Everyday Robotics

robots as everyday objects

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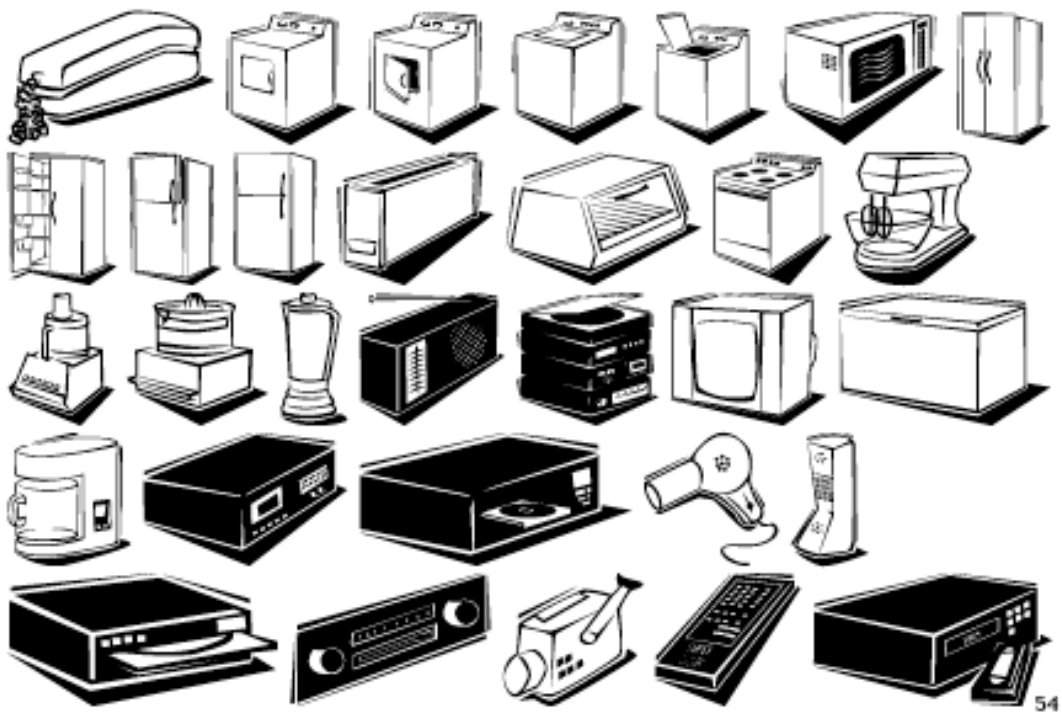
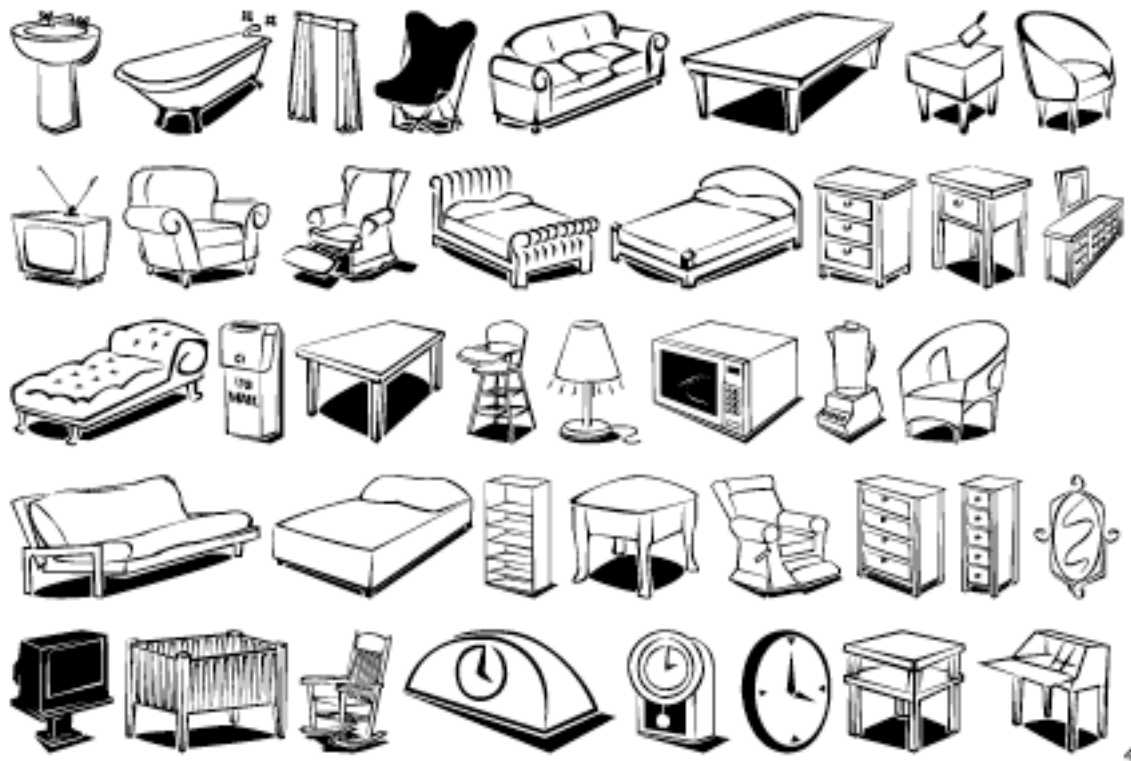
Q1

What do these things have in common?






STAPLER

They have won the competition!

They have found a niche in our home

Some are **ugly**

Some are **nice**

Some have a **clear function**

Some are **useless**

Some are attached with **souvenirs**

Others can be easily **thrown away**

Some requires hours of **training**

Others are **straightforward** to use

Some are **cheap**

Some are **precious**

Q2

Why are we not living yet with robots?

(c) Philippe Constantin

Technological reasons...

