



Literally speaking or in inverted commas?

Reflections on the use of language in Robotics & AI

Fabio Fossa, Ph.D.

Department of Philosophy and Educational Sciences, University of Turin
Department of Computer Science, University of Pisa

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fabiofossa36@gmail.com

<https://unipi.academia.edu/FabioFossa>

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Overview

1. A problem with words
2. The Process of Semantic Extension
3. What to do then?

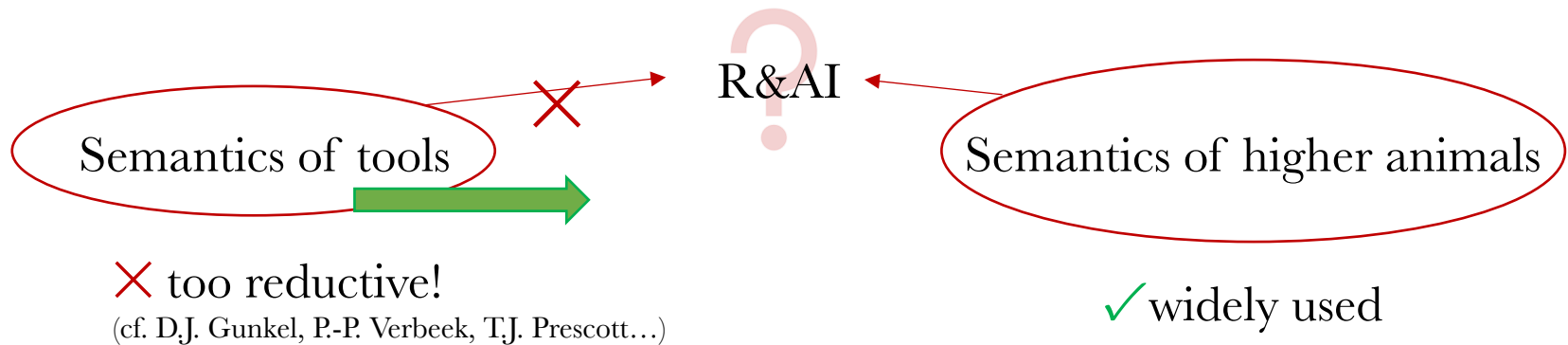
A problem with words

- Robotics and AI = *strange, confusing* artefacts. Why?
 - Feature: execute functions autonomously.
 - Exhibit a *mimetic nature*: simulate entities capable of doing things.
 - What is it that *does things*? Life, organisms.
- R&AI imitate organisms. But how?
 - *Pictorial* imitation: reproduction of what something is/ appears to be. ✗
 - *Operative* imitation: simulation of what something does – whatever the hardware. ✓

Cf. N. Wiener, *God & Golem Inc.*

A problem with words

- *Still*: Robotics and AI \neq organisms
 - *New class* of entities *between* tools and organisms (more often, animals and human beings)
 - How can we cope with the novelty of R&AI?



A problem with words

- Very successful (and typical) strategy → widespread

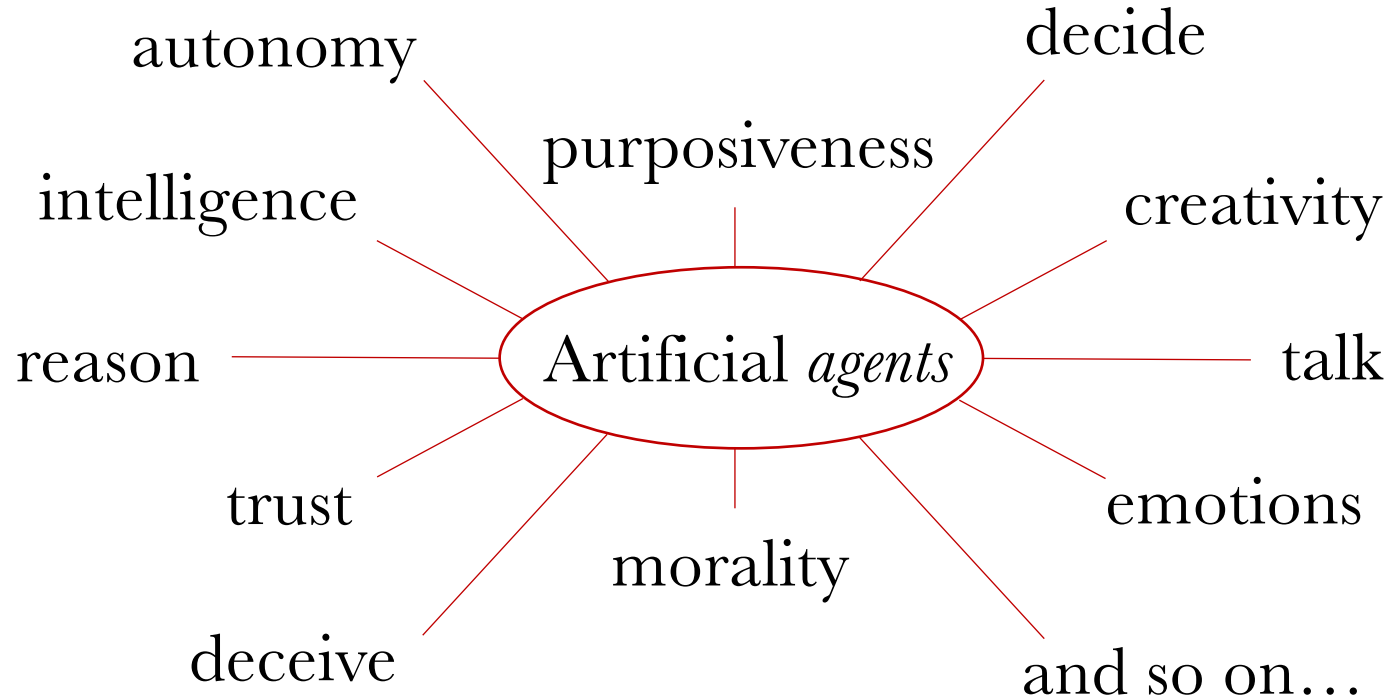
“The study is to proceed on the basis of the conjecture that every aspect of learning or any other feature of intelligence can in principle be so precisely described that a machine can be made to simulate it. An attempt will be made to find how to make machines use language, form abstractions and concepts, solve kinds of problems now reserved for humans, and improve themselves”

