition
Embodied Interaction
Community
Emotion
UX

focus on the properties
of specific system
components

focus on tasks at hand

focus on socially and materially
embedded interactions

John M. Carroll

1st Wave

Rigid guidelines.
Formal methods.
Systematic testing.

2nd Wave

Focus on context and groups working with a collection of applications.

Theories: situated action, distributed cognition and activity theory.

Proactive methods: variety of participatory design workshops, prototyping and contextual inquiry, qualitative approaches studying use as it happens.

3rd Wave

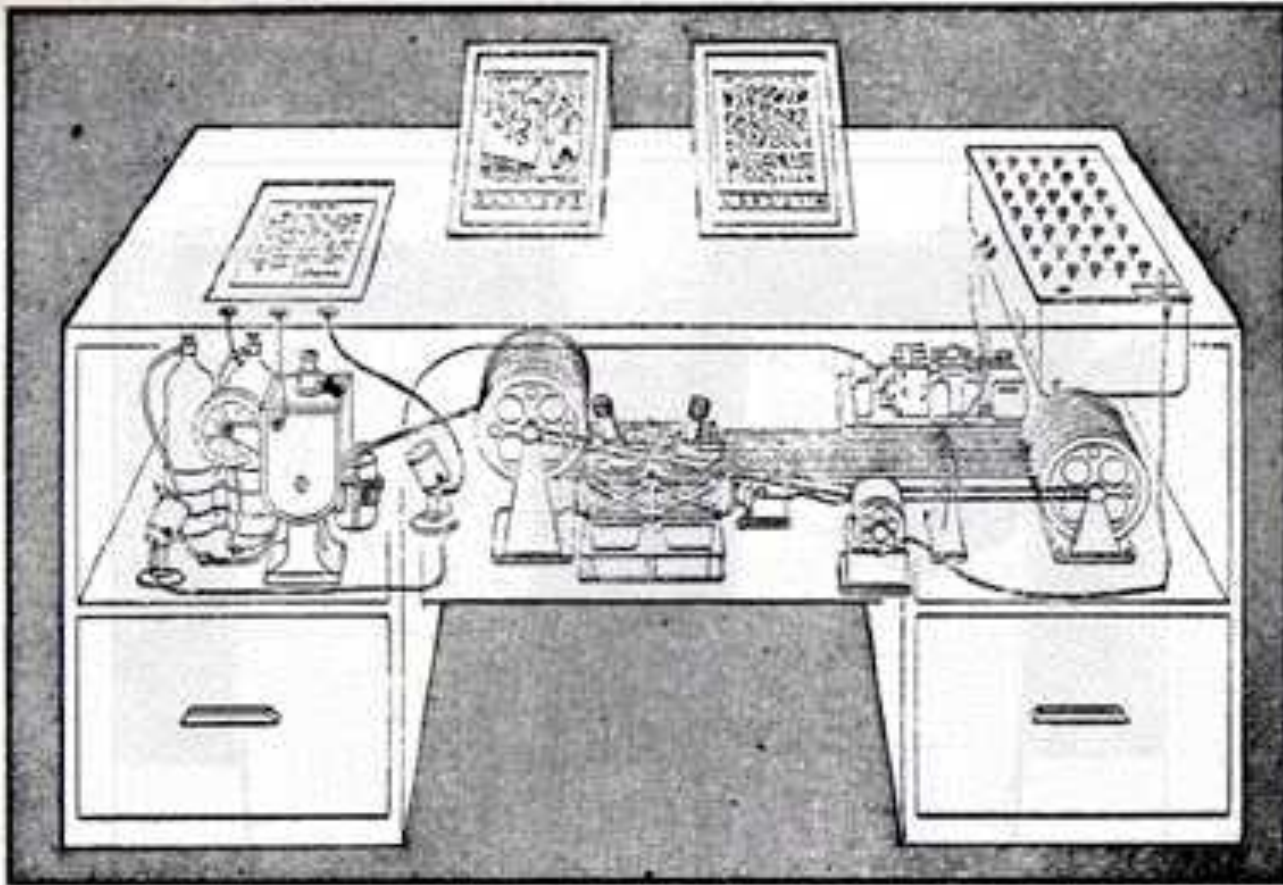
Use of context and application types are broadened. Computers are increasingly being used in private and public spheres. Technology spreads from workplace to homes and everyday lives and culture.

Theoretical focus on aesthetics, cultural level, cognitive expands into emotional, cultural, historical focus on experience.

Methods moved away from commitment to users towards more exploratory take-it-or-leave-it approach where designers seek inspiration from use.

Susanne Bødker

Dawn!

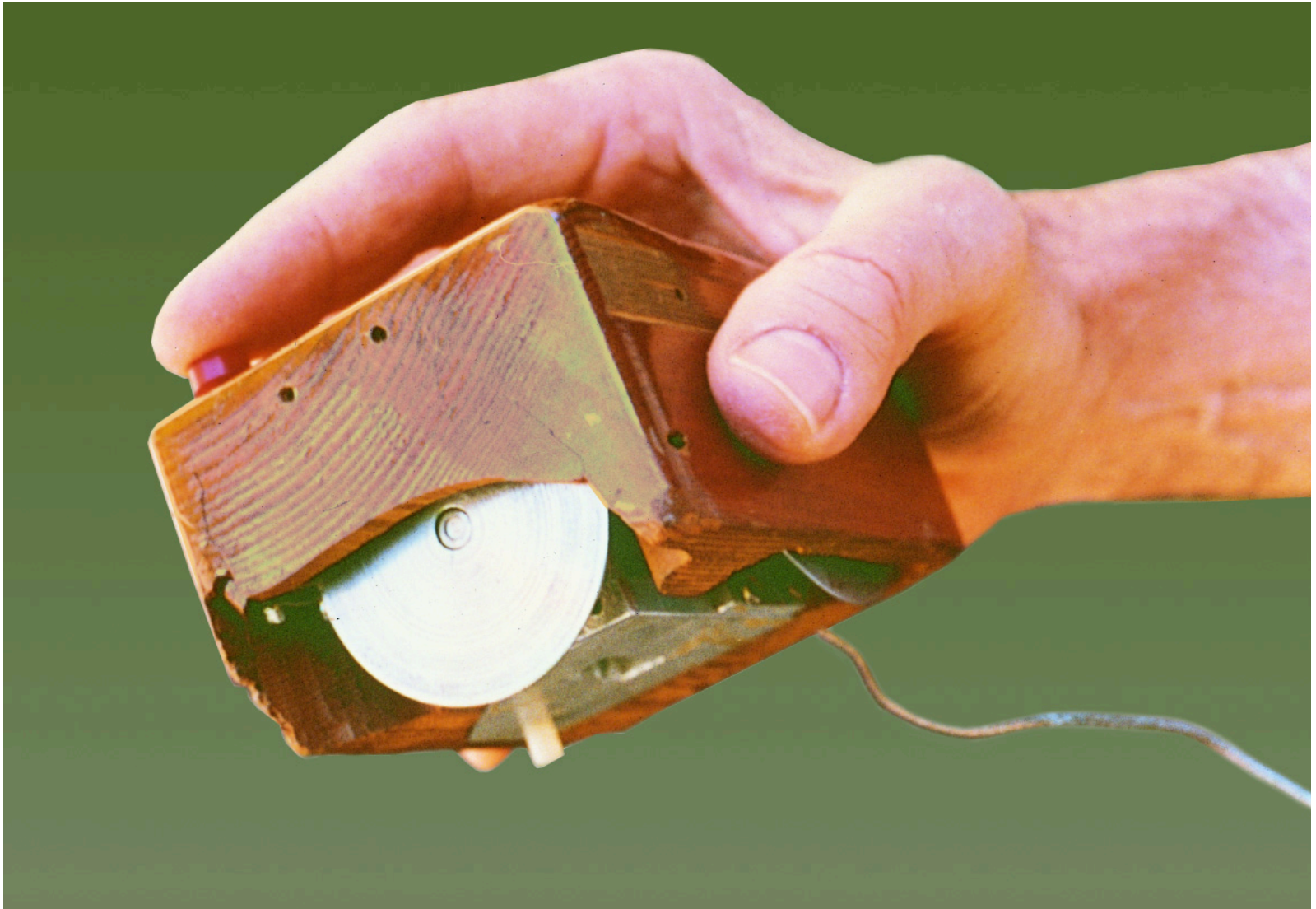


Memex in the form of a desk would instantly bring files and material on any subject to the operator's fingertips. Slanting translucent viewing screens magnify supermicrofilm filed by code numbers. At left is a mechanism which automatically photographs longhand notes, pictures and letters, then files them in the desk for future reference (*LIFE* 19(11), p. 123).