Problems are **hard**

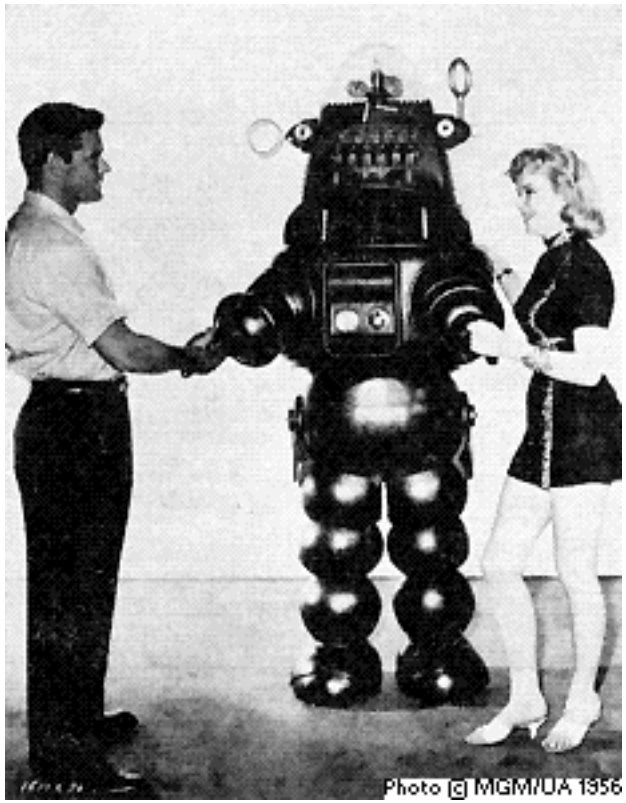
Wrong technological route

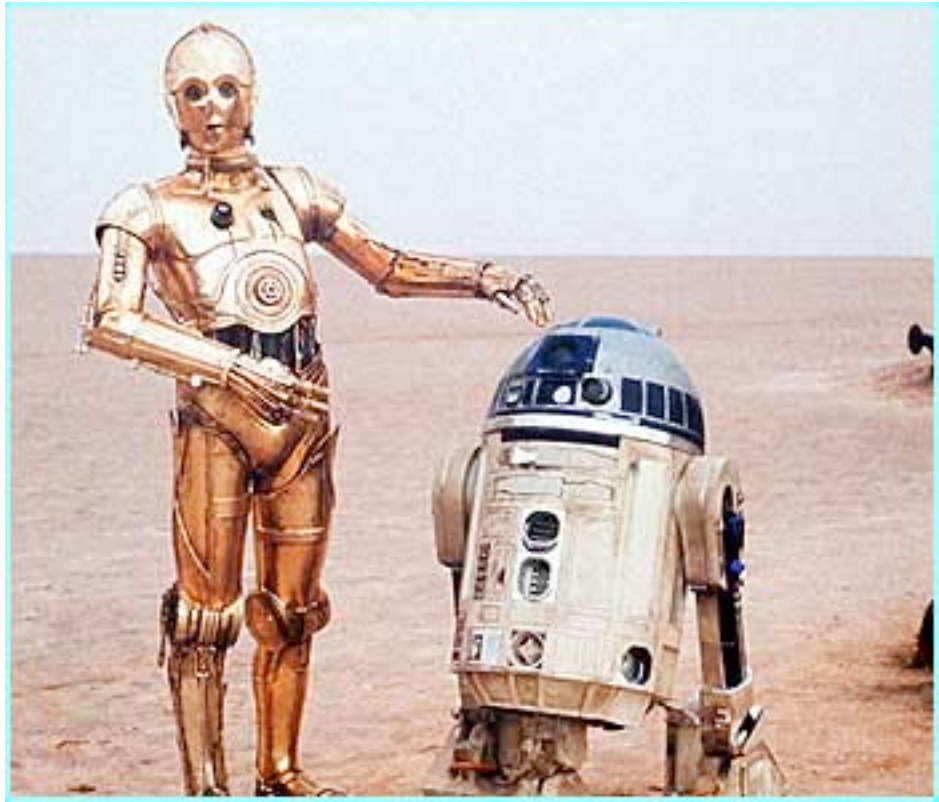
But also ...

Not a sufficient effort to think what would **really** be the place of robot in our house.

Most of time, the imagination of the engineer seems to be trapped by representations coming from **Science-Fiction.**

The science-fiction dream





The science-fiction dream

Robot maids ...

Universal remote controllers ...

