

It probably won a prize

- Aim
 - To be able to analyse and compare the designer and the user models of devices

**Technological aspects of
Donald Norman:
The Design of Everyday Things**
by
Jens Kaasbøll

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Qualities of devices

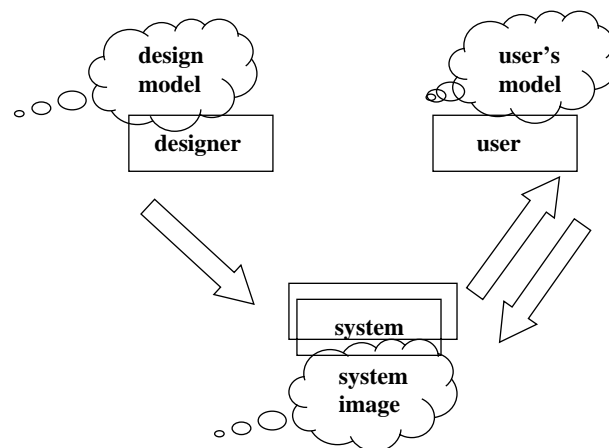
- Aesthetic
 - Pleasing to look at and sense in general
- Technologic
 - Adhering to accepted principles of good technical solutions
 - Simple manufacturing
- Learnability
 - Promotes quick learning
- Usability
 - Causing desirable effects
- Durability
 - Tolerates long term intended use
- Robustness
 - Tolerates improper use
- Safety
 - Not causing undesirable effects

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Conceptual models



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When simple things need instruction, it is a certain sign of poor design

- Visibility
 - The shape of the device signals its proper use
 - What about blind people?
- Mapping
 - Immediately understandable relation between symbols and operation
 - Iconic symbols
 - Visual similarity
 - Conventional symbols
 - Learned system of representation
 - Arbitrary letters and shapes
- Feedback
 - The device signals the result of the operation

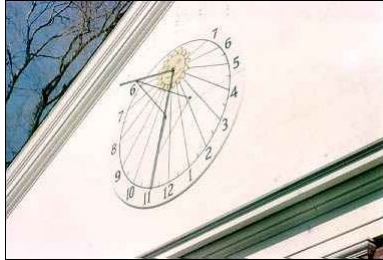
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Mappings should be unambiguous



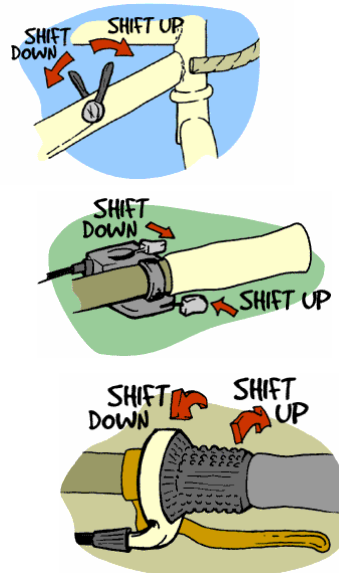
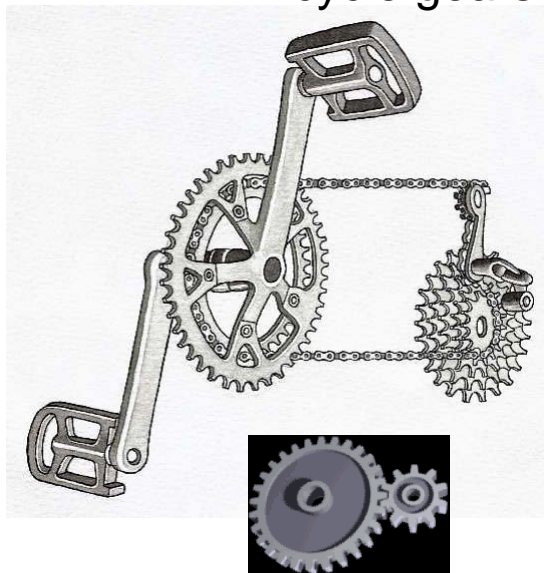
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Mappings (clockwise)



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Bicycle gears



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Changing gears

Design model 1950

Slower rotation – Larger cogwheel – pulling the wire (hard)

Faster rotation – Smaller cogwheel – pushing the wire (easy)

Design model 1990

Slower bicycle speed – smaller gear number

Faster bicycle speed – higher gear number

Slower rotation – Larger cogwheel – pulling the wire (hard)

Rear wheel 7 → 1

Crank pedals 1 → 3

Faster rotation – Smaller cogwheel – pushing the wire (easy)

Rear wheel 1 → 7

Crank pedals 3 → 1

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User model



- **Slower bicycle speed**
Left hand up
Right hand down (hard)
- **Faster bicycle speed**
Left hand down (hard)
Right hand up

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How the designers might believe that users see



or



11



Fixed gears



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What are the consequences of the choice of

| | Material | Structure | Mechanics |
|--------------|----------|-----------|-----------|
| Aesthetic | | | |
| Technologic | | | |
| Learnability | | | |
| Usability | | | |
| Durability | | | |
| Robustness | | | |
| Safety | | | |

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Preventing the user from making mistakes

- Lockin
 - Keeping a process going
 - Preventing prematurely closure
- Lockout
 - Prevents an event from occurring

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Interlock Forcing a sequence

- Open cover
- Unscrew lid
- Insert nozzle in tank opening
- Hang up nozzle
- Insert lid
- Close cover
- Start engine and drive away

No interlock

- Open cover
- Unscrew lid
- Put tank lid on car roof
- Insert nozzle in tank opening
- Hang up nozzle
- Close cover
- Start engine and drive away

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How does an ATM guard against user errors?



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Controlling temperature



- Designer and user models
- Mappings
 - Type of symbols
- Lockins – lockouts
- Interlock



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Oven

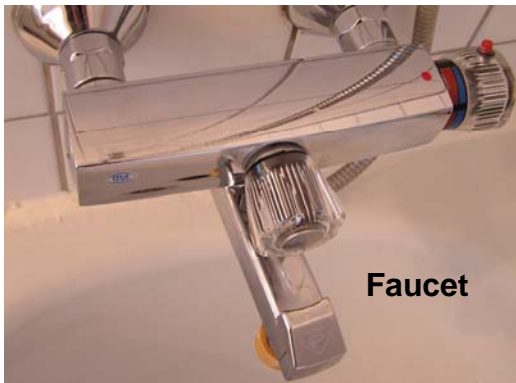


Hotplate



Heater

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Faucet



Iron



Washing machine