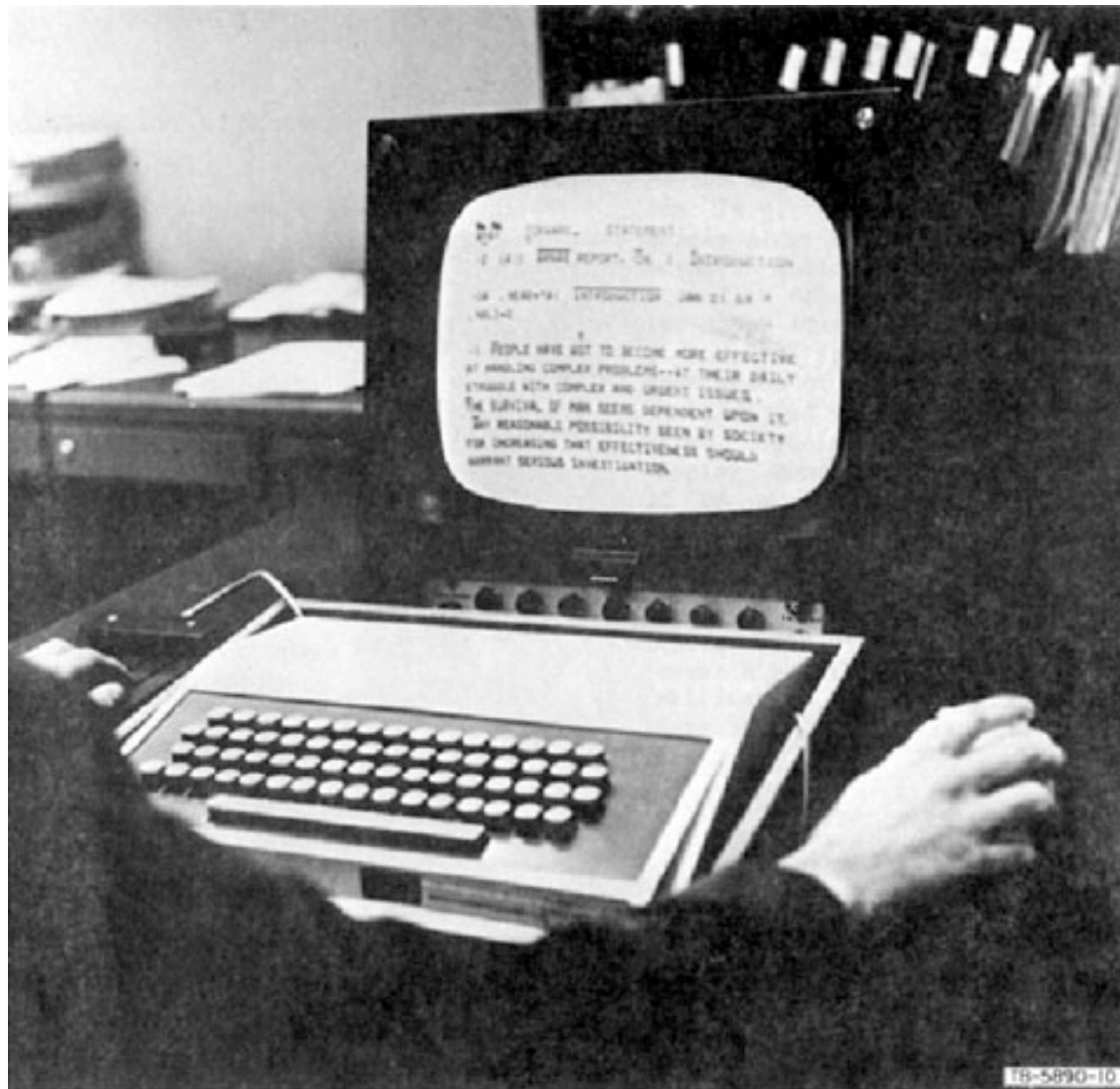
memex design sketch (1945)



SketchPad by Ivan Sutherland at MIT (1963)



first mouse by Douglas C. Engelbard at Stanford (1964)



NLS demo (1968)

First wave!

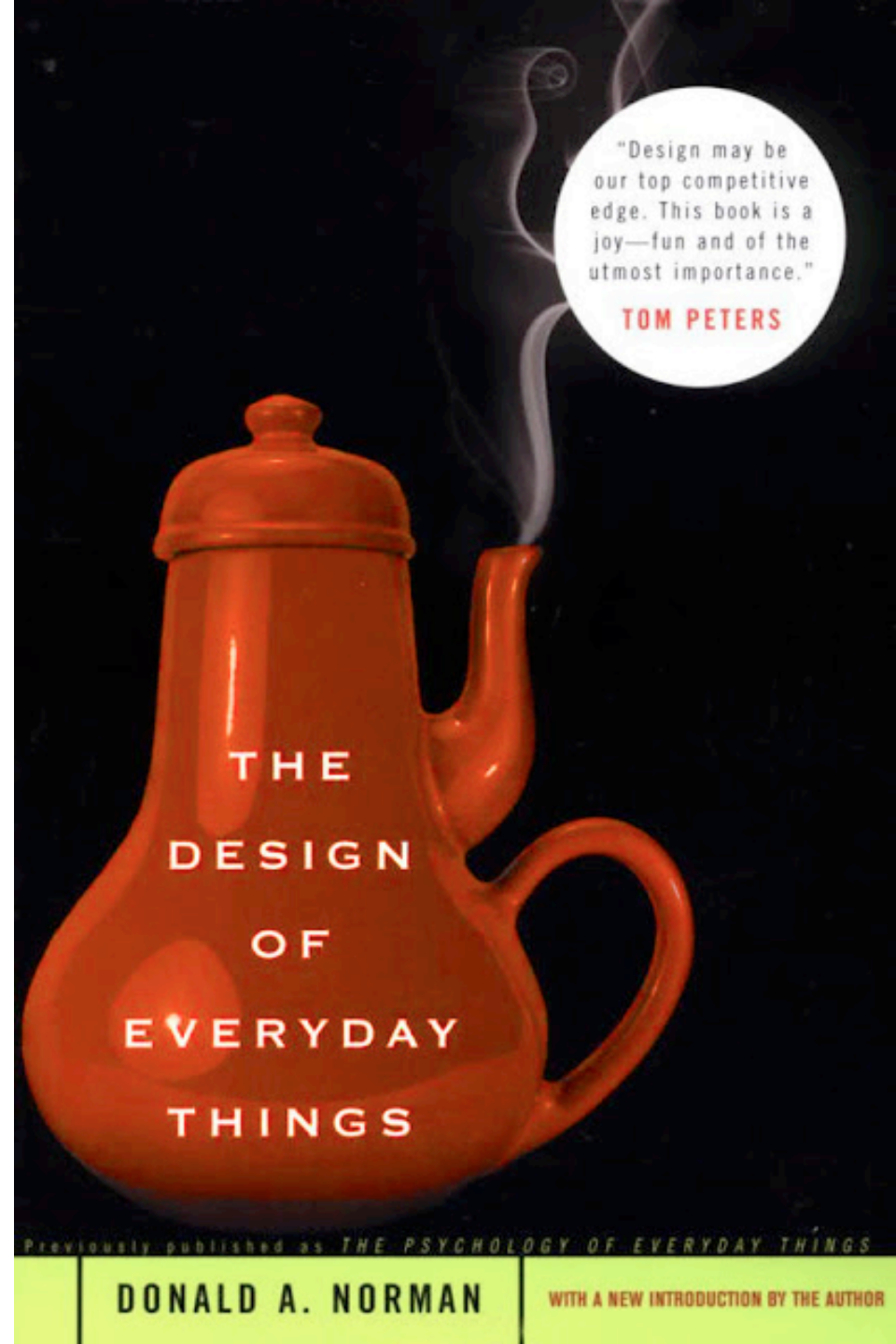
- rigid guidelines
- focus on the ergonomics and human factors
- anthropometry, mainly quantitative
- interaction between a single person and a computer
- lab studies
- task-oriented experiments
- usability testing and experimental psychology



