Can Stones Be Conscious?

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Can Machines Think and Understand?

Physicalism *versus* Non-Physicalism

Some philosophers—called **physicalists**—believe that mental states can be entirely *reduced to* brain states. In other words, they believe that mental states are entirely physical.

Other philosophers—called **non-physicalists**—think that it is *impossible to reduce* mental states to brain or physical states.

Whether mental states can be reduced to physical states or not is one of the central questions in philosophy of mind today.

(1) The Problem of Qualia

(2) The Problem of Consciousness as Self-Awareness

One challenge for the physicalist is to give a completely physical description of **qualia** (=*the subjective state we are in when, for example, we see colors or experience pain*)

Another challenge for the physicalist is to give a physical description of the fact that we are **self-aware** when we experience ***qualia*** in the sense that we are **aware that <u>it is us</u> having the experience**.

Ramachandran on the Two Problems (1) Qualia and (2) Self-Awarenes

https://www.youtube.com/watch?v=jTWmTJALe1w&list=PLBF0905C888051EB7

For Ramachandran, the two problems are closely connected, two sides of the same coin.

Another Argument against Physicalism: the **Easy/Hard Problem of Consciousness**

David Chalmers, one of the leading philosophers of mind today

The Easy Problem of Consciousness

We perform many tasks, such as walk, run, jump, take decisions, recognize people, etc.

A completely physical entity, such as a robot, can be trained to walk, run, jump, take decisions, recognize people, etc.

If consciousness consisted in simply performing those tasks, a physical machine could be easily said to have consciousness. This is the **easy problem of consciousness.**

But Consciousness is not Just About Performing Tasks, Actions or Functions

The Hard Problem of Consciousness

Besides performing tasks, such as walking, jumping, recognizing people, etc. **we are also conscious of them as we perform them**. As we walk, we are conscious that we are walking. As we run, we are conscious that we are running. Etc.

The hard problem of consciousness is to explain how it is that we have such conscious experiences.

This is a hard problem for physicalists because ***there seems to be nothing in the physical structure of the world that accounts for why we are conscious of our actions as we perform them***.

Chairs aren't conscious of sitting in a room? How come we are conscious if we are just made of matter as the physicalists think?

David Chalmers' Answer to the Hard Problem of Consciousness

There are **four** fundamental **physical forces** which physics admit: (1) gravity; (2) electromagnetism; (3) strong; (4) weak.

We can add another basic force in nature, namely (5) consciousness.

This addition to the fundamental forces makes consciousness **present everywhere in nature**.

This is called **panpsychism** (*psyche* and *pan* are the Greek words for *soul* and *everything)*

Though consciousness would be everywhere, we humans would have **more consciousness** than, say, rocks or tables.

Turning to Our Next Topic: Can Computers Think and Understand Just like Us?