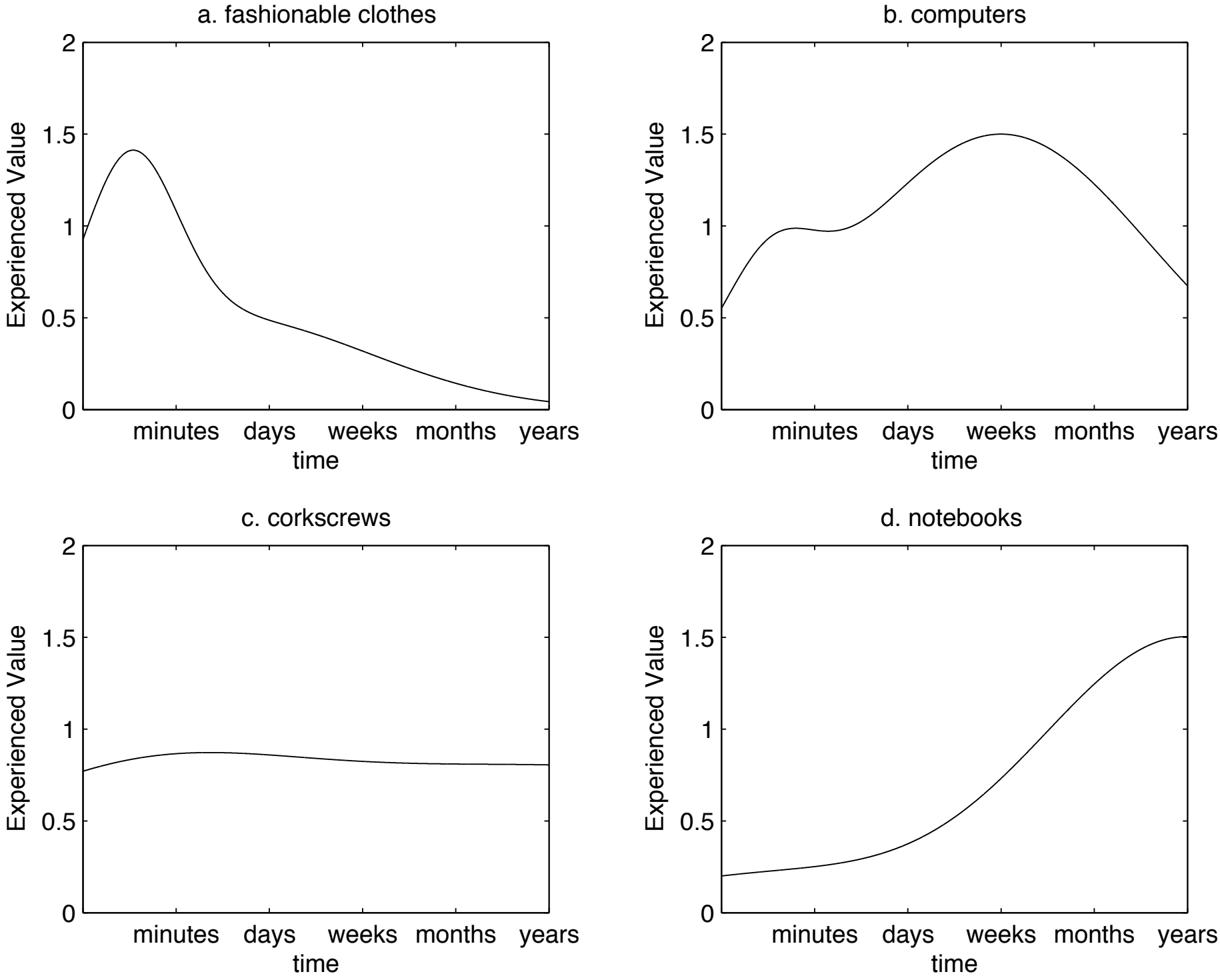
Versatile companion that will assist and comfort us in everyday situations ...

Would it be **really** enjoyable to have such robots in our house?

A lesson from the world of **design**.

Not only think in terms of potential applications, but think in terms of potential **experience.**

Value Profiles


a. fashionable clothes
b. computers
c. corkscrews
d. notebooks
Experienced Value
0
0.5
1
1.5
2
minutes
days
weeks
months
years
time

A 7 dimensional grid of analysis

Versatility: How specialized is the object? Does it have a fixed, well-defined, closed functionality (e.g. a corkscrew)? Or is it intrinsically opened to various usages (e.g. a computer)?

Social orientation: Is the object targeted for individual usage (e.g. a mirror)? Or is it a mediator towards interindividual interactions (e.g. a phone).

Network factor: Does the experienced value depends on the quantity of objects already present in the society? In some case, the more people use the object, the more it will be valuable for me to use it (e.g. a fax machine). In others, if too many people use the object, my experience with it will be less interesting (e.g. a Rolex).

Investment: Some objects need long-term investment in order to lead to an enjoyable usage (e.g. a piano), others are immediately intuitive to use (e.g. a lamp).

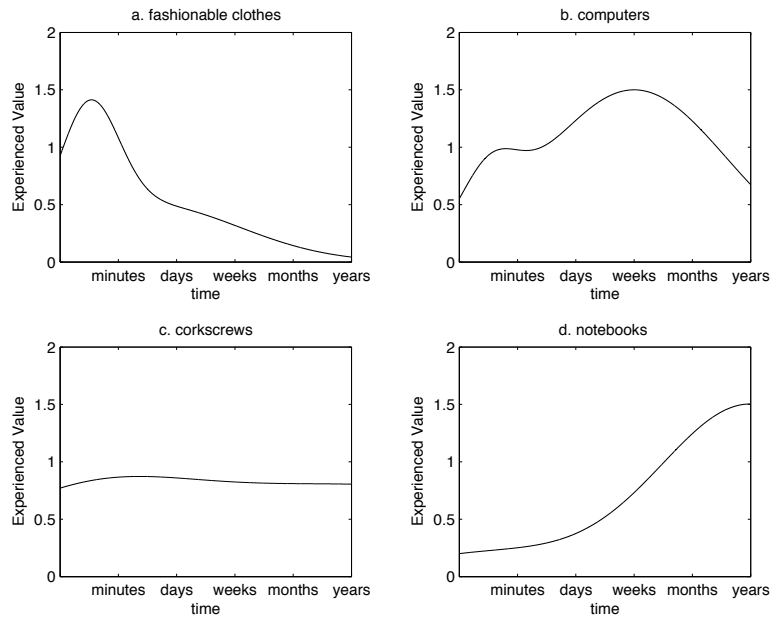
Historical capacity: Some objects are likely to be associated with souvenirs, or capable explicitly capturing parts or our life (e.g. a favorite pencil, preferred clothes, photos). Others offer no support for such memories.

Personalization: Some objects can be explicitly customized (e.g. an organizer) or become adapt to their user (e.g. clothes). Others stay the same over time (e.g. a hammer).

Control types: Interaction with objects can take various forms. Some objects are like extensions of ourselves (e.g. glasses) Some are more like autonomous entities with which we interact simply during short episodes (e.g. a washing machine). Some acts as a repository where we put things in order to fetch them later (e.g. a notebook). Some are content provider (e.g. a television). Some are essentially interactive entities which are not fully in our control but we which we have tightly coupled interaction (e.g. a video game).

