# 24.09 Minds and Machines
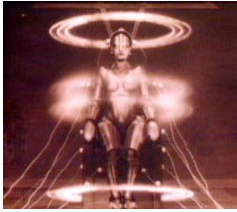## spring 2006



- recitations

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# intentionality

underived:
- the belief that Fido is a dog
- the desire for a walk
- the intention to use 'Fido' to refer to Fido

derived:
- the English sentence 'Fido is a dog'
- the Spanish sentence 'Fido es un perro'
-

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WEAK AI
the principle value of the computer in the study of the mind is
that it gives us a very powerful tool—e.g. it enables us to
*simulate* various kinds of mental processes
(cf. WEAK ARTIFICIAL METEOROLOGY)

obviously correct (ditto WEAK AM)

STRONG AI
an appropriately programmed computer literally has mental states
(in particular, cognitive states)
(cf. STRONG AM—an appropriately programmed computer
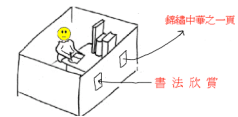literally has meteorological states.)

disputable, and disputed by Searle
(STRONG AM, at least, is obviously false)

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# the Chinese room

- a program: an algorithm (mechanical recipe) for transforming symbols into symbols
- the thought experiment exploits the fact that computer programs can be "multiply realized"
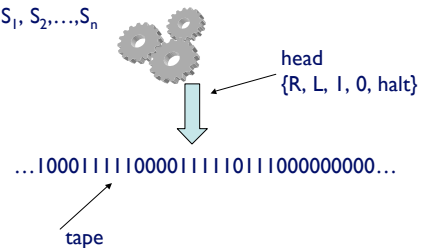
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# digression on Turing machines



- wartime codebreaker, founder of computability theory
- invented "Turing machines"
- also invented the "Turing test" (more on this later)

**Alan Turing (1912-54)**

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# Turing machines

states: $S_1, S_2, \ldots, S_n$

head
{R, L, 1, 0, halt}

…10001111100001111101110000000000…

tape

## a simple Turing machine

| state / scanned cell | $S_1$ | $S_2$ |
|---|---|---|
| 1 | R, $S_1$ | H |
| 0 | 1, $S_2$ | H |

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## a simple Turing machine

00000000111111000000000000

$S_1$

8

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## a simple Turing machine

00000000111111000000000000

$S_1$

9

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## a simple Turing machine

00000000111111000000000000

$S_1$

10

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## a simple Turing machine

00000000111111000000000000

$S_1$

11

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## a simple Turing machine

00000000111111000000000000

$S_1$

12

## a simple Turing machine

⬇

0000000011111000000000000

$S_1$

13

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## a simple Turing machine

⬇

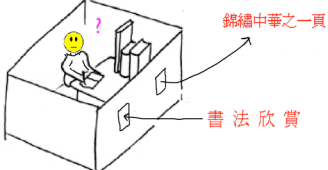0000000011111100000000000

$S_2$

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## a simple Turing machine

⬇

0000000011111100000000000

H

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"…you behave exactly as if you understood Chinese, but all the same you don't understand a word of Chinese. But if going through the appropriate computer program for understanding Chinese is not enough to give *you* an understanding of Chinese, then it is not enough to give *any other digital computer* an understanding of Chinese"
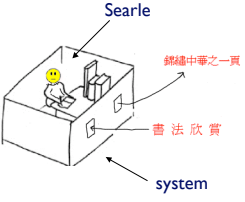
so, Strong AI is false



錦繡中華之一頁

書 法 欣 賞

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## the systems reply



Searle

錦繡中華之一頁

書 法 欣 賞

system

- the "whole system" understands Chinese, not Searle
- (don't get hung up on "understanding")

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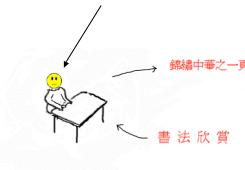## Searle's reply…

"…is quite simple: Let the individual internalize all of these elements of the system...he understands nothing of the Chinese, and a fortiori neither does the system, because there isn't anything in the system that isn't in him"

(from Searle, "Minds, Brains, and Programs")

Searle (memorizes instructions)



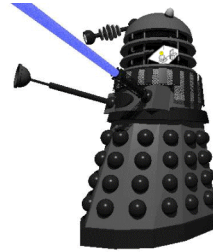錦繡中華之一頁

書 法 欣 賞

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## Searle's reply…

… appears to rely on the mistaken principle that if *x* is part of *y*, and *y* isn't *F*, then *x* isn't *F*. (My liver is part of me, and I don't weigh 1 pound, but maybe my liver does.)

錦繡中華之一頁

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## the robot reply

"Inside a room in the robot's skull I shuffle symbols…As long as all I have is a formal computer program, I have no way of attaching any meaning to any of the symbols. And the fact that the robot is engaged in causal interaction with the outside world won't help me…"

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**STRONG STRONG AI**
there is a computer program (i.e. an algorithm for manipulating symbols) such that any (possible) computer running this program literally has cognitive states

**WEAK STRONG AI**
there is a computer program such that any (possible) computer running this program and embedded in the world in certain ways (e.g. certain causal connections hold between its internal states and states of its environment) literally has cognitive states

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There is one aspect of Searle's case with which I am sympathetic. I have my doubts as to whether there is anything it is like to be the Chinese system, that is, whether the Chinese system is a phenomenally conscious system. My doubts arise from the idea that perhaps consciousness is more a matter of implementation of symbol processing than of symbol processing itself.

Block, "The mind as… "

錦繡中華之一頁

書 法 欣 賞
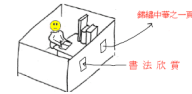
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### Minds and Machines
spring 2006

dualism

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## dualism

- *Meditations* (1642)

  "Wherein are demonstrated the existence of God and the Distinction of Soul from Body"
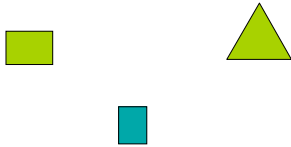- *Principles of Philosophy* (1644)
- *Passions of the Soul* (1649)

René Descartes (1596-1650)

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## from the philosophical toolkit:

- properties and particulars

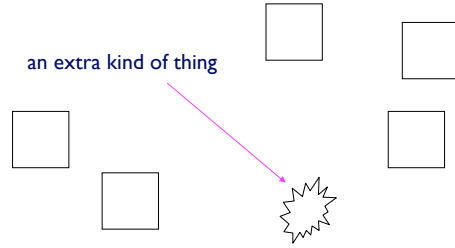24.09 spring 06                                            25

## substance dualism

an extra kind of thing

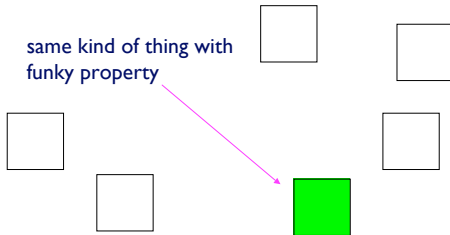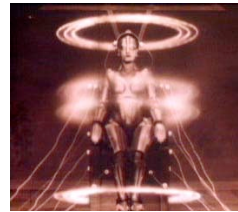24.09 spring 06                                            26

## property/attribute dualism

same kind of thing with
funky property

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### Minds and Machines
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- problem set 1 +
  writing assignment 1
  on friday
- next class on
  tuesday

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