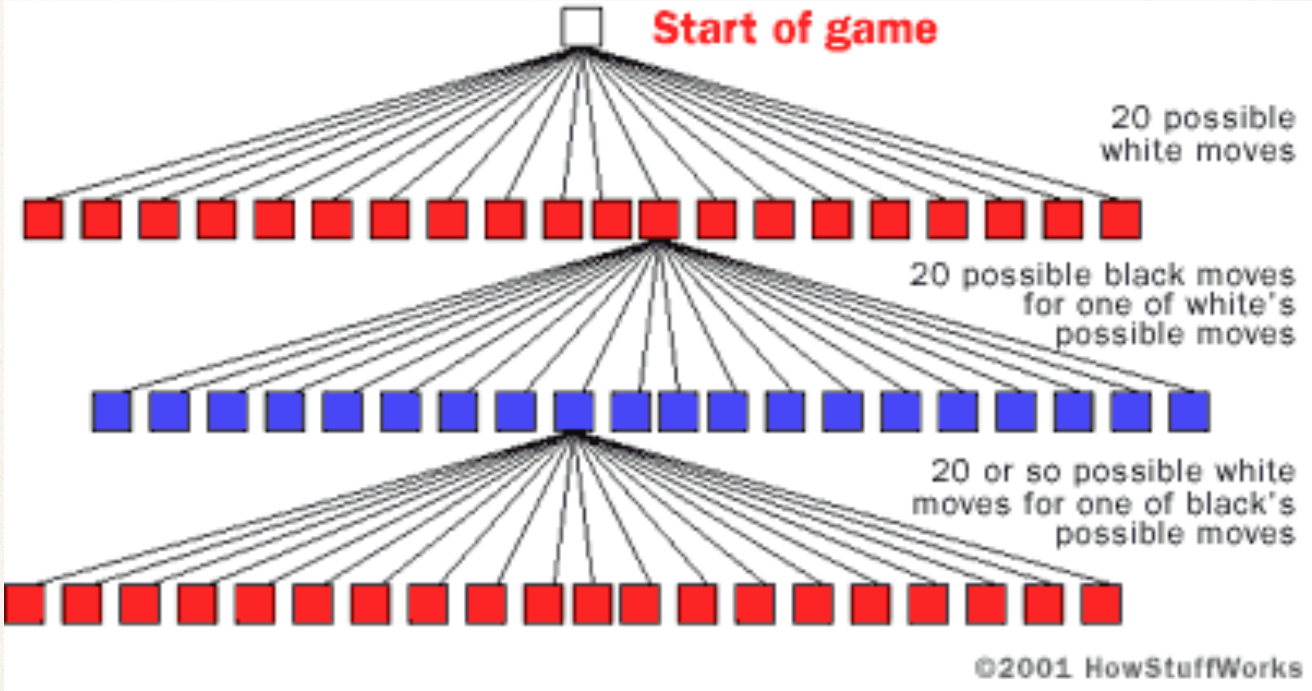
How A Chess Computer Works

Beginning of the game: there 20 possible moves.

Second step: there are 20*20 moves.

Third step: there are 20*20*20 moves.

Etc.



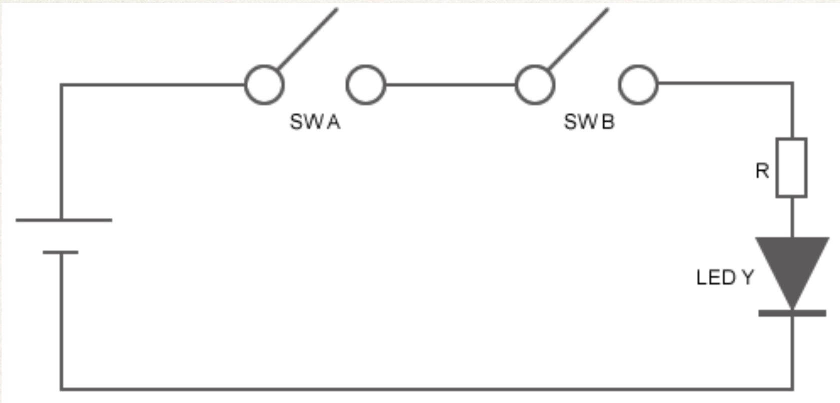
The computer computes in advance as many moves as possible. For example, it can compute 8 or 9 steps in the game ahead. In this way a computer can beat most people at chess.

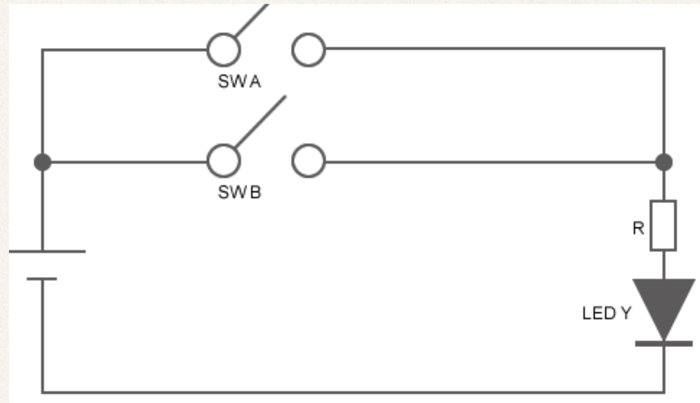
But Would We Say that The Computer Thinks Or Understands?