Negative network effect
Low investment

Some investment
Positive social network effects
both individual and social use

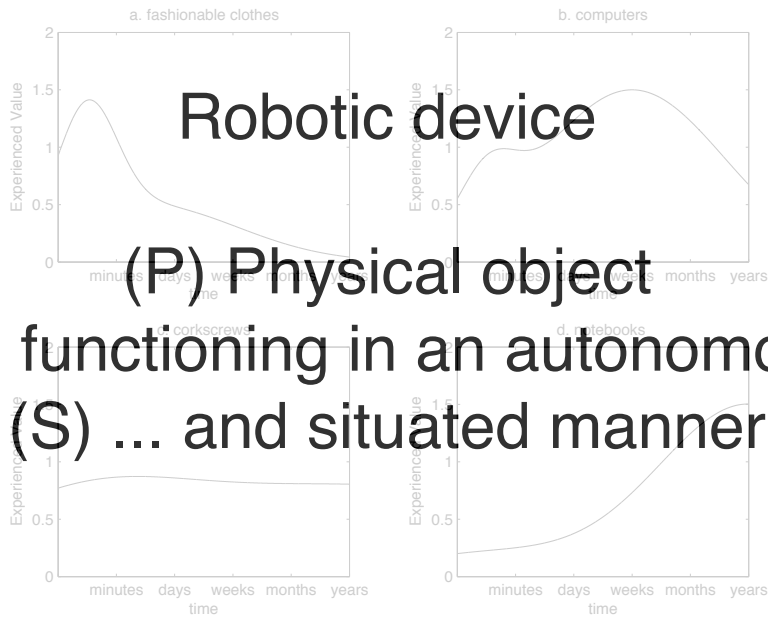


Personal “extension”
Closed functionality
No possibility of customization

High historical capacity
Versatile functionality
Orientation towards social interaction

Negative network effect
Low investment

Some investment
Positive social network effects
both individual and social use



Robotic device

(P) Physical object
(A) functioning in an autonomous
(S) ... and situated manner

Personal “extension”
Closed functionality
No possibility of customization

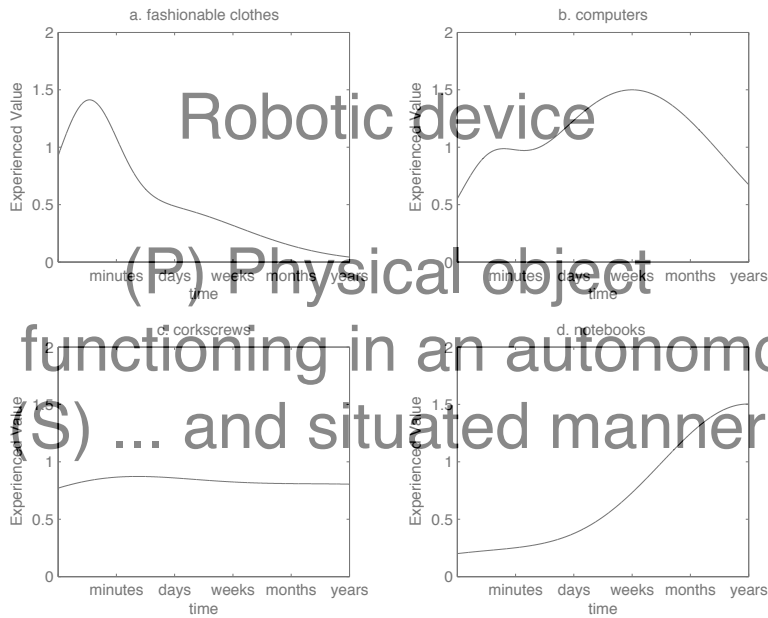
High historical capacity
Versatile functionality
Orientation towards social interaction

A short-term hype

Negative network effect
Low investment

A technological tool

Some investment
Positive social network effects
both individual and social use



Robotic device

(P) Physical object

(A) functioning in an autonomous

S) ... and situated manner

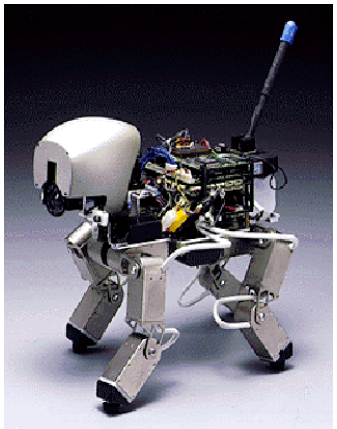
Personal “extension”
Closed functionality
No possibility of customization

