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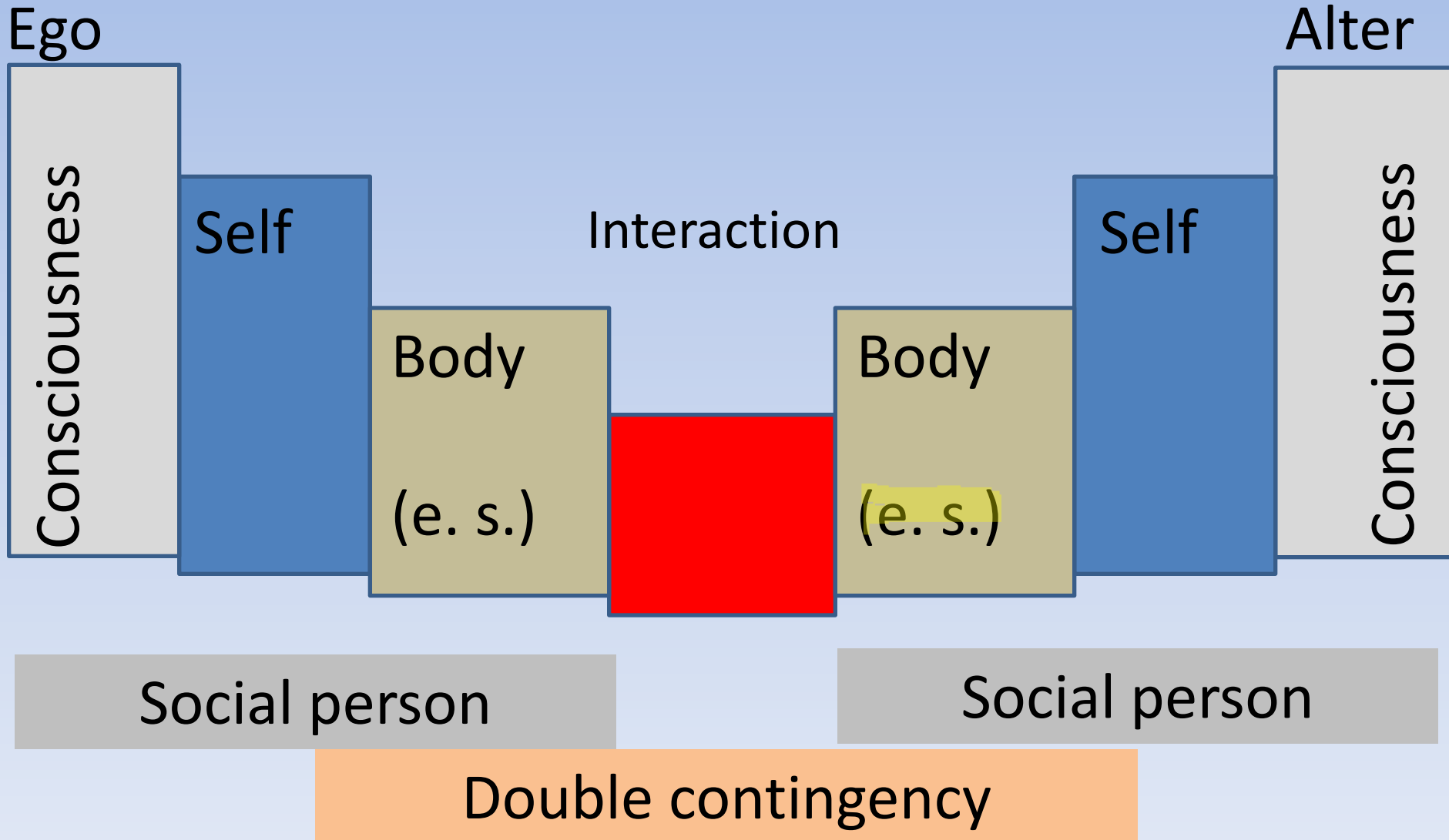
Embodiment, Self and Consciousness

