Information Technology for Digital Humanities

Lecture 1

Mario Verdicchio

Università degli Studi di Bergamo

Academic Year 2023-2024

Lecture 1 (September 26 2023)

- Introduction
  - logistics and bureaucracy
  - contents
- Fundamental concepts: information

The module: organization

- Lecturer: Mario Verdicchio
  - mario.verdicchio@unibg.it
  - office hours: after every lecture
- 30 hours in class
  - Tuesdays 9:00 – 12:00 (Salvecchio 5)
  - Wednesdays 9:00 – 12:00 (Salvecchio 8)
  - from today until October 31
  - guest lecturer Martin Zeilinger (Abertay University, Scotland): Oct 24, 25, 30, 31
  - Monday Oct 30: 13:00 – 16:00 (Salvecchio 5)

The module: organization

- Written test
  - part A: multiple-choice test (20 questions, 1 point per correct answer, no penalties for wrong answers)
  - part B: open questions (2 questions with 5 points each or 1 question with 10 points)
- Test dates:
  - January 11, February 15
- Module webpage:
  - https://cs.unibg.it/verdicch/itdh.html

The module: textbooks

- Code: The Hidden Language of Computer Hardware and Software (2nd edition)
  - by Charles Petzold, Microsoft Press
- For Italian speakers, as a suggestion
  - Informatica per la Comunicazione (terza edizione) by Mario Verdicchio, ed. Franco Angeli (upcoming)
  - Che cos'è un Computer by Mario Verdicchio, ed. Carocci (upcoming)

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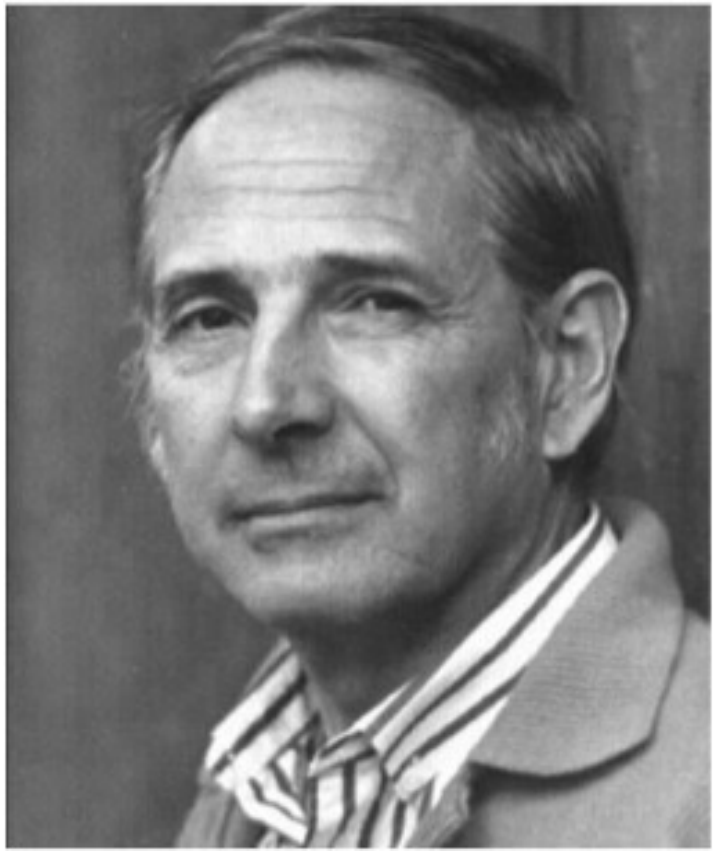
What is “information”?

- Exercise: provide one or more definitions of “information”.



John Searle (1932 -)

American philosopher widely known for his contributions to the philosophy of language, philosophy of mind, and social philosophy.

The Chinese Room

- This is a “thought experiment” proposed in 1980 by Searle in his article “Minds, Brains, and Programs” published in the journal “Behavioral and Brain Sciences” 3, pages 417-457.

It is **not** a scientific experiment in the classical sense of the term, in which devices have been used in a laboratory to test a theory.

Rather, it is a way to illustrate an imaginary but theoretically feasible situation to prove a thesis.