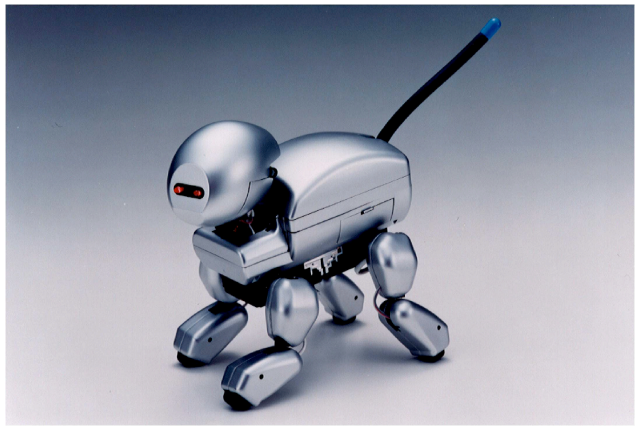
A specific service provider

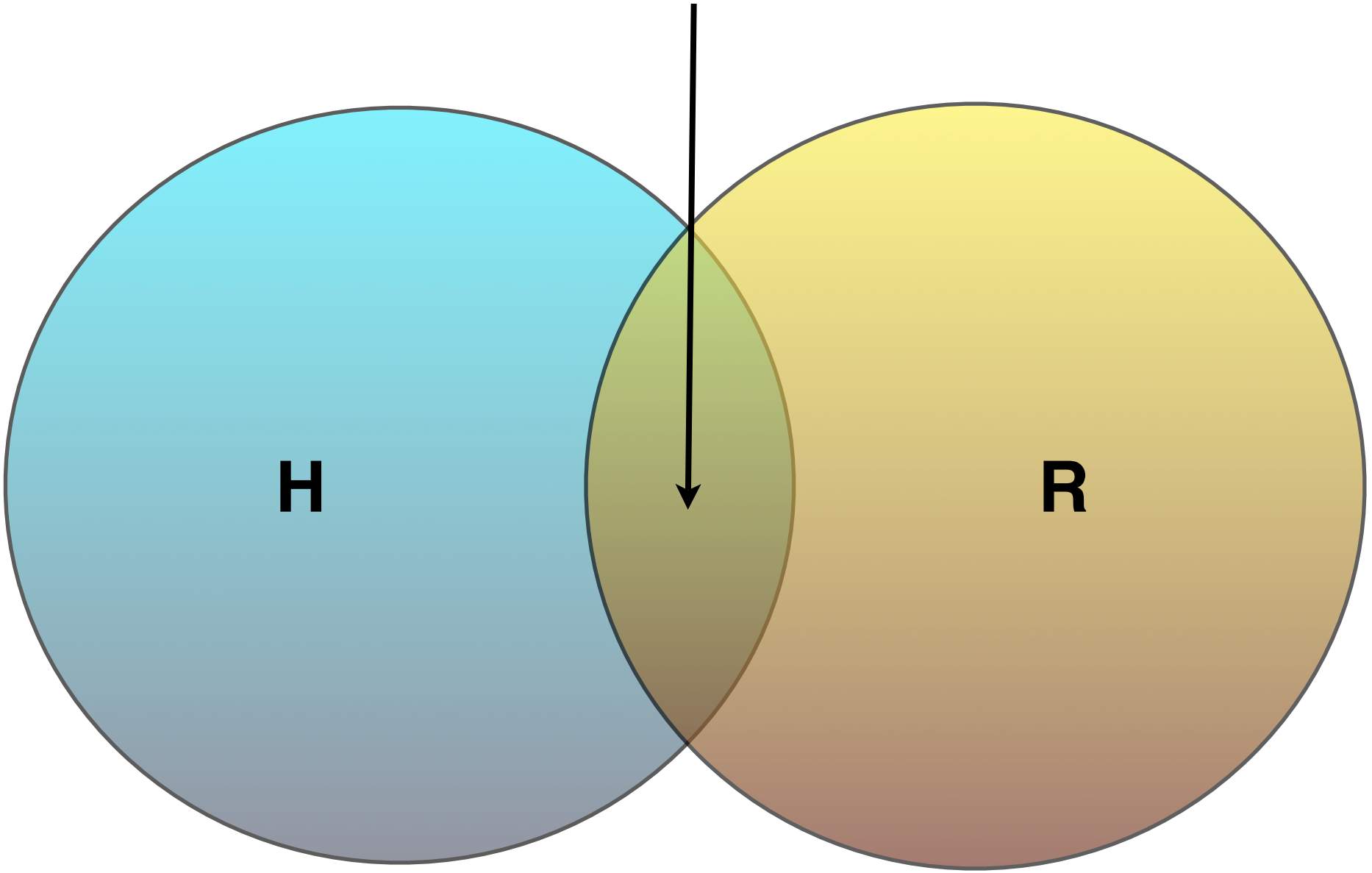
High historical capacity
Versatile functionality
Orientation towards social interaction