Modules of socially interactive and
biologically inspired humanoid robotics

Summary

1. The scheme of social interaction
2. The issue of the “uncanny valley”
3. Living being as a model of robotic research
4. Modules of life-inspired humanoid robotics
5. Logical boundaries of technological development
6. Conclusion

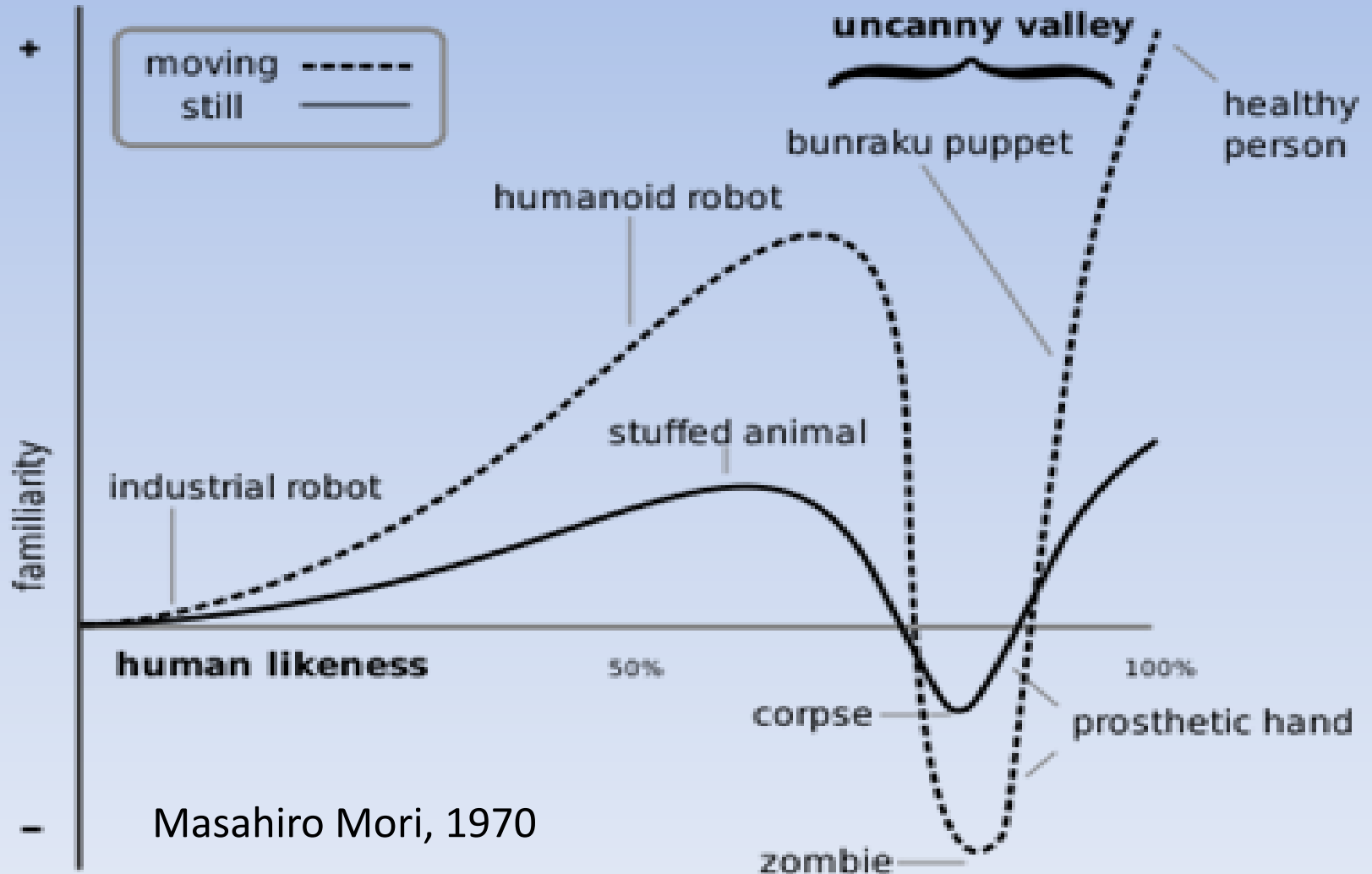
The social interaction scheme



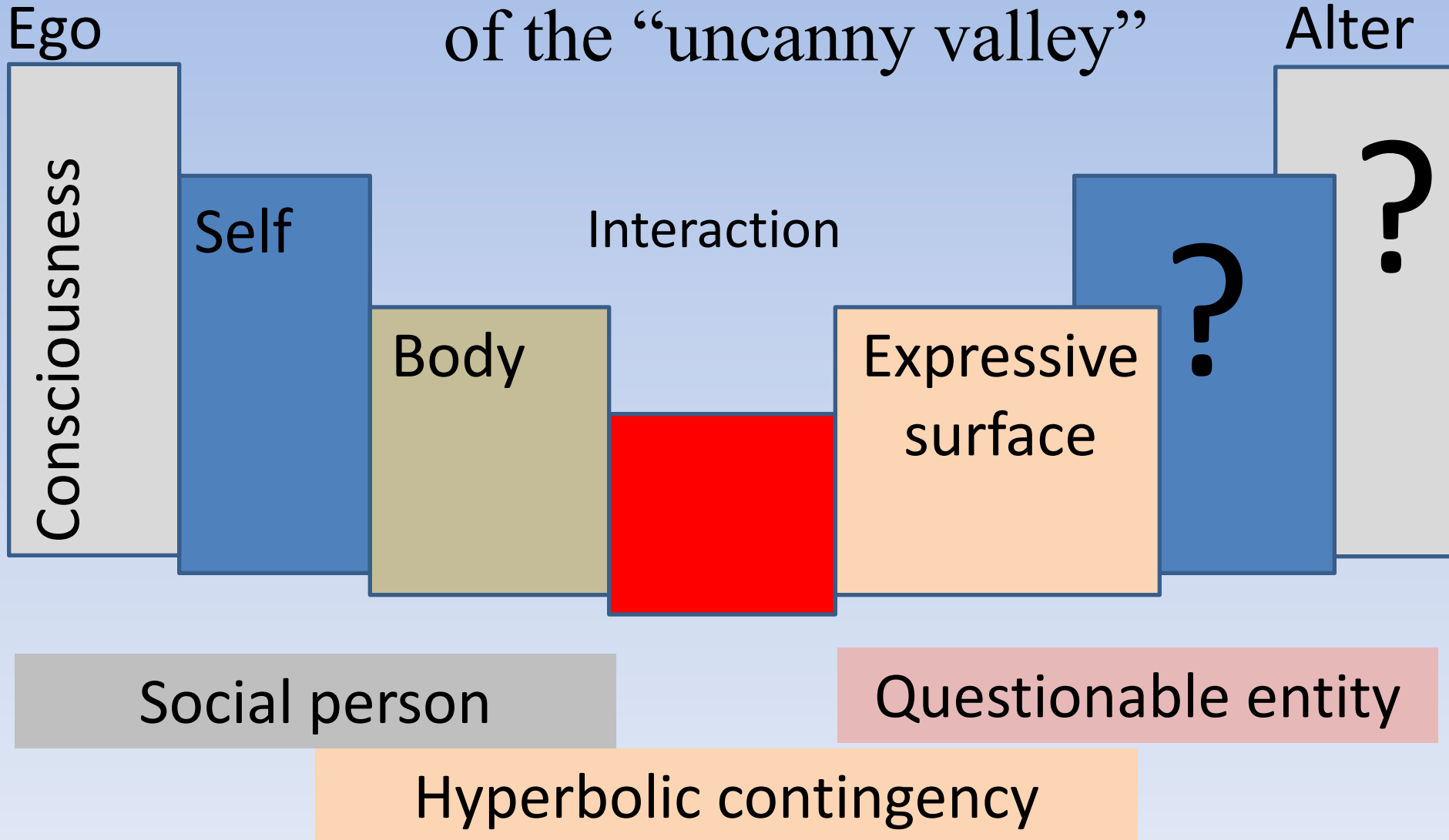
What happens if somebody recognizes
that he/she is not interacting
with a “social person”?