INPUT
恭喜發財
DATA
RULE
LEDGER
OUTPUT

The Chinese Room works as follows.
Imagine having a closed room, with a person inside (e.g. John Searle himself) who has everything necessary for survival (food, water, air, etc.), and who does not know the Chinese language.
From the outside, the room looks like a large cube, with only a Chinese keyboard on one wall, and a slot on the opposite wall, from which printed pages can come out.
The keyboard allows a person outside the room who knows Chinese to enter sentences in the language.
The keyboard is connected to a monitor inside the room that displays the ideograms typed on the keyboard.
Although Searle does not know Chinese, he has at his disposal a manual which indicates to him, for each sequence of ideograms on the monitor, another sequence of ideograms that he must take from a filing cabinet and send to the outside of the room through the slot.
Even if he doesn't understand Chinese, by following the manual Searle is able to respond to the sentences on the monitor, and if the manual is well written, the person outside the room will have the impression that the room can speak Chinese. It is a Chinese Room.

What does Searle want to prove with the Chinese room experiment?

Searle wants to show us that it is possible to create an automatic system that works in a certain language without understanding the words of that language. Indeed, the person inside the room does not understand Chinese and relies on the manual. Being the only living being inside the room, if he does not understand Chinese, surely nothing else in the room can.

With his thought experiment, Searle wants to suggest that computers are machines built to work with signs (the same signs that are shown on the monitor in the Chinese Room or on your laptop's monitor) without any understanding of their meaning.

Signs.

What is it like to work with signs whose meaning is unknown?

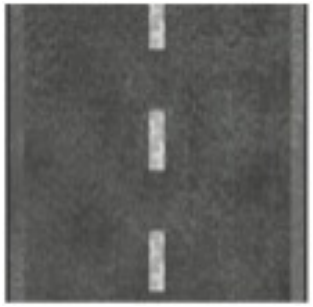
What is it like to be inside the Chinese Room?

犬　赤　道

Welcome to the Chinese Room.