An Open device

Immediate,
short-term
and long-term experiences





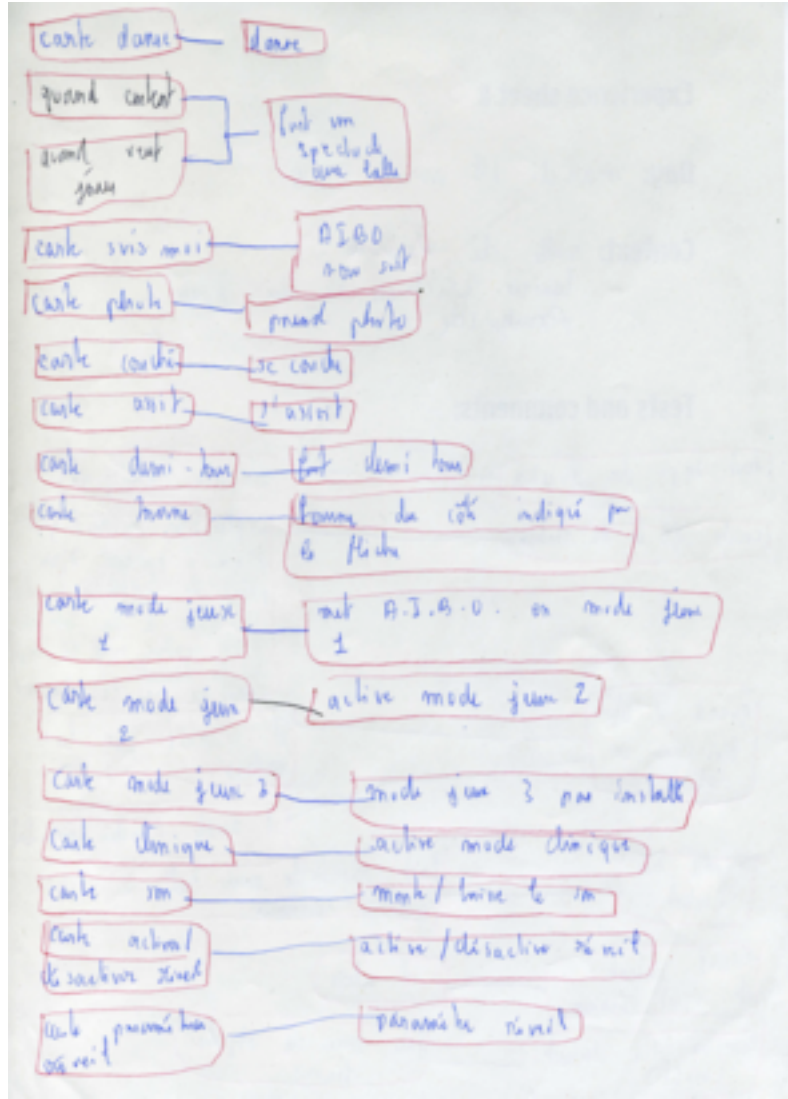


Umwelt intersection

Probing representation changes over a week

Sees Ball → Follows the ball

When sees "Jean" → Displays Happy face

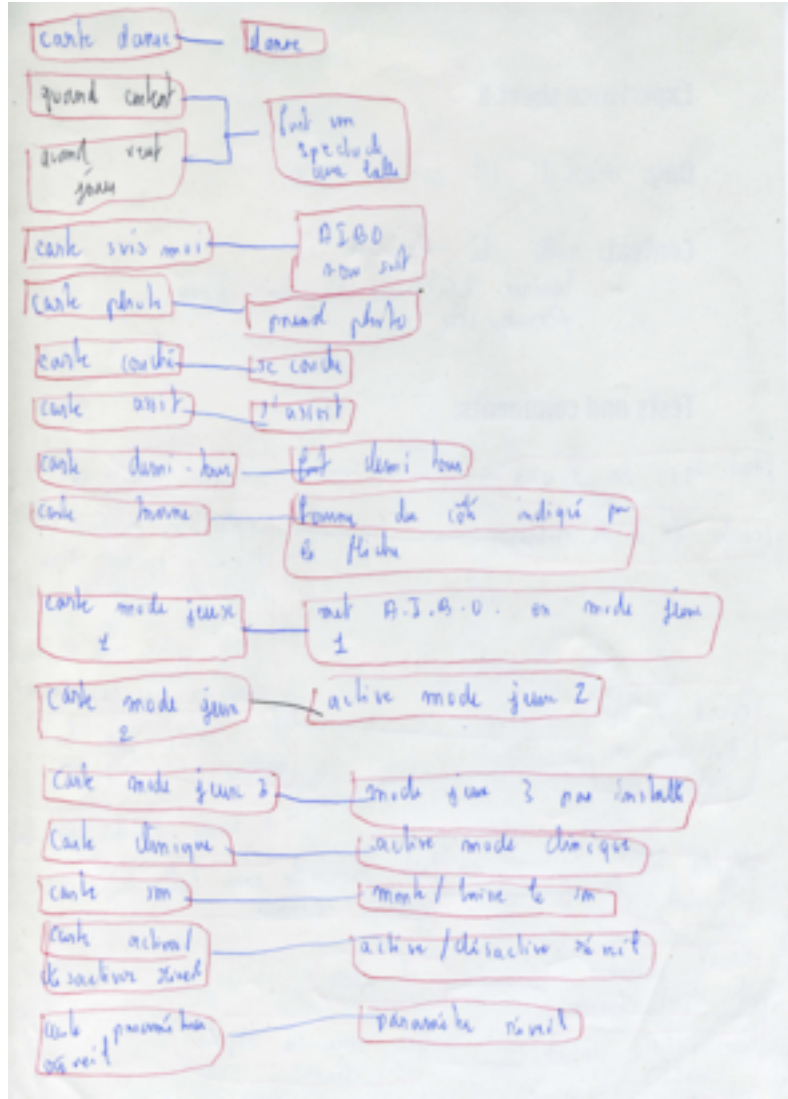


short-term experiences