➤ The question of the „uncanny valley“

The issue of the “uncanny valley”



Sociological understanding of the “uncanny valley”

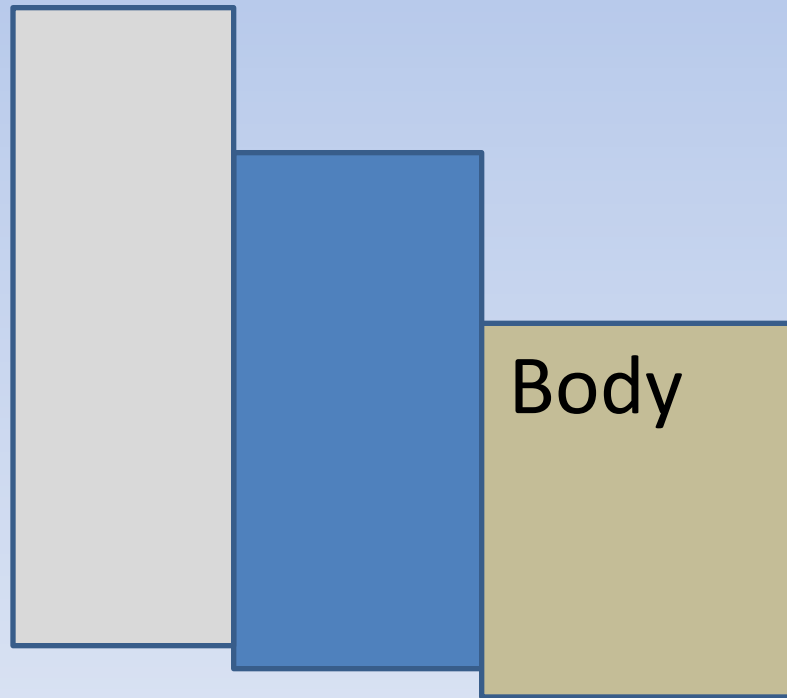


Bio-inspired robotics as a strategy to overcome the “uncanny valley”?

Or sociologically:
what are the biological conditions of social interaction?

- Three main topics are at stake:
 1. Embodiment
 2. The self
 3. The self/consciousness

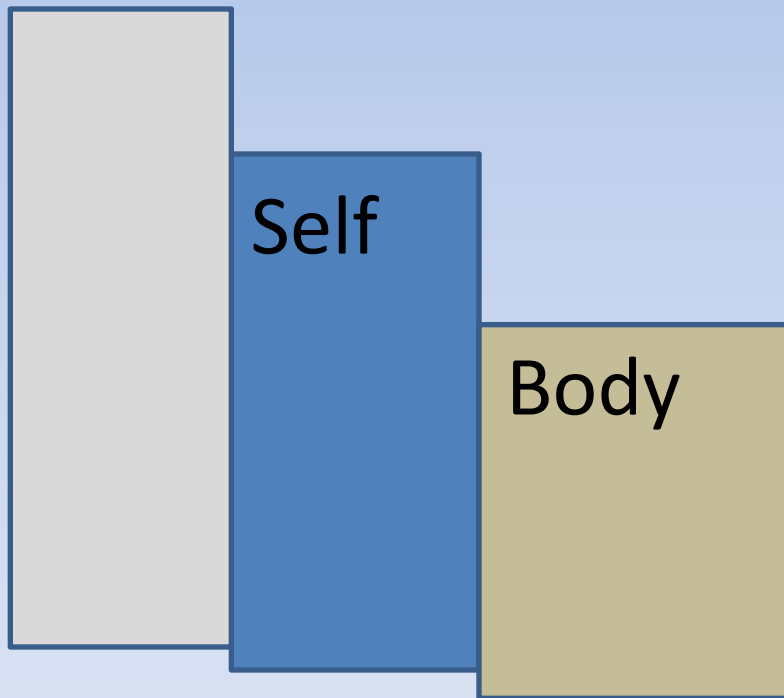
Embodiment:



Social person

- Living beings have their own delimitations from the environment (>|<)
- They use it to interact and communicate with the environment
- This “embodiment” furnishes them with an “expressive surface”