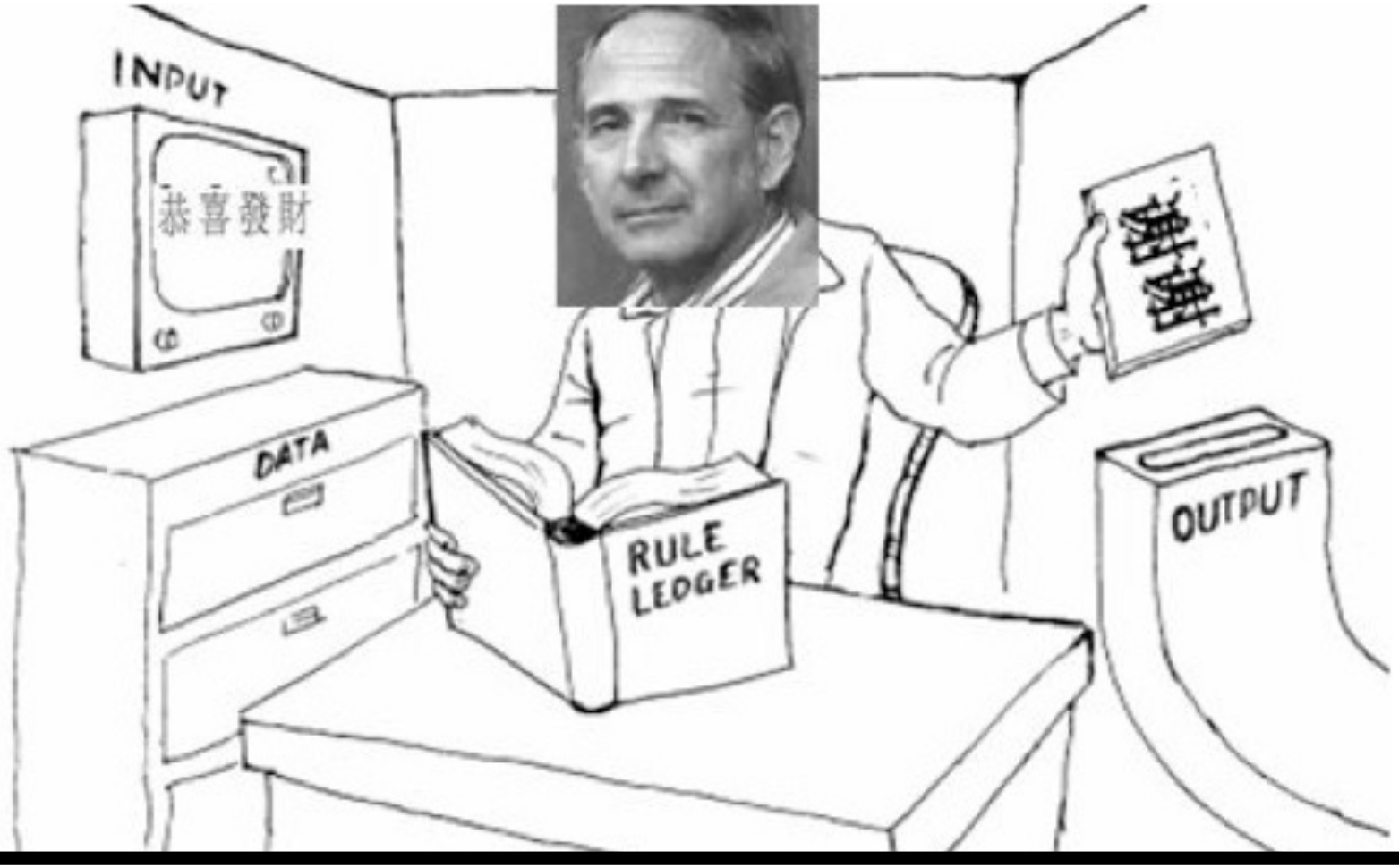
犬　赤　道

What do these signs mean?



Wrong.


犬.



Searle's thought experiment is aimed to demonstrating that a computer processes signs without understanding the meaning of those signs.

This is a sign.

This is its meaning.

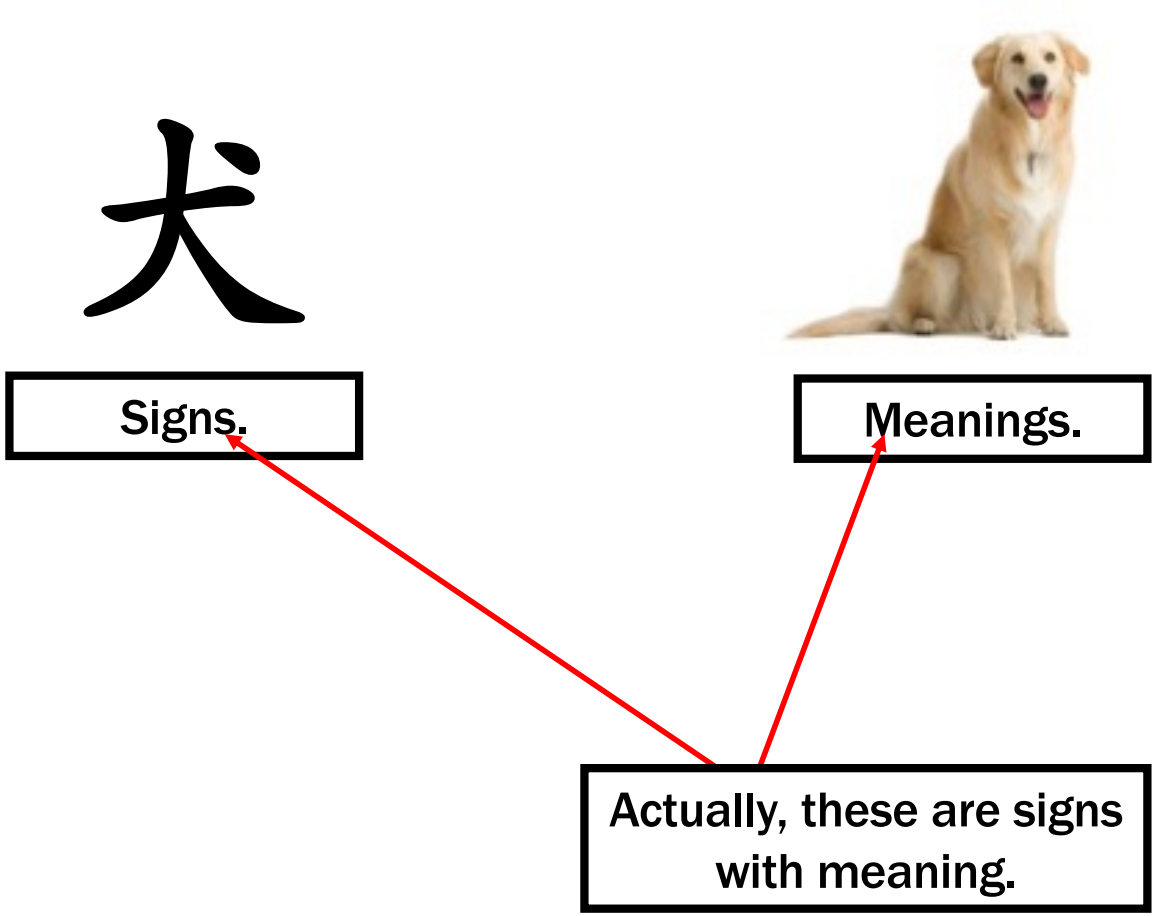
Actually, this is an image.