Probing representation changes over a week

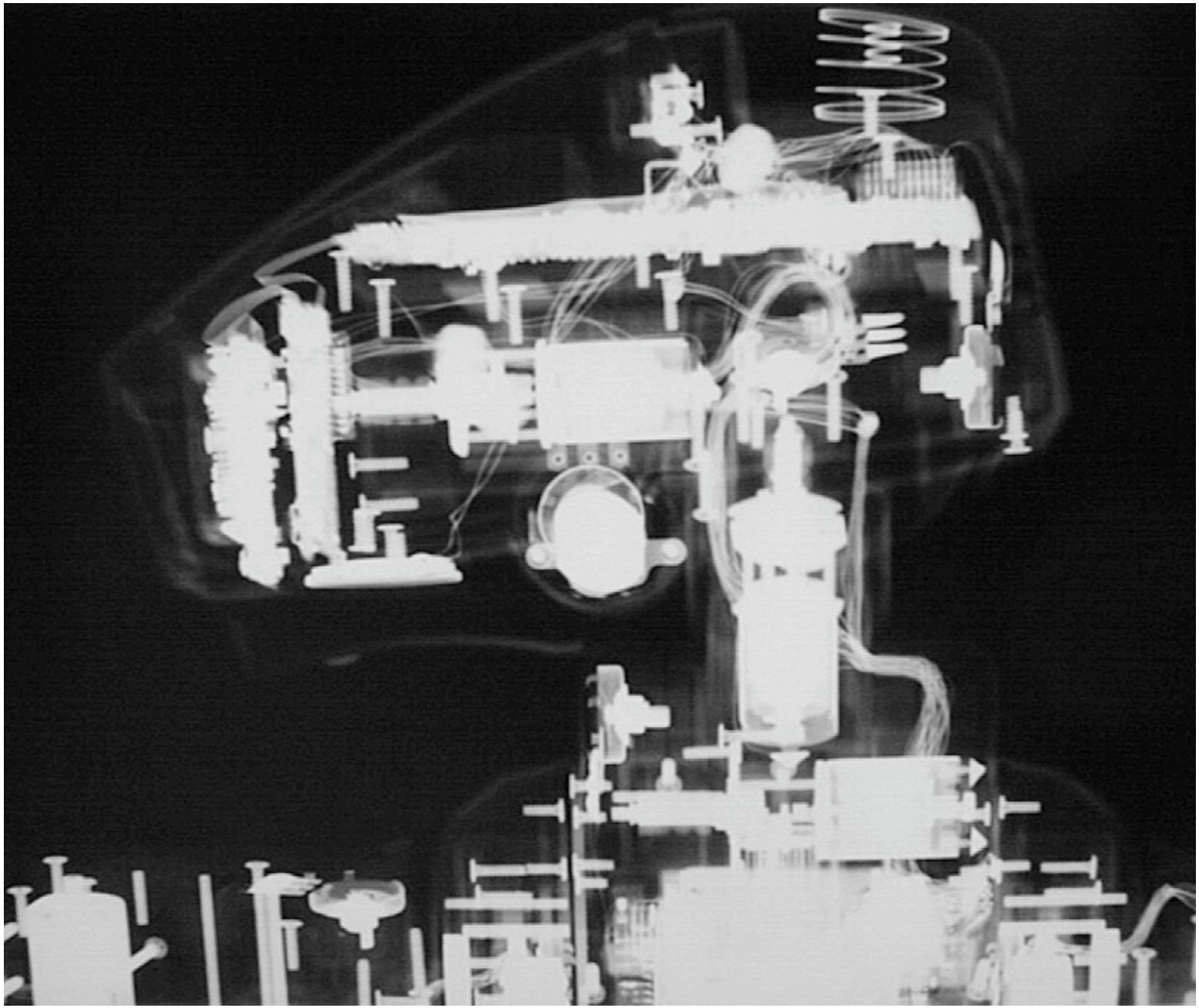
Several important redescription steps

Overestimation of the robot capabilities
(sometimes because of publicized technical features
e.g. speech understanding)

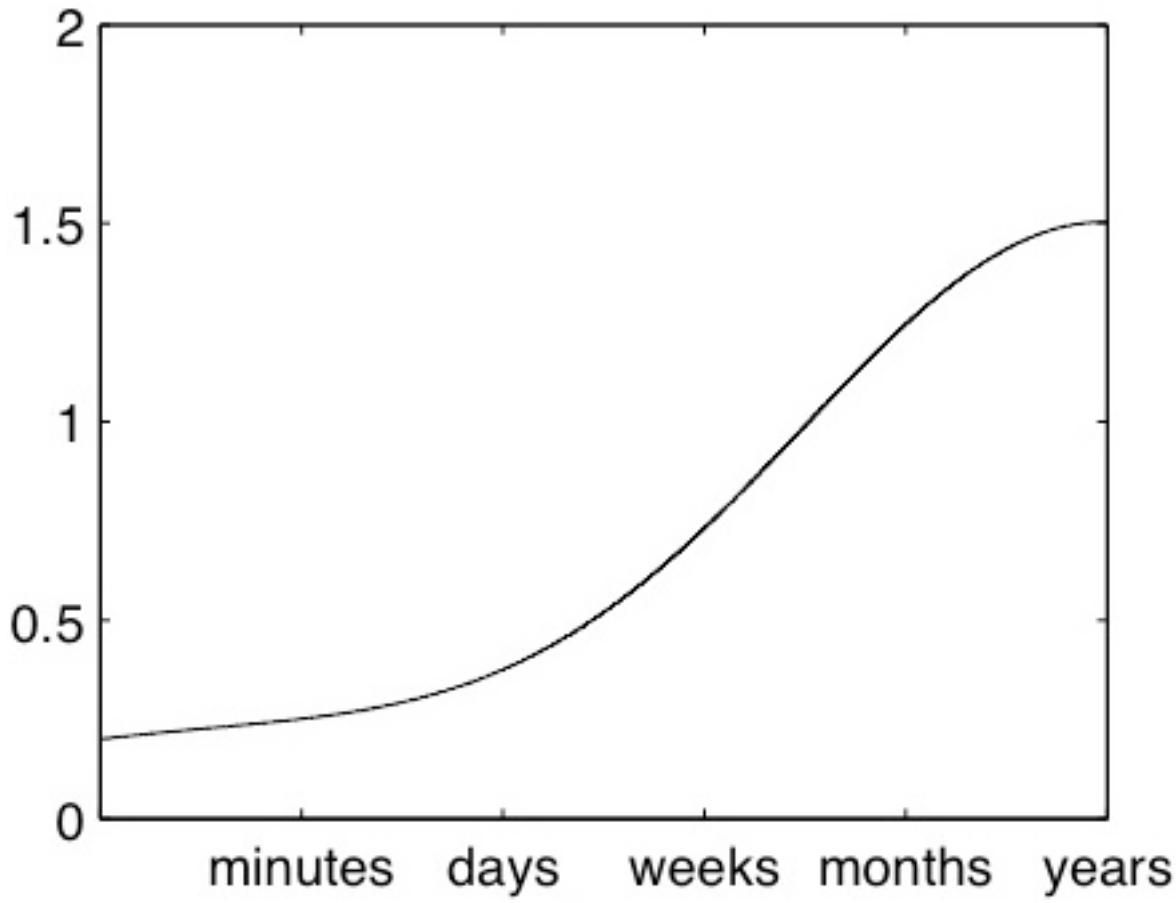


short-term experiences

“Transparent robots”