Xerox Star (1981)

1988

Donald Norman's
first book on
user centered design

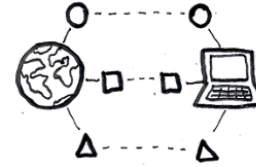


Ten Usability Heuristics by Jakob Nielsen



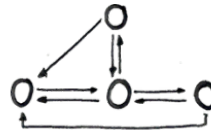
Visibility of system status

Give the users appropriate feedback about what is going on.



Match between system and the real world

Use real-world words, concepts and conventions familiar to the users in a natural and logical order.



User control and freedom

Support undo, redo and exit points to help users leave an unwanted state caused by mistakes.



Error prevention

Prevent problems from occurring: eliminate error-prone conditions or check for them before users commit to the action.



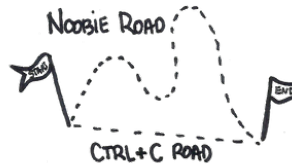
Aesthetic and minimalist design

Don't show irrelevant or rarely needed information since every extra elements diminishes the relevance of the others.



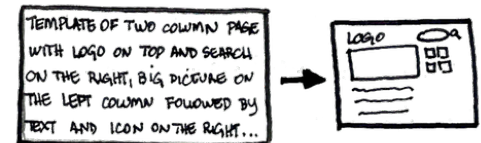
Consistency and standards

Follow platform conventions through consistent words, situations and actions.



Flexibility and efficiency of use

Make the system efficient for different experience levels through shortcuts, advanced tools and frequent actions.



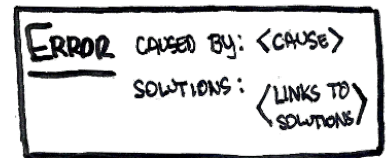
Recognition rather than recall

Make objects, actions, and options visible at the appropriate time to minimize users' memory load and facilitate decisions.



Help and documentation

Make necessary help and documentation easy to find and search, focused



Help users recognize, diagnose, and recover from errors

Express error messages in plain language (no codes) to indicate the problem and suggest solutions.

1995

Jakob Nielsen's 10 general principles for interaction design called "heuristics" as they are broad rules of thumb and not specific usability guidelines

Some fundamental problems:

- experimental setups capable of explaining behaviors in constrained situations
- difficult to generalize to new contexts and tools
- ecological considerations
- impossible to analyze group behavior

Second wave!

- “from human factors to human actors” (Bannon, 1986)
- focused on theory on work settings and interaction within communities of practice
- situated action, distributed cognition and activity theory as important sources of theoretical reflection
- field studies, more and more qualitative
- context based
- rigid guidelines, formal methods, and systematic testing exchanged for proactive methods such as participatory design workshops, prototyping and contextual inquiries