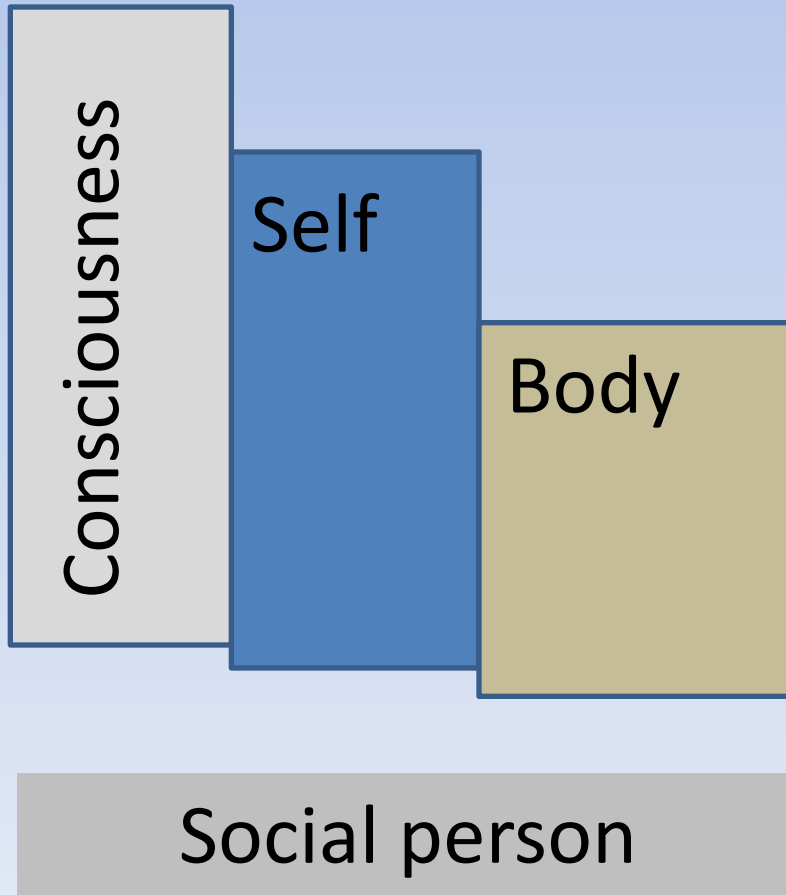
Self:



- Starting from the animal, living bodies have a “closed form” grounded on a coordination centre
- This is called the “self”
- Through the body’s expressive surface, the self interacts and communicates with the environment

Social person

Self-consciousness



- Human beings not only act as a self, but are also conscious of being a self
- This allows them to maintain a distance to their own body-life and to adjust their behaviour to the interactive situation
- Human beings expect other “social persons” to have the same skills at their disposal
- i.e. being “in the body”, “outside the body” and “with the other”

To recall:
the issue is
which “modules” are needed
to allow androids or robots
to take part in a social environment,
yet without provoking a reaction of
“the uncanny”
in the humans interacting with them?

Modules of socially interactive and biologically inspired humanoid robotics

Consciousness-
module
 \approx quasi-
consciousness

+

Self-module
 \approx quasi-self

+

Expressive
surface \approx
quasi-body

Quasi social person

Depending on the technologies in use,
the result would be fixed between
two logical extremes

1. Biological androids
produced through genetic engineering
 2. Mechatronic androids
produced through robotics research
- Let's take a look at the way science fiction
represents the two scenarios

Blade Runner (Ridley Scott, 1982)



I, Robot (Alex Proyas, 2004)

➤ Blade runner:

1. On a genetic level androids are “human”
2. But they have an artificial memory and limited life time
3. In social interaction there is no issue of “the uncanny”
4. But a test is necessary to establish if they are or not “social persons”

➤ I, Robot

1. Mechatronic androids act as if they would have a self(consciousness)
2. Their appearance is not human
3. But human perception skills have overcome “the uncanny”
4. The distinction between androids “acting as if” and “social persons” becomes an automatic habit

Final issues:

- Will the state of the art ever allow androids or robots to be equipped with a self and a consciousness module?
- Do we need this in order to introduce service robots in an urban social environment?

Thank you for your attention

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