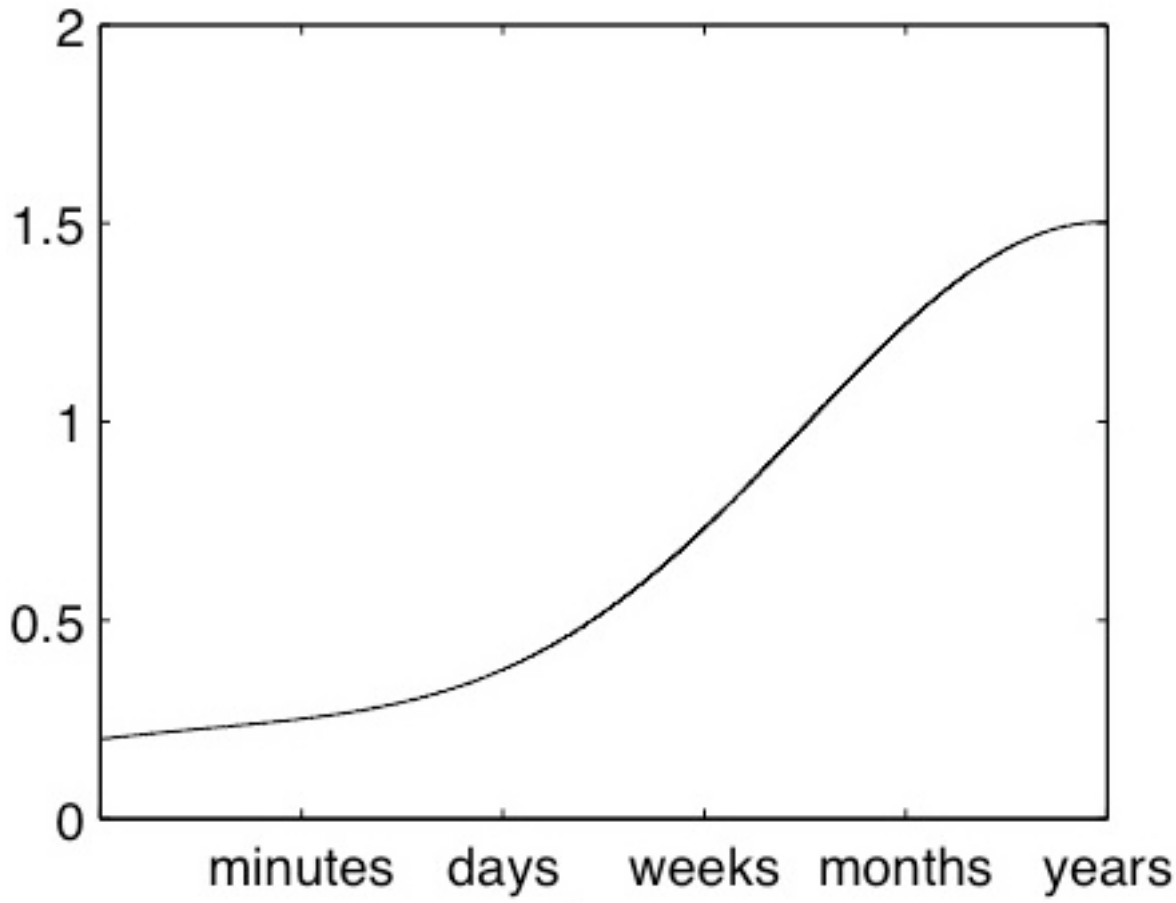
Creating entrainment dynamics



long-term experiences

Naming Objects

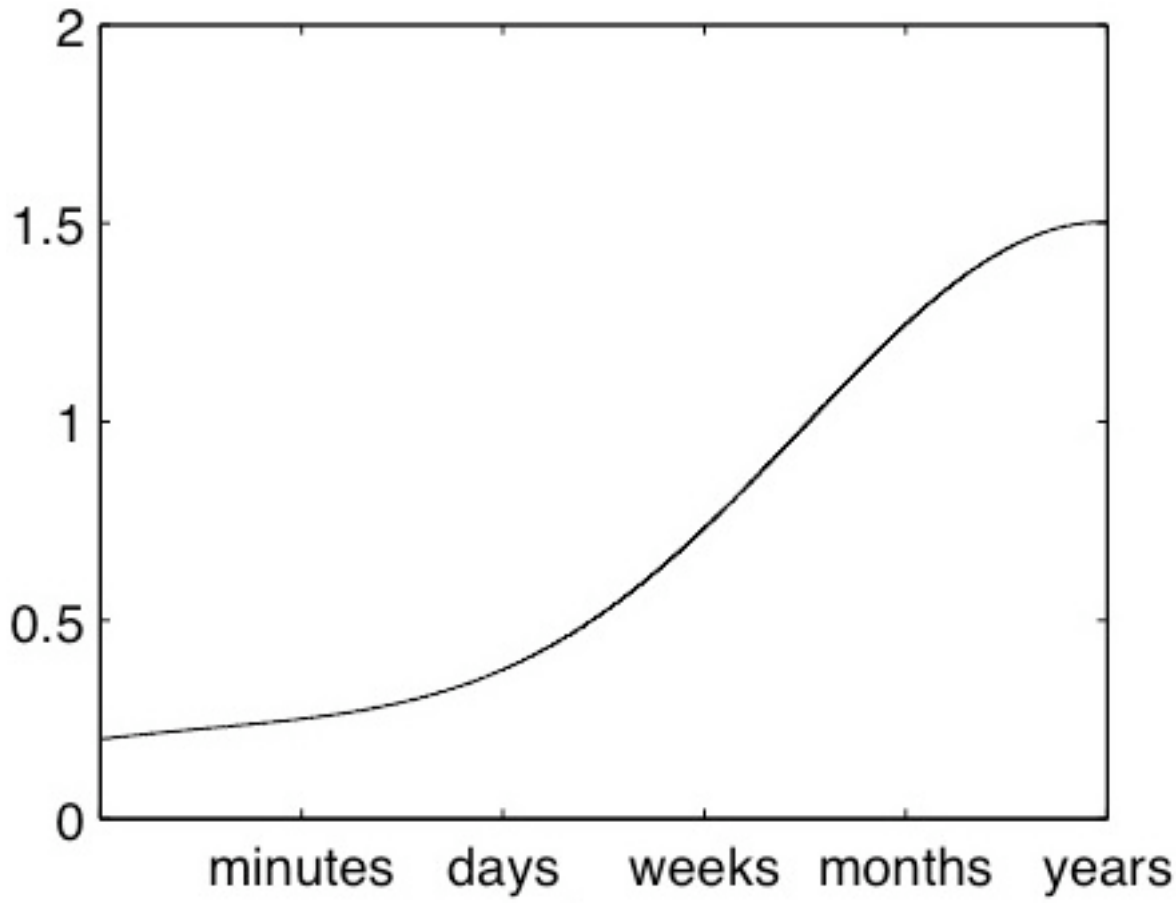
Creating positive network effects



long-term experiences

Teleportation in the Talking Heads Experiment

Ubiquitous robotics



long-term experiences


EVI
AIBO

Take home messages

1

To become everyday objects,
robots should primarily lead
to interesting **experiences**

2

The design space is **huge**.
Everyday robots don’t have
to be like Science-Fiction robots

3

If some robots really become everyday objects, they may not be called robots anymore.

4

In the meantime, it is crucial that interaction designers and robotic research engineers work closely together... this what everyday robotics is about.