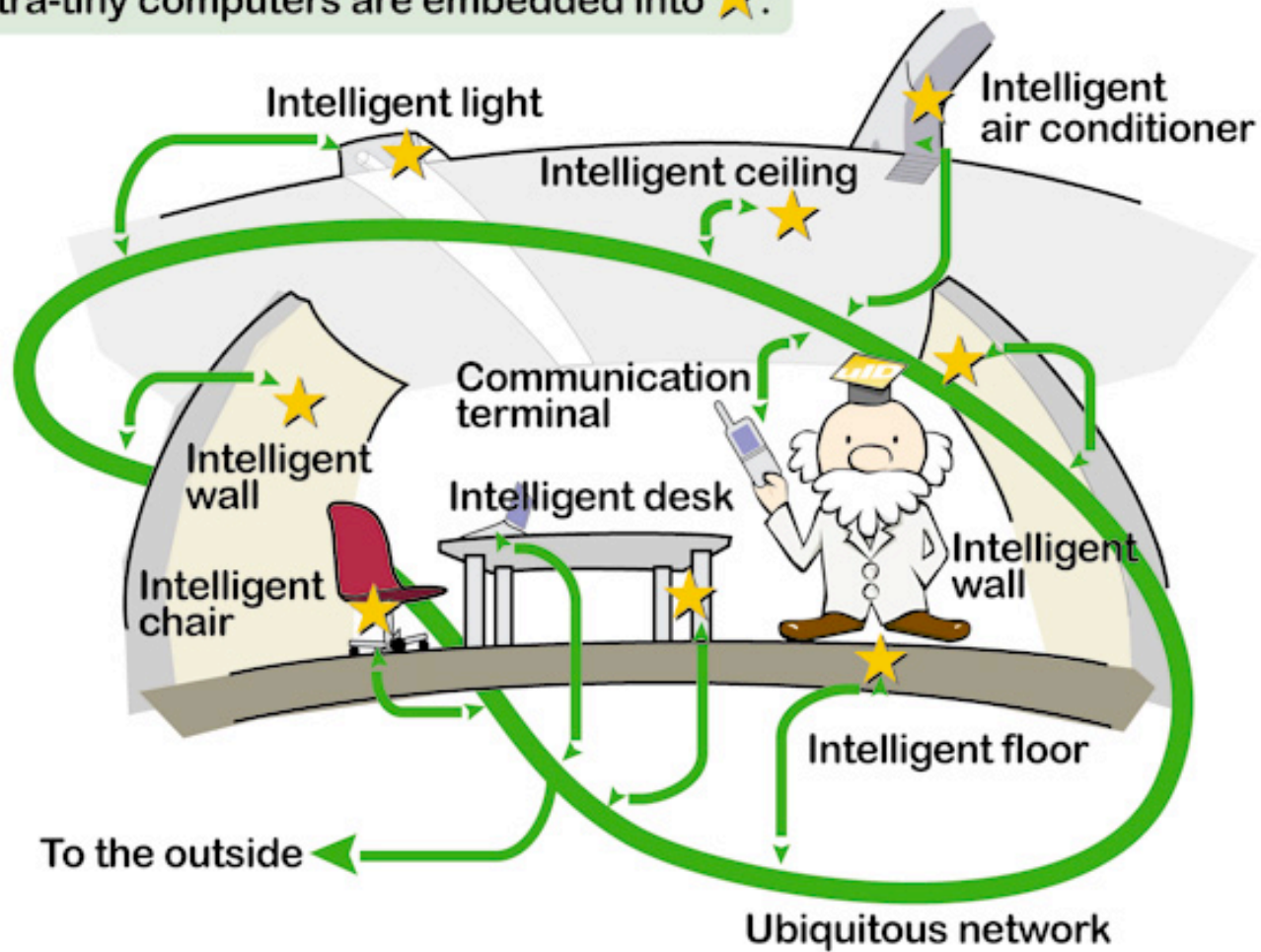


Kitchen stories style of research

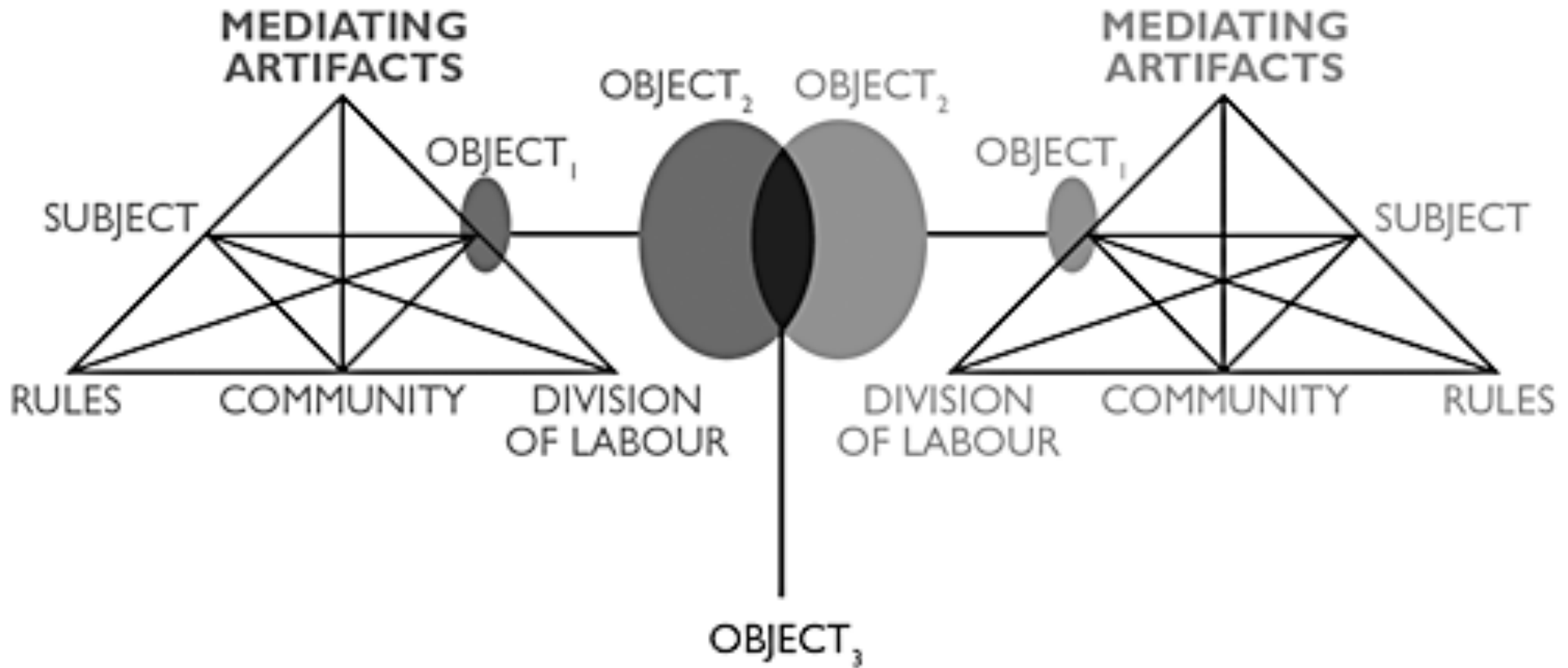


World Wide Web (1990)

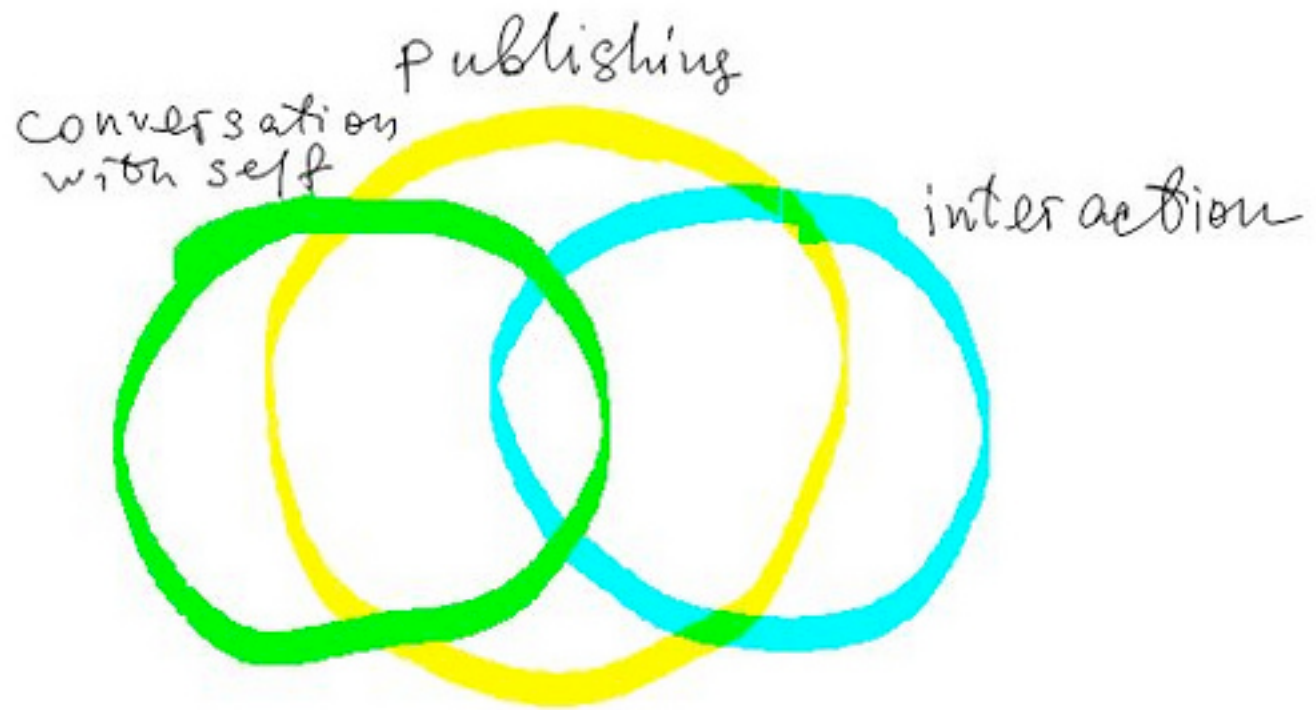
Ultra-tiny computers are embedded into ★.