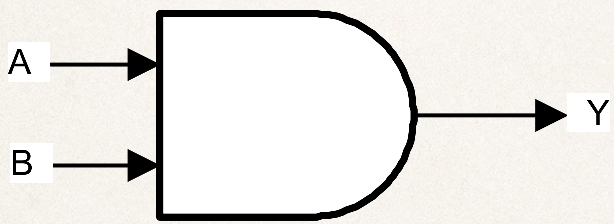
All the Information in a Computer Consist of String of Zeros and Ones

Computers are Good at Processing Information According to Rules

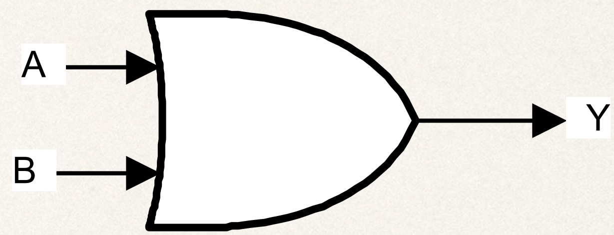
The AND and OR "Rules"







AND gate



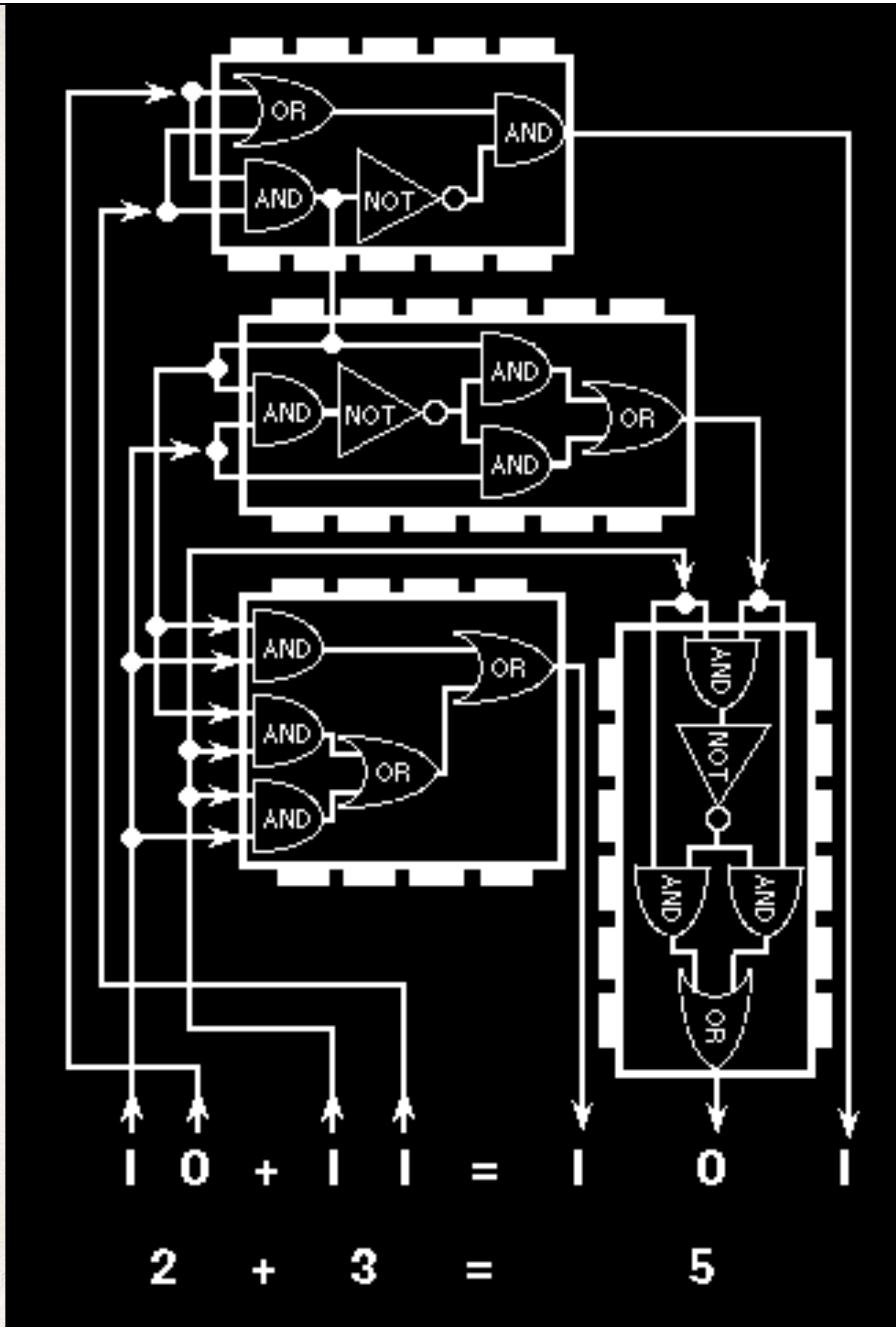
OR gate

The AND gate returns 1 as output whenever **both** inputs are 1's.