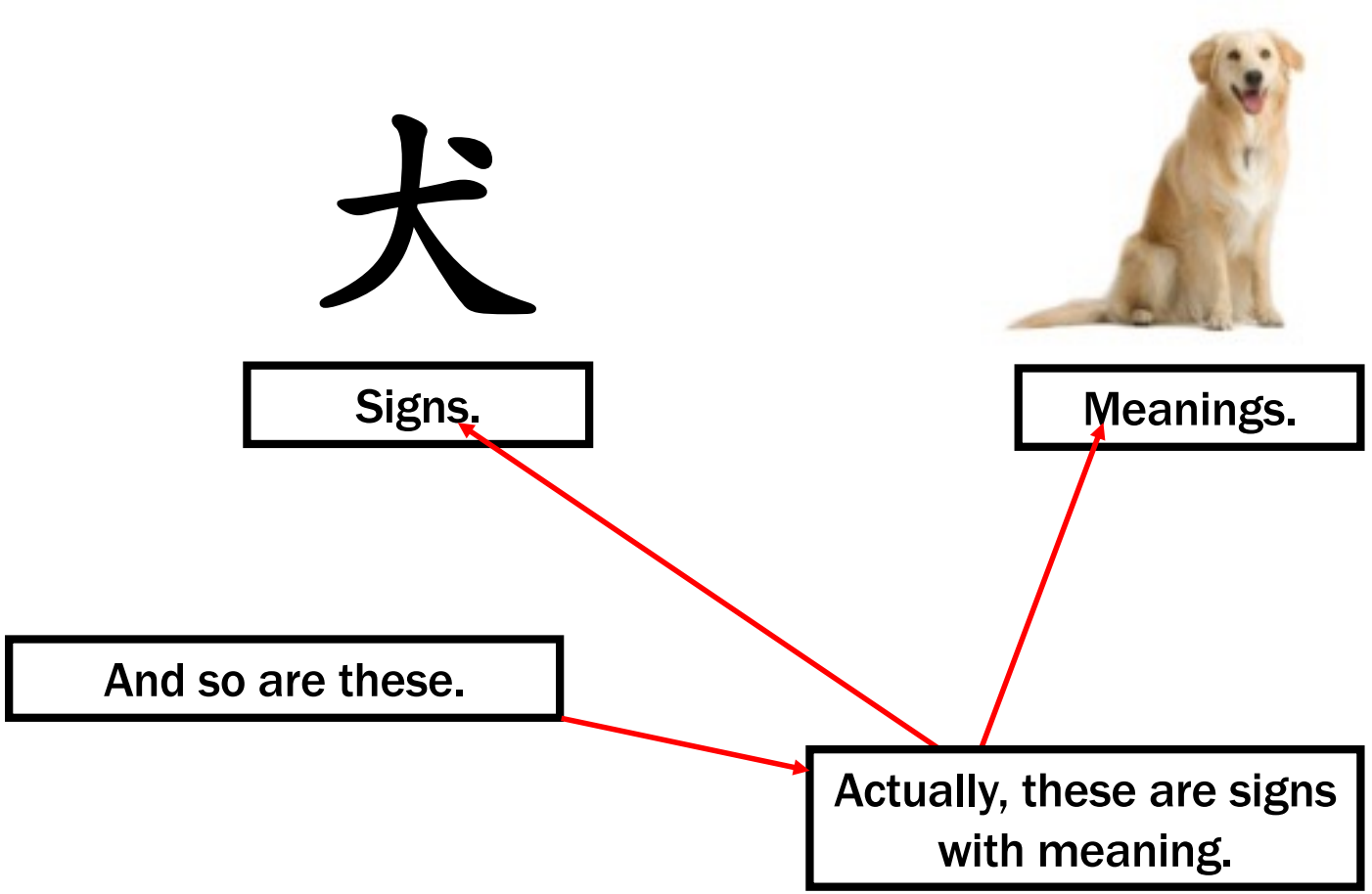
But you know what I mean.