Ubiquitous Computing, Mark Weiser (1991)



basic structure of human activity by Engeström (1987)



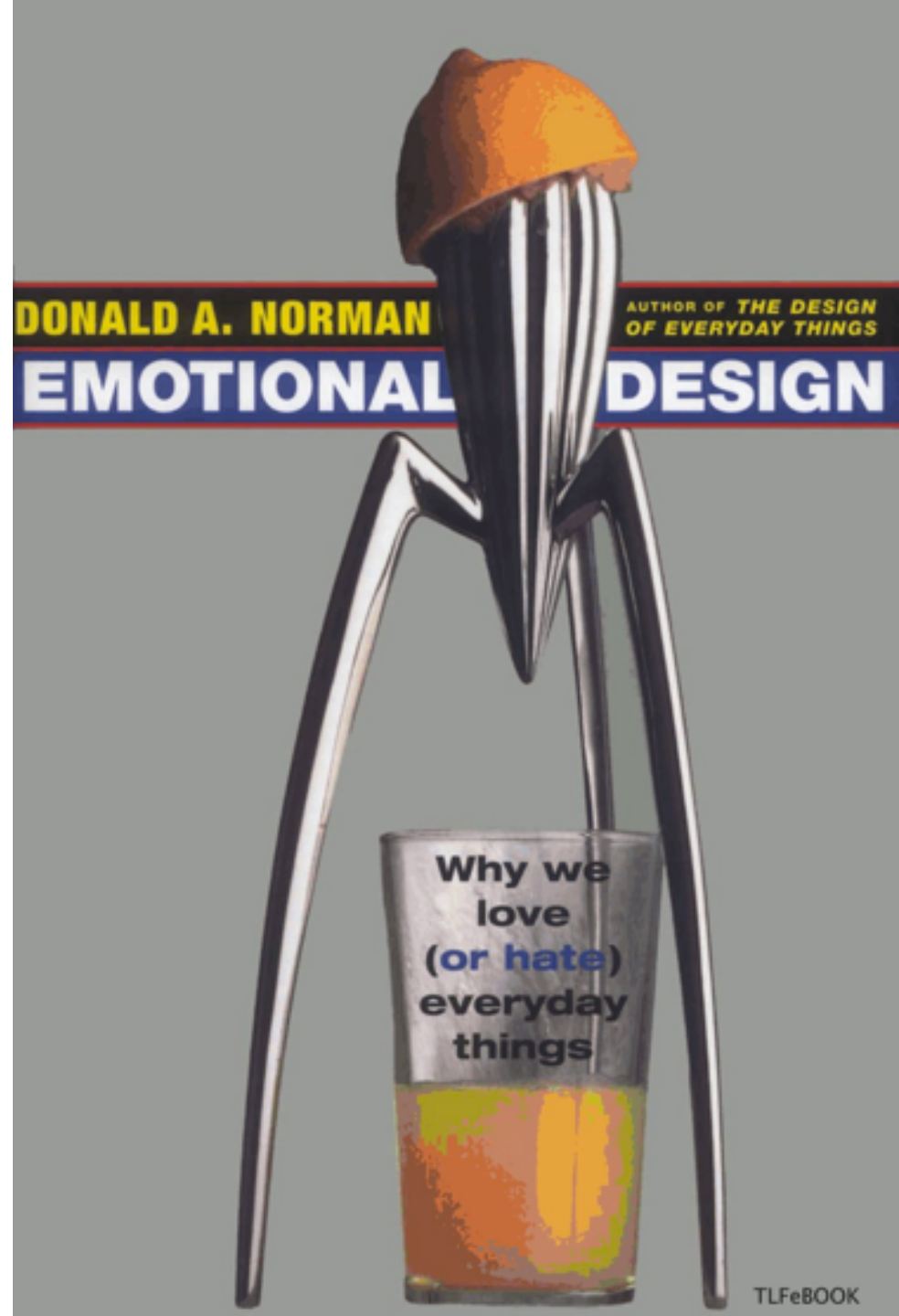
the notion of boundary objects

Third wave!

- expanding the reach to homes and larger environments
- wide technology application
- working on emotions and experiences
- users as active participants and not passive subjects
- importance of cultural differences
- following a solid design process
- non-rational thinking supported (intuition, talent, etc.)
- design as a way to innovate
- phenomenology