The OR gate returns 1 as output whenever **at least one** of the inputs is 1.

Addition by a Computer

After receiving as an input a string of O's and 1's — corresponding to, say, the numbers 2 and 3 — the computer can perform the mathematical operation of addition and giving as output the result, again in the form of 0's and 1's.



Computers receive symbols as **input** and they return new symbols as **output**.

Computer as *Input/Output* Manipulators of Symbols

Will Computers Ever Be Intelligent?

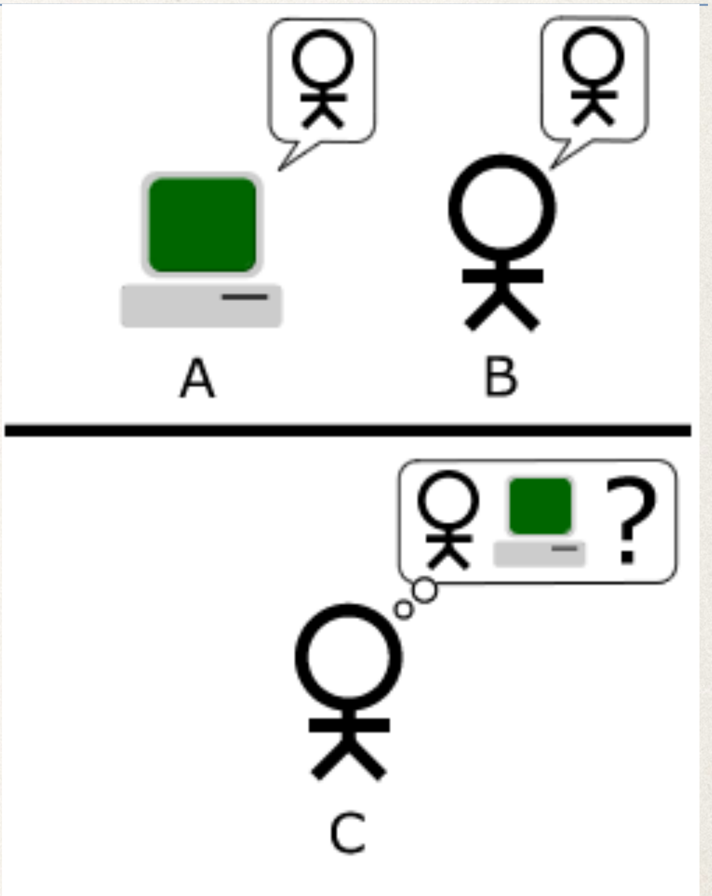
Alan Turing's Imitation Game

Suppose that we have a person, a machine, and an interrogator.

The interrogator knows the other person and the machine by the labels 'A' and 'B.'

The interrogator is allowed to put questions to the person and the machine of the following kind: "Will A please tell me whether A plays chess?" Whichever of the machine and the other person is A must answer questions that are addressed to A.

The object of the game is for the interrogator to determine which of the other two is the person, and which is the machine.



Passing the Turing Test

A machine is said to have passed the Turing Test if during the imitation game it can fool a sufficiently large number of interrogators and make them believe that it is a real human being and not a machine.

A Conversation with ELIZA a Program From The 1960ies

-I am the psychotherapist, please describe your problems.

- I have a terrible headache.

- Maybe you should consult a doctor of medicine. I am a psychotherapist.

- Okay, I will do that, then.

- Can you elaborate on that?

- What are you talking about? No, I cannot elaborate. See you later!

- Why do you say that?

- Now, you are just talking non-sense!

- What makes you believe that I am talking non-sense?

- You are not making any sense.

- Perhaps your plans have something to do with that. …

David Avidan (1934-1995)

The Israeli poet David Avidan had conversations with ELIZA and published them under the title *My Electronic Psychiatrist—Eight Authentic Talks with a Computer.*

Alan Turin's Prediction in 1950ies

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 … ***one will be able to speak of machines thinking without expecting to be contradicted****.*

Are Computers Better Today with the Turing Test? *Not Really!*

Participants in the **Loebner Prize Competition**—an annual event in which computer programmes are submitted to the Turing Test—come nowhere near the standard that Turing envisaged.