犬

Signs.

Meanings.


犬
Signs.
Meanings.
Actually, these are signs with meaning.


犬
Signs.
Meanings.
And so are these.
Actually, these are signs with meaning.

犬

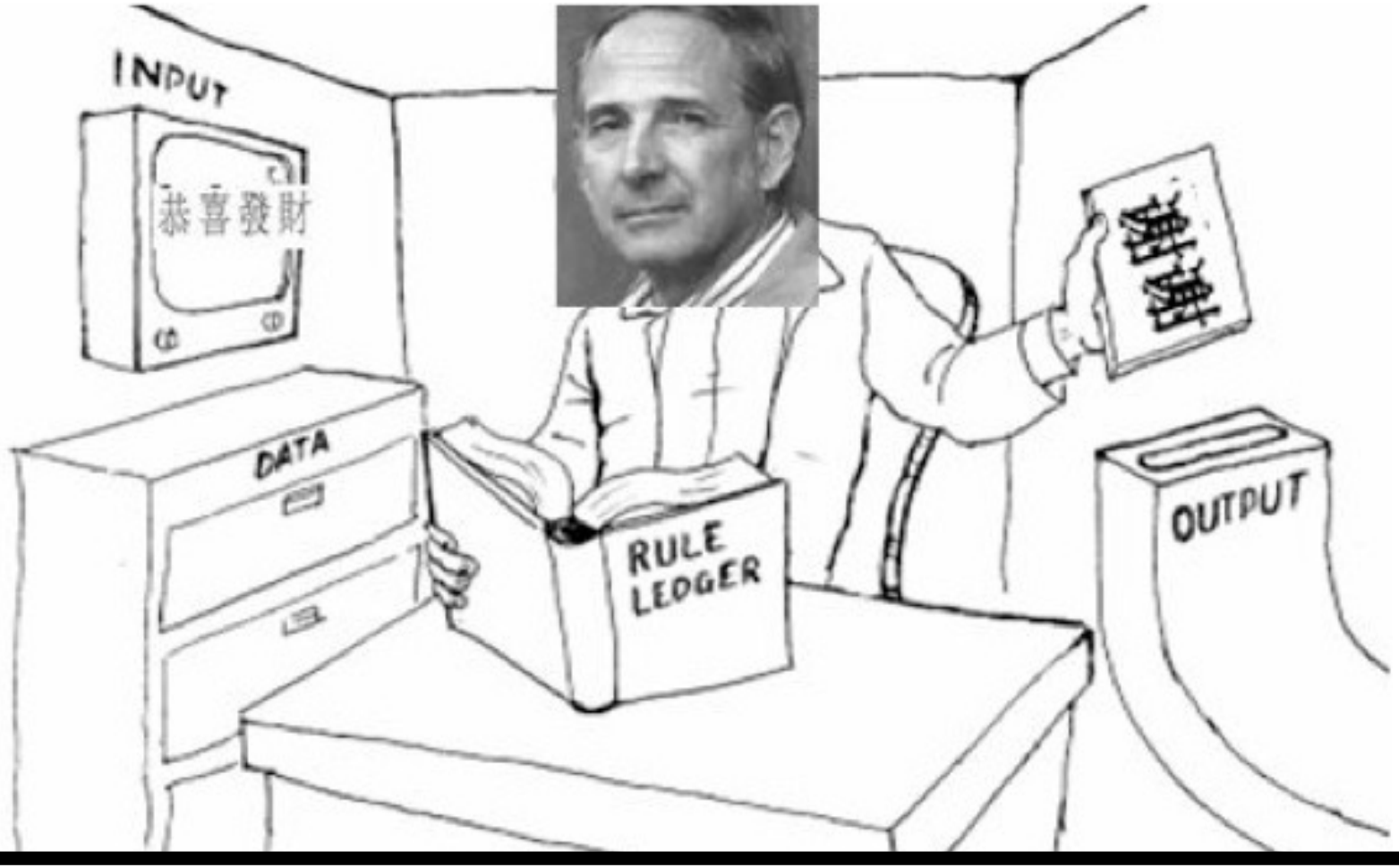
Signs.

Meanings.