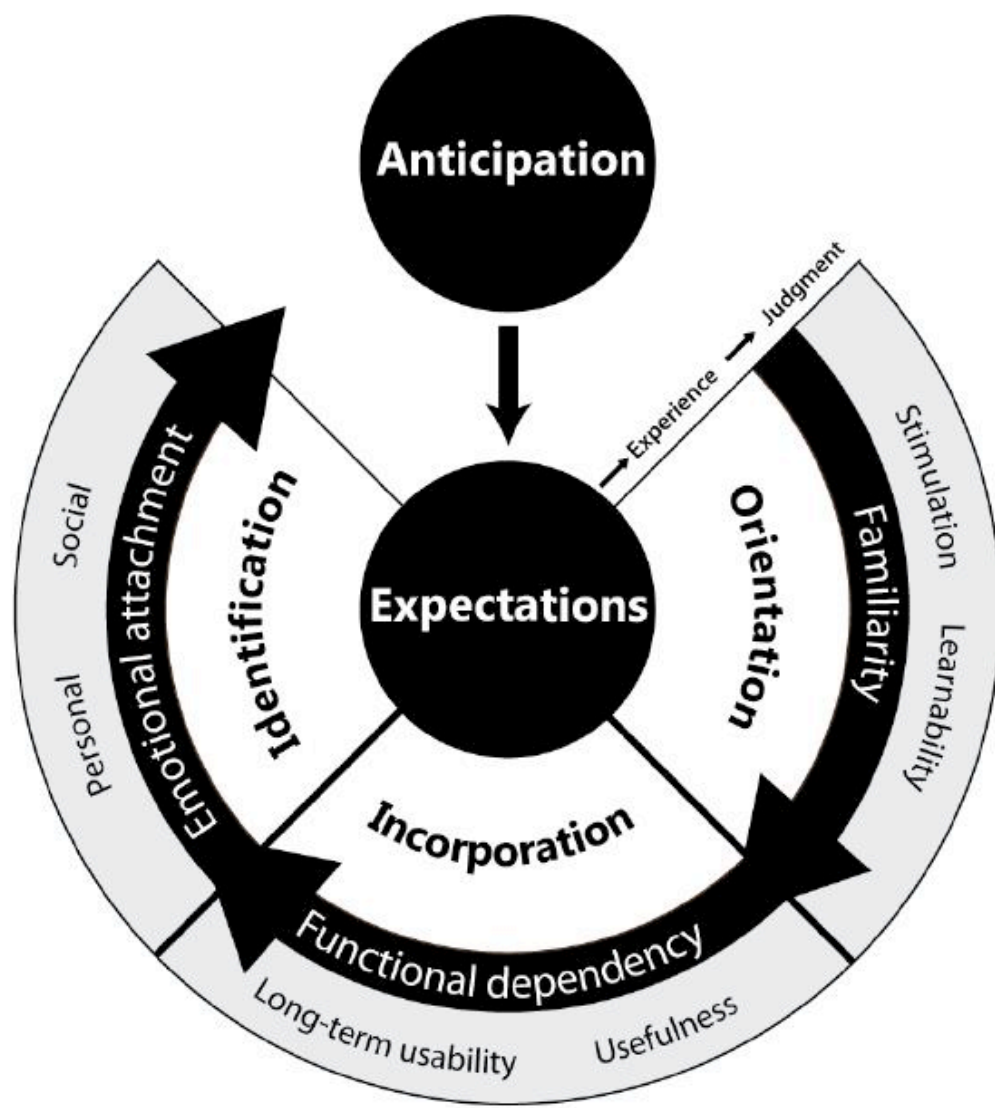
2005

Donald Norman's book
„Emotional design“





iPhone



UX over time

Jordan

PLEASURE

Hassenzahl

HEDONICS

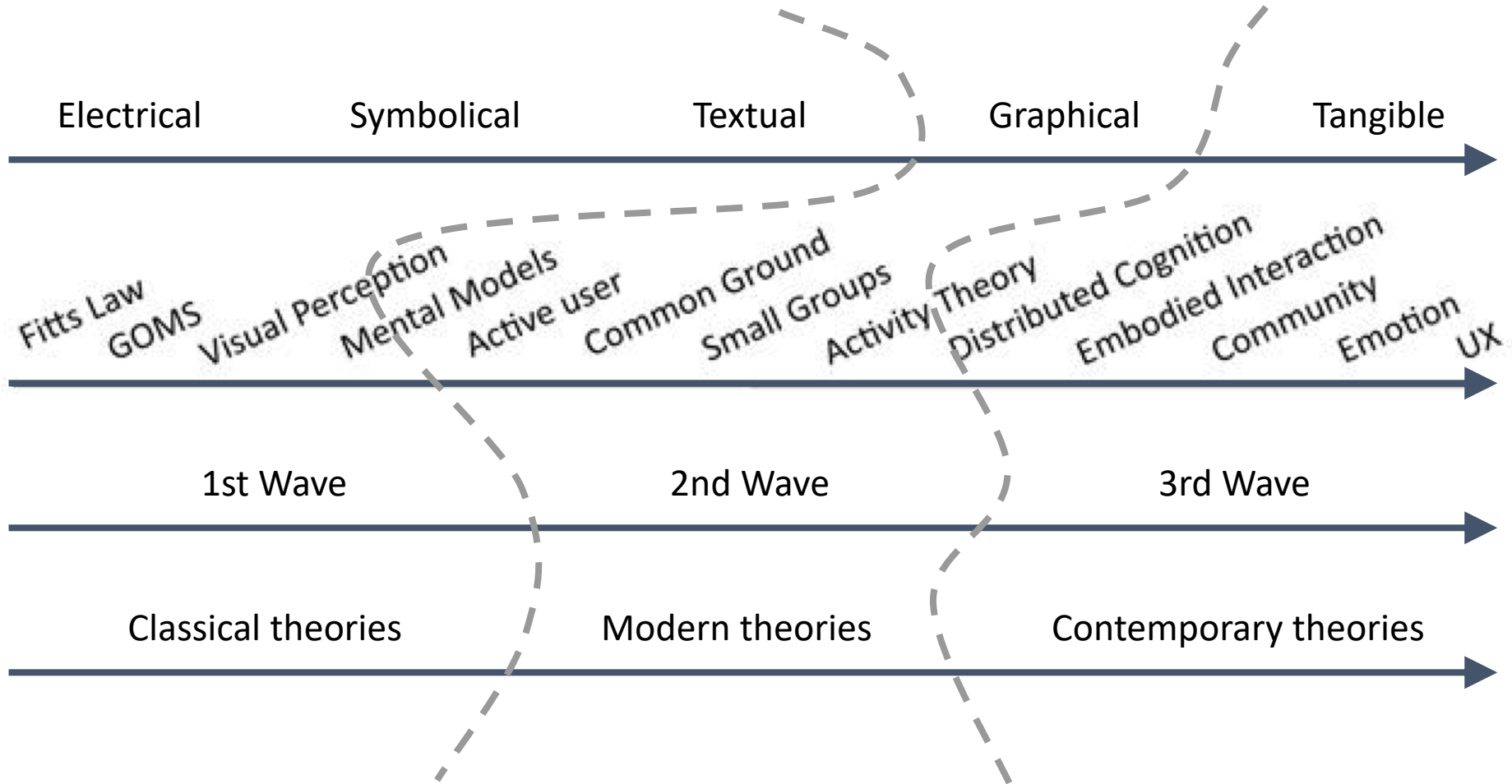
Blythe e.a.

FUNOLOGY

Cockton

VALUE

perceptions and



A large, stylized yellow question mark is centered within a yellow hexagon. The question mark is white with a yellow shadow, giving it a 3D appearance. The hexagon is also yellow and has a slight drop shadow.

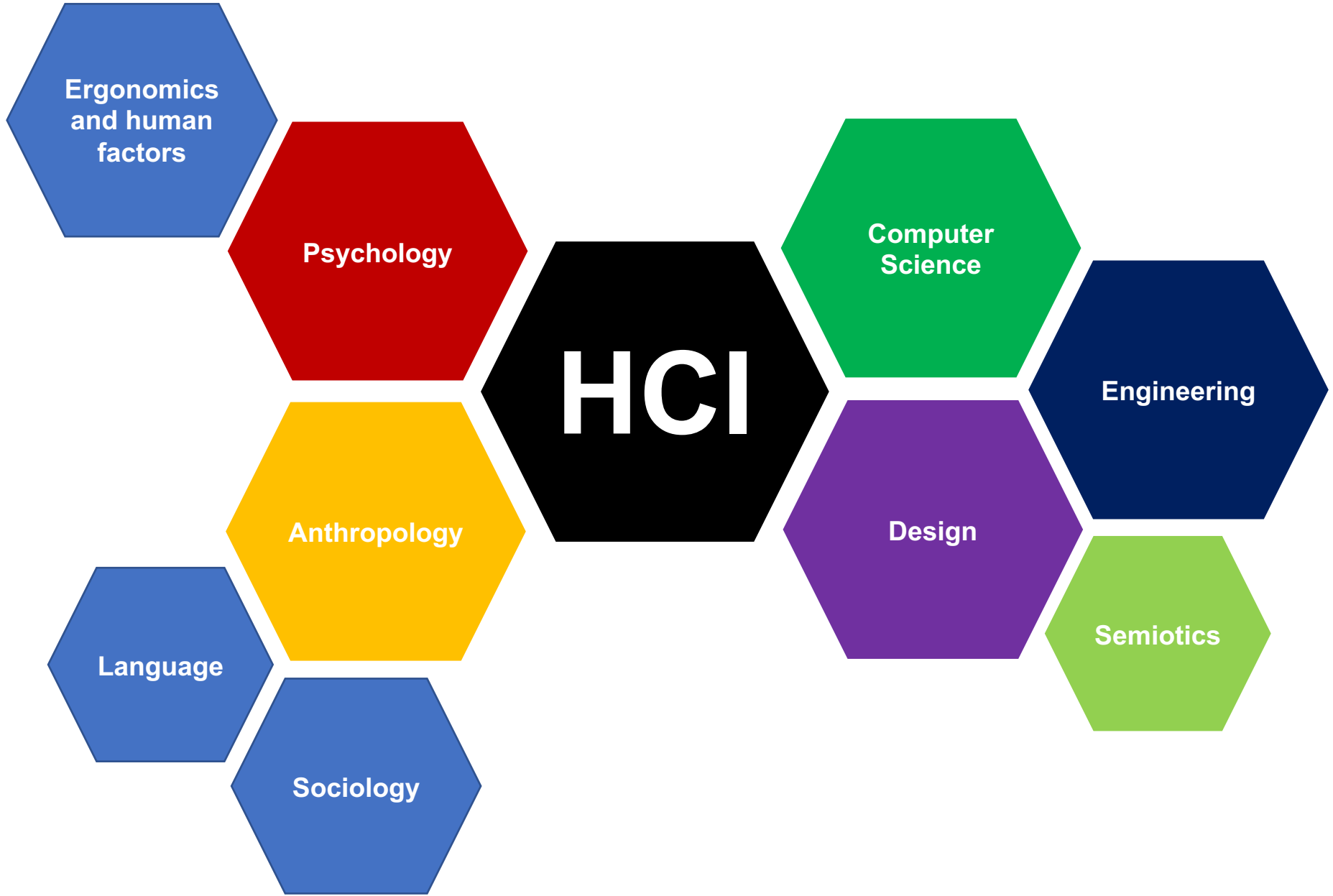
Where can we learn more
about this?