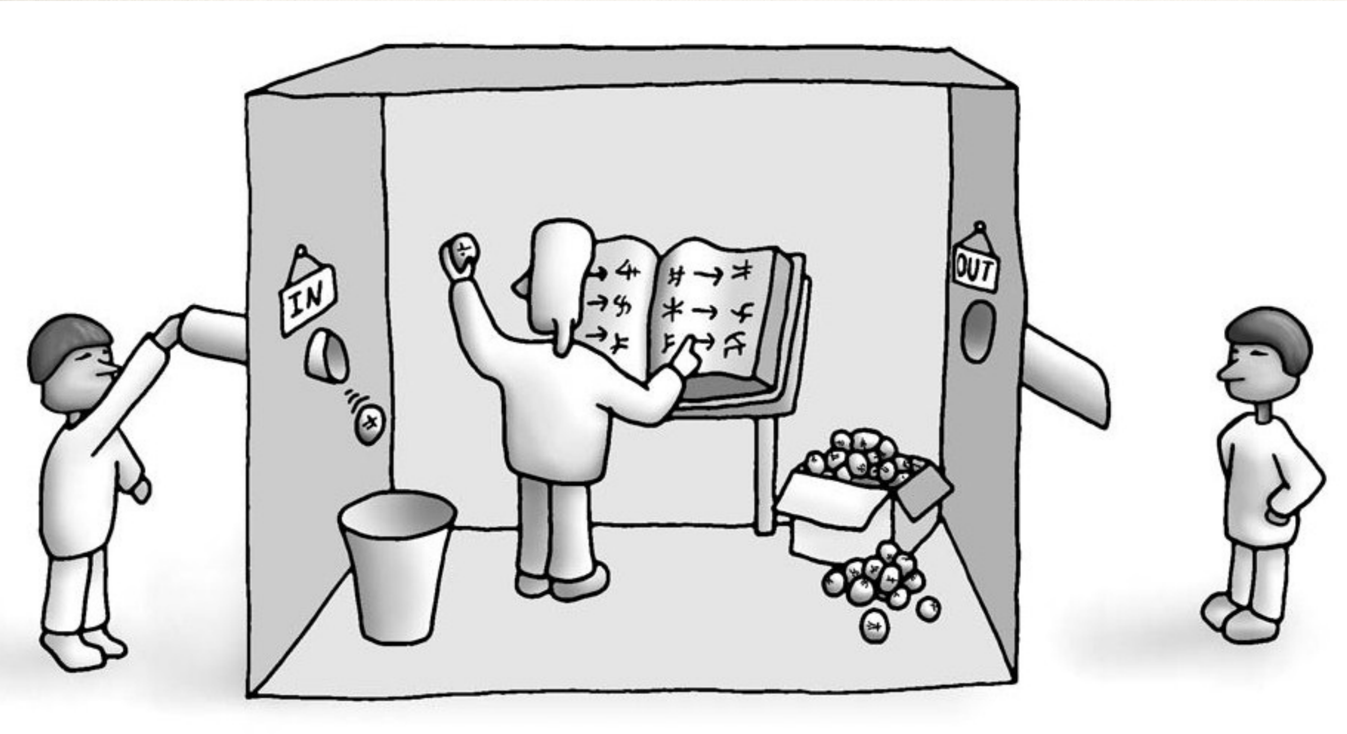
Some claim that the Loebner Prize Competition is an embarrassment because we are so far from having a computer programme that could carry out a decent conversation for a period of five minutes.

Imagine that One Day Computers Will be So Good They Could Pass The Turing Test

Would passing the Turing Test show that a computer is intelligent and able to understand what it is saying?