A Proposal for the Dartmouth Summer Research Project on Artificial Intelligence

August 31, 1955

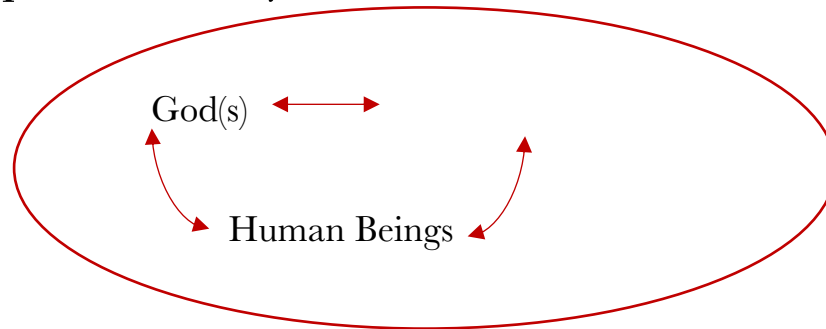
*John McCarthy, Marvin L. Minsky,
Nathaniel Rochester,
and Claude E. Shannon*

A problem with words



Process of Semantic Extension

- What happens here?
 - Process of Semantic Extension [PSE].
 - New entities are described with words that used to describe exclusively *different* entities.
 - The semantic domain gets re-defined.
- Example: creativity.



Artistic Robots & AI

Process of Semantic Extension

- Main issue: PSE *literal* or *metaphorical*?

Cf. J. Searle, *Minds, Brains and Programs*, 1980.

- This process is *both* successful *and* problematic.
- Complex: hype, sci-fi, human psychology, intrinsic reasons...
- Massive use of *syntactic clues* to signal semantic dissatisfaction: inverted commas, CAPS LOCK, compound words...
- Harsh criticism: “intellectual smog”

(H. Dreyfus, *Alchemy and Artificial Intelligence*)

Process of Semantic Extension

→ What is the problem?

- We risk losing track of the *differences* and the *specific properties* of the entities involved.
- Reductionism and confusion:
 - mechanization of human beings; *and*
 - humanization of R&AI.

What to do then?

- To-do list:
 - Strike a balance between:
 - a. the *factual* evolution of language, according to which the meaning of words cannot be abstractly fixed but is significantly regulated by their usage; and
 - b. the *proper* meaning of words, which may very well be flexible and adapt to different applications, but still exhibits a determinate nature which founds the possibility of distinguishing between unproblematic and problematic choices of words.

What to do then?

- To-do list (not exhaustive):
 - Learn how to assess the PSE *critically*:
 - ✓ Uncover the (semantic, linguistic, practical, communicative, social, economical) *reasons* behind the PSE.
 - ✓ Focus on both *similarities* and *differences*.
 - ✓ Exercise a *reflective* attitude towards the use of language.
 - ✓ Resist *indeterminate* semantic extension.
 - ✓ Promote *determinate* semantic extension.
 - ✓ Raise *awareness* (in the scientific community and the public) of the risks and opportunities involved in PSE.

Conclusion

- Steer clear from
 - ✓ too naïve or enthusiast a word usage that may generate false expectations, illusions, and ultimately deception (if not even self-deception);
 - ✓ too strict or technical an approach to the use of language that may lead to communication failures, obscure jargon, and confusion.



Middle-way solution: PSE + critical attitude.

So, basically





DIPARTIMENTO DI INFORMATICA



Thank you!

Fabio Fossa, Ph.D.

* * *

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