With our masters in
Human-Computer
Interaction



We emphasize technology
for the **benefit of people!**



Ergonomics
and human
factors

Psychology

Computer
Science

Engineering

HCI

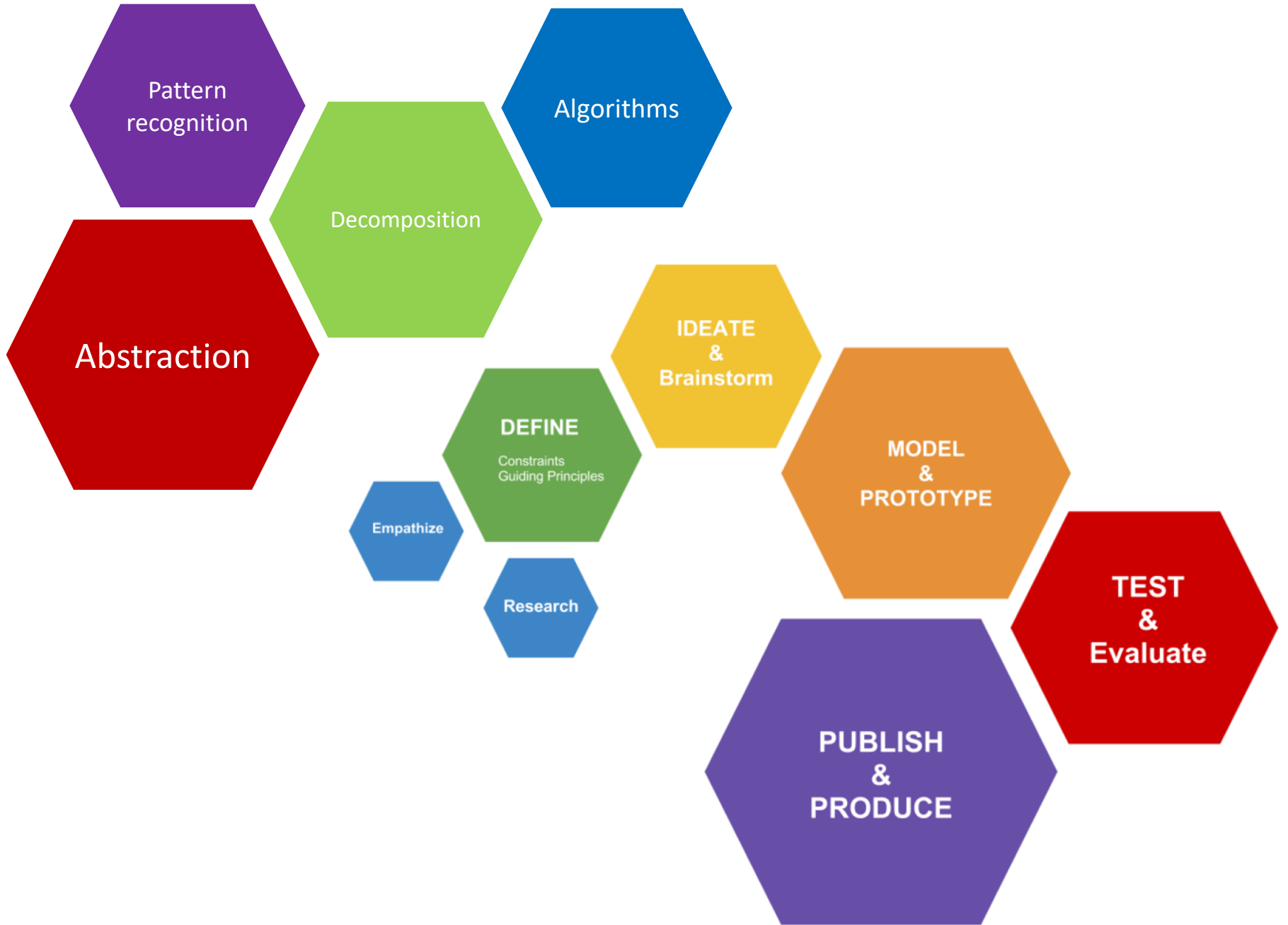
Design

Semiotics

Anthropology

Language

Sociology





WE WANT TO KNOW YOU IN 5 STEPS

START
SKIP

SIGN UP FOR AN ACCOUNT

☺ [] [] [] [] []

1 2 3 4 5

YOUR PROFILE IS BEING CREATED

JUST A MOMENT.

SEND MAIL

NEXT

FIRST USE SCREEN



DAY 1



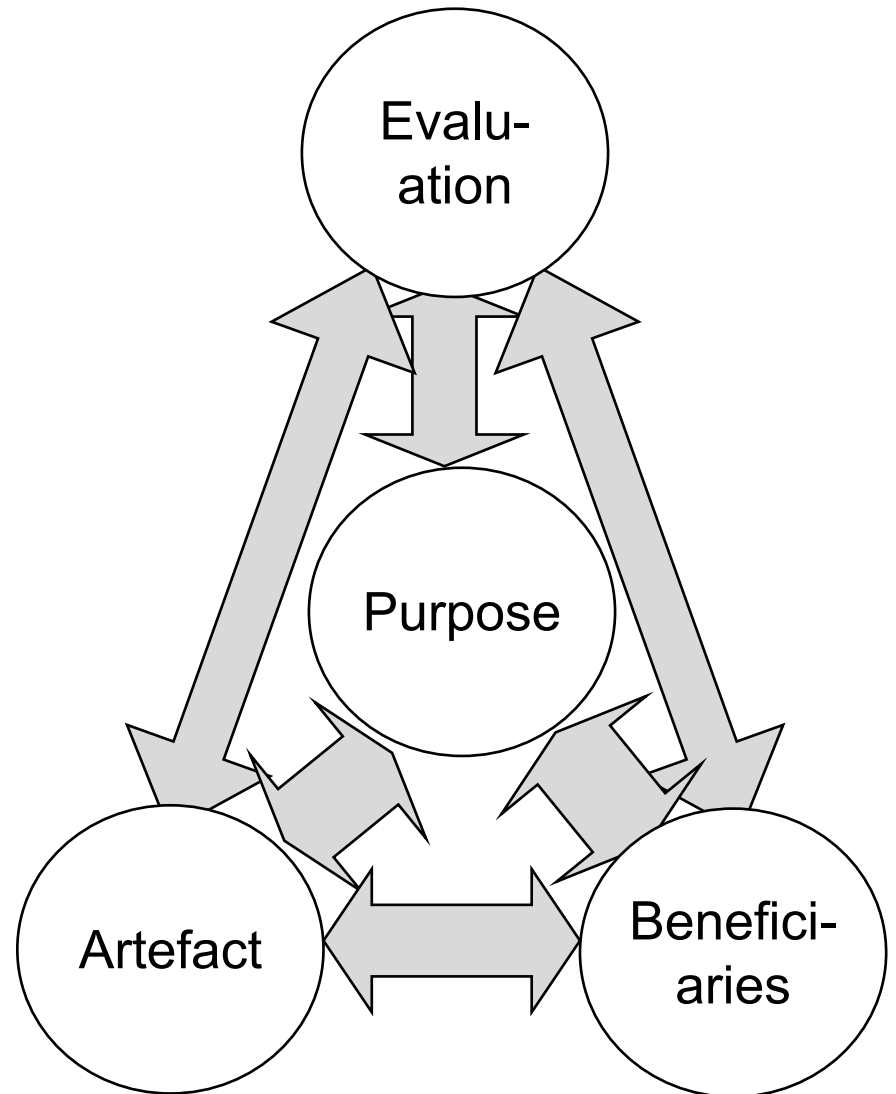
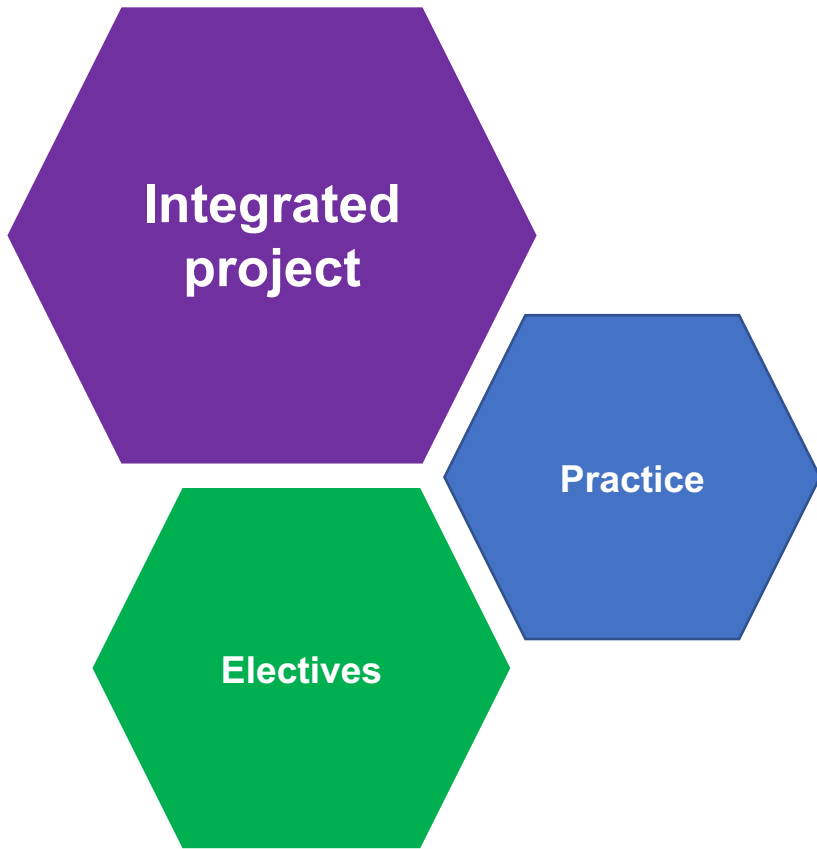