Passing the Turing the Test Might Not Be Enough

Searle's Chinese Room Argument

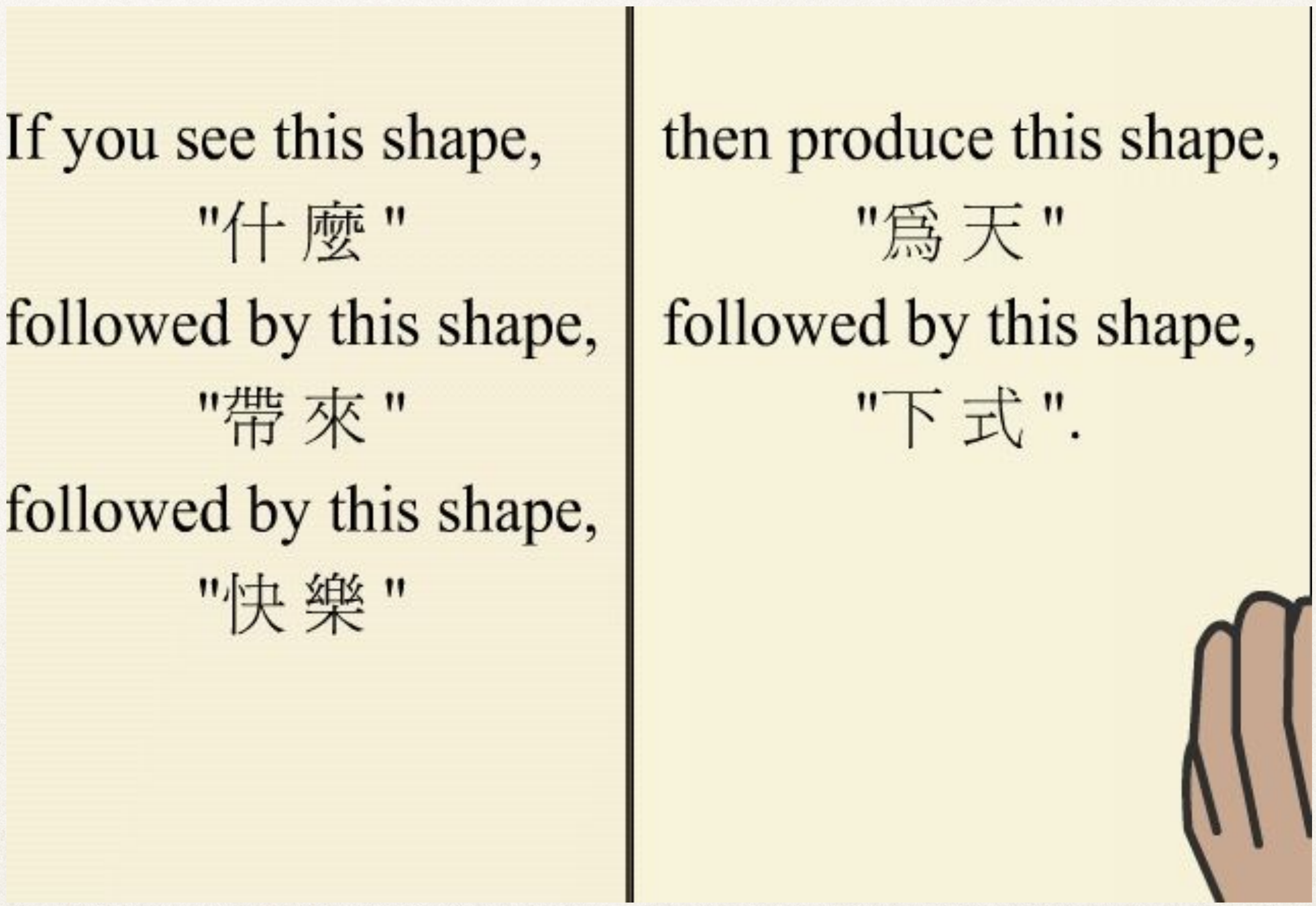


Imagine that a "box" can have a conversation in Chinese by receiving questions (*inputs*) and by providing answers (*outputs*) in Chinese.

Inside the box, however, there is a man who does not understand Chinese at all. The man blindly follows a rule book.

The box is like a computer that can pass the Turing Test, yet we cannot say that the box understands Chinese.

What the Rule Book Looks Like



An Important Distinction

Syntax. Putting together strings of symbols, letters, series of 1's and 0's, etc.

Semantics. Assigning a meaning to such symbols.

The Chinese Room Argument underscore the difference between manipulating symbols correctly (*syntax*) and understanding what such symbols mean (*semantics*).

Even if computers could pass the Turing Test, they would still lack the ability to understand meaning (*semantics*).