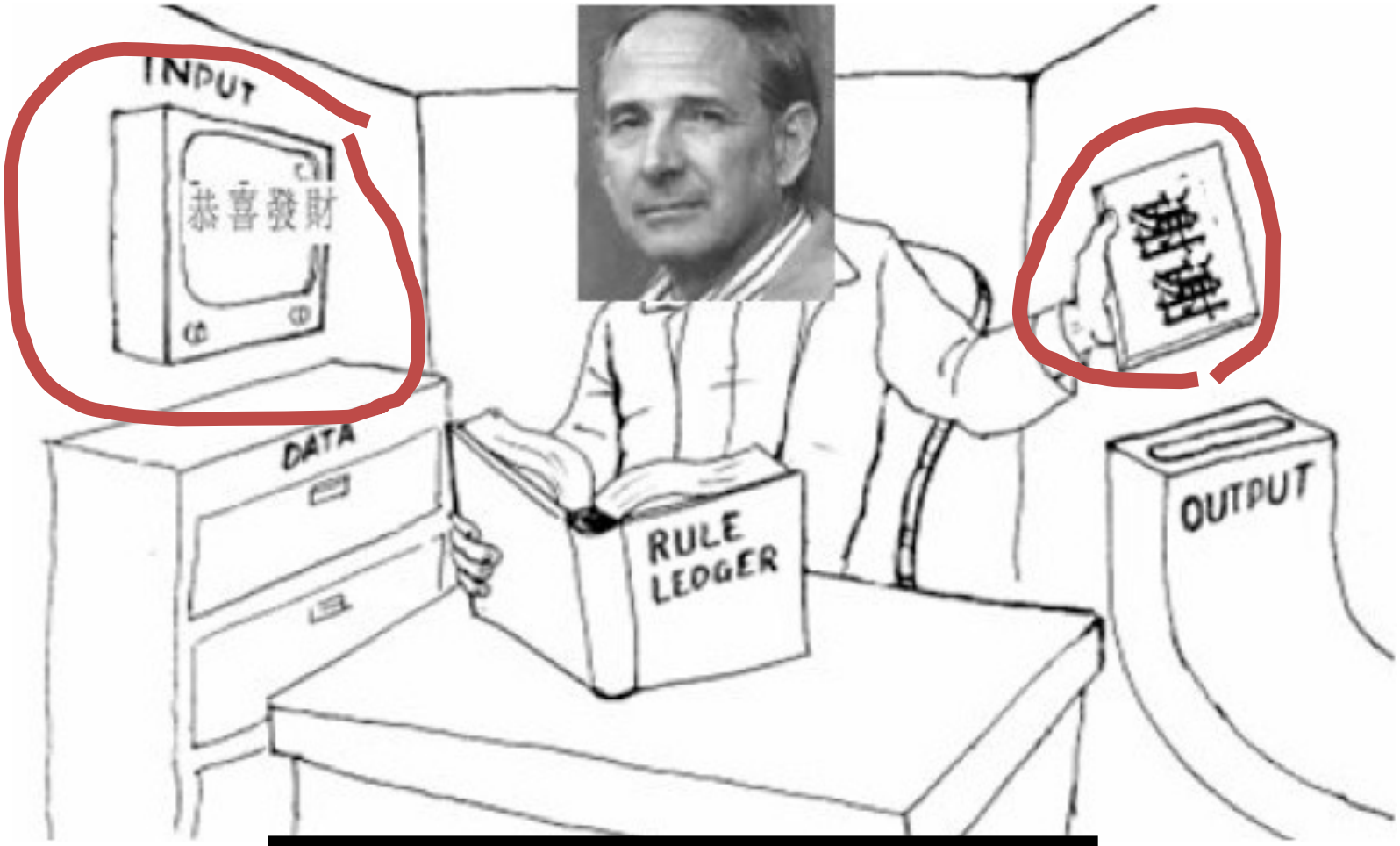
犬

Syntax

Semantics



Searle's thought experiment is aimed to demonstrating that a computer processes signs in a purely syntactic way, and not in a semantic way.



What are these signs doing?
Are they information?
If not, what are they? Data.

What is “information”?

- Exercise: provide one or more definitions of “information”.
- Fabio: “A piece of knowledge or a broad set of pieces of knowledge that are conveyed and/or represented by a particular arrangement or sequence of things that then allow further uses, mainly communication.”
- Valeria: “useful knowledge for practical use, more immediate than knoweldge in general.”

What is “information”?

- Silvia: “a combination of data that are brought together in order to give new knowledge about something.”
- Kosuke: “lots of data that we need to observe particular things and whole meanings.”
- Sara: “instruction guide for conveying a certain expression in order to deepen one’s understanding of something.”