Philosophy 101

Searle on
Artificial
Intelligence

Review of
Dretske

Can Machines
Think?

Searle & the
Chinese Room

# Philosophy 101

## Searle on Artificial Intelligence

March 4, 2014

# Review of Dretske

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# Question 1

Dretske's project is to show how intentionality could be natural

*A. true*
*B. false*

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# Question 2

Dretske distinguishes between two kinds of intentionality, one of which is more basic than the other. Which is the basic form?

*A. indication*
*B. representation*
*C. language*
*D. pictures*

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# Question 3

Dretske articulates the notion of indication in terms of

*A. one thing's representing another thing*
*B. a reliable causal connection between two things*
*(e.g. tree rings and moisture)*
*C. being able to build something*
*D. our interpretation of the natural world*

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# Question 4

Dretske argues that an indication relation becomes a representation relation when…

*A. the indication relation is reliable*
*B. the indication is always correct*
*C. the indication relation acquires a specific function*
*D. the indication relation is a product of an historical process*

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# Two Questions

1. Can a physical system capable of performing certain functions think?
2. Can a sufficiently sophisticated computer program think?

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# Two Questions

2. Can a sufficiently sophisticated computer program think?

   • Is the mind to the brain like software is to hardware?

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# Strong & Weak AI

Strong AI: thinking is constituted by the manipulation of formal symbols, such as occurs in a computer program

Weak AI: thinking may be modeled by formal symbol systems, such as computer programs

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# The Imitation Game

- Can you guess, using a series of questions, which of two conversation partners is a machine and which a human?
- Questions may be of all kinds:
    - what's your name
    - what's your favorite color?
    - what does the smell of freshly cut grass remind you of?

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# The Turing Test

*I believe that in about fifty years' time it will be possible to programme computers…to make them play the imitation game so well that an average interrogator will not have more than 70 percent chance of making the right identification after five minutes of questioning…I believe that at the end of the century the use of words and general educated opinion will have altered so much that one will be able to speak of machines thinking without expecting to be contradicted. (Alan Turing)*

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# The Turing Test

1. For some arbitrary time period, there will be no discernable difference between the linguisitc behavior of a person and that of a machine

2. If there is no discernable difference in linguistic behaviour between man and machine, then there is no reason to think that there is any underlying difference in the causes of that behaviour

3. ∴ If we are willing to say that it is intelligent thought that is the cause of the linguistic behavior in the person we should be willing to say the same thing about the machine

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# Strong AI & the Turing Test

- Any computer that can pass the Turing Test for arbitrarily long periods of time will, according to strong AI, qualify as a thinking machine

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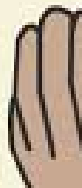Dretske

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# The Chinese Room Argument

*suppose I am placed in a room containlng baskets full of Chinese symbols. Suppose also that I am given a rule book in English for matching Chinese symbols with other Chinese symbols. The rules identify the symbols entirely by their shapes and do not require that I understand any of them. The rules might say such things as, "Take a squiggle-squiggle sign from basket number one and put it next to a squoggle-squoggle sign from basket number two." Imagine that people outside the room who understand Chinese hand in small bunches of symbols and that in response I manipulate the symbols according to the rule book and hand back more small bunches of symbols.*

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# The Chinese Room Argument

If you see this shape,
"什麼"
followed by this shape,
"帶來"
followed by this shape,
"快樂"

then produce this shape,
"爲天"
followed by this shape,
"下式".

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# The Chinese Room Argument

*Now, the rule book is the "computer program." The people who wrote it are "programmers," and I am the "computer." The baskets full of symbols are the "data base," the small bunches that are handed in to me are "questions" and the bunches I then hand out are "answers."*

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# The Chinese Room Argument

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# The Chinese Room Argument

*Now suppose that the rule book is written in such a way that my "answers" to the "questions" are indistinguishable from those of a native Chinese speaker. For example, the people outside might hand me some symbols that unknown to me mean, "What's your favorite color?" and I might after going through the rules give back symbols that, also unknown to me, mean, "My favorite is blue, but I also like green a lot." I satisfy the Turing test for understanding Chinese. All the same, I am totally ignorant of Chinese. And there is no way I could come to understand Chinese in the system as described, since there is no way that I can learn the meanings of any of the symbols. Like a computer, I manipulate symbols, but I attach no meaning to the symbols. (Searle, 26)*

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# The Chinese Room Argument

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# The Chinese Room Argument

1. Programs are purely formal (syntactic)
2. Human minds have mental contents (semantics)
3. Syntax by itself is neither constitutive of, nor sufficient for, semantic content
4. ∴ Programs by themselves are not constitutive of nor sufficient for minds

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# Syntax & Semantics

Syntax: the formal or structural features of a symbol system which determine which expressions are legitimate members of the system and which are not

- The syntax of English (its grammar) requires that all complete sentences have a noun phrase and a verb phrase
  - 'John goes to school' vs. 'school John to goes'

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# Syntax & Semantics

Semantics: The system of meanings assigned to a symbol
system, given by determining the referents of the
symbols and the truth conditions of symbol strings

- 'Schnee' refers to snow
- 'weiß' refers to the property of being white
- 'Schnee ist weiß' is true just in case snow is white

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# What Does the Argument Intend to Prove?

- You can't get semantic content from syntax alone
- A system must have more than purely syntactic properties in order to possess intentional states