Foundations

Electives

Harmonization





Specialization

Studies
abroad

Free
electives



(Cartoons by S. Iwasawa from Pfeifer & Bongard: How the body shapes the way we think, 2007)

**Master
thesis**

**Dual
supervision**

**Applied and
basic
research
combined**

- Interaction aesthetics
- Tangible interfaces for music making
- Distributed music making
- New media art
- Eye-tracking and user experience
- Trust and engagement
- Wearables and well-being
- User-modeling and adaptation strategies
- Flow, gameplay and electroencephalograms

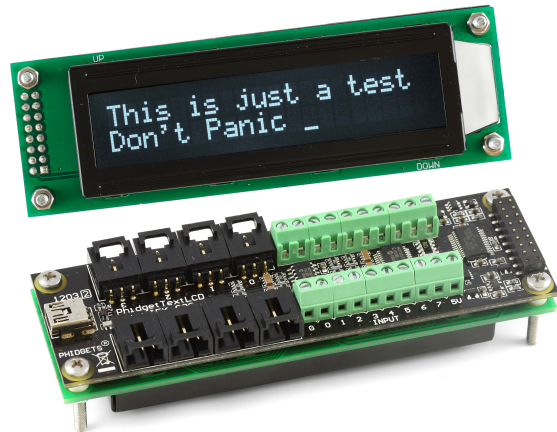
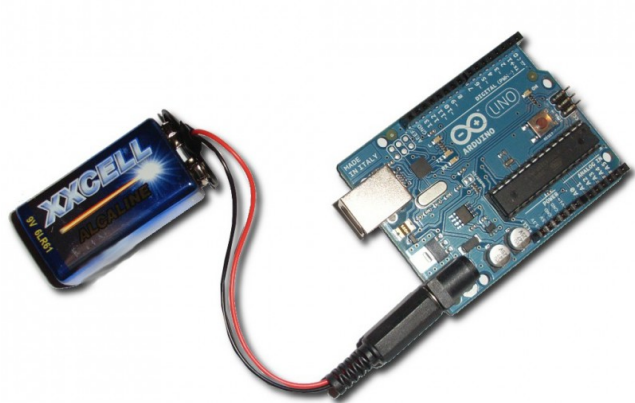
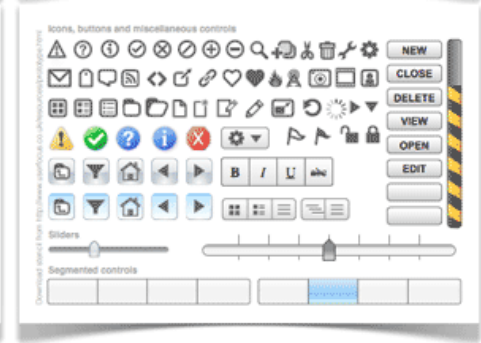
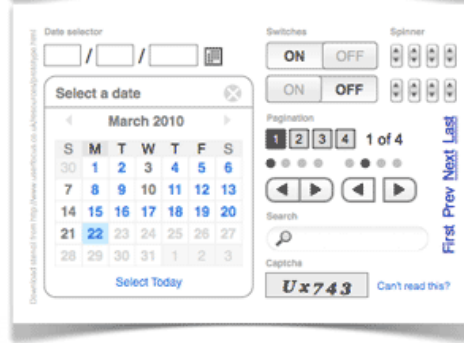
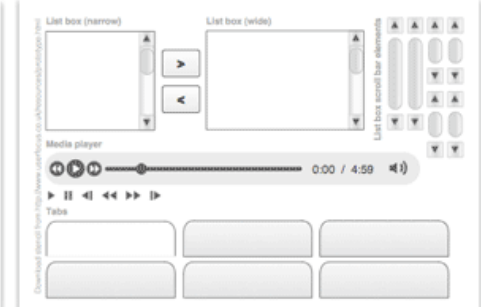
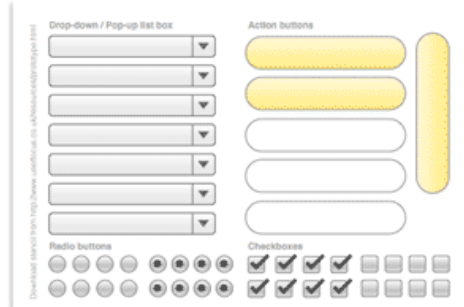
**User
experience
lab**

**Interaction
design lab**

**Software
lab**

**Games
lab**

**Hardware
lab**











Future

2017 2018 2019 2020 2021 2022 2023 2024 2025 2026
2018 2019 2020 2021 2022 2023 2024 2025 2026
2019 2020 2021 2022 2023 2024 2025 2026
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2025 2026

Business Analyst, Chief Experience Officer,
Experience Manager, Head of Online
Channels, Information Architect, Interaction
Designer, Interface Designer, Marketing
Manager, Product Manager, Project Manager,
Usability Analyst, Usability Consultant, User
Experience Architect, User Experience
Designer, User Interface Designer, User
Researcher, Visual Designer

Graduates are also able to follow
doctoral studies in Tallinn University's
School of Digital Technologies
and elsewhere in the World!

A large, stylized yellow question mark is centered within a yellow hexagon. The question mark is white with a yellow shadow, giving it a 3D appearance. The hexagon is a solid yellow color.

But...

if we want to try it out before
diving into a masters?




Then take our course in
Experimental Interaction Design



winterschool.tlu.ee

summerschool.tlu.ee



Or attend our
World Usability Day



THINK
11



Coming on 2.11.2018

wud.tlu.ee



**That's
it!**