

## 1. Is the Turing Test (TT) a good test for intelligence?

Passing the Turing Test – if this will ever be possible – definitely is not the understanding of intelligence in full. It looks like Alan Turing got quite a narrow view of the meaning of intelligence. Talking to another person through a terminal window by just typing letters onto the monitor without even knowing if the other person is a He, a She or a "Hell-knows-what"... well, that's what chatting is all about. Through a terminal window we cannot see the agent on the other side. We cannot really judge whether he's lying or being honest. We cannot smell him. We cannot touch him.

The only thing what we can do is: typing, typing, typing. If we would like to shout at the agent, we can use an exclamation mark, if we'd like to ask a question we enter a question mark. – Isn't that a little bit limited?

Hugh Loebner is offering \$100,000 in contest for the person who passes the Turing Test. This looks like a huge sum. But now, think about the meaning of "passing the TT"...

If passing the TT would mean that we discovered intelligence and understood the whole meaning of it, even how the human brain works, well, then this amount of money would be quite ridiculous.

Still, I like the idea of the Turing Test. Creating a machine that will pass the TT may be possible one day. This test gives scientists a chance. Few of them will give up fast. Actually it looks pretty simple at first sight. Still, we are realizing that we actually don't understand intelligence yet at all. Passing the TT may be possible in twenty years, in a hundred years or it may never be possible.

Just one thing we have to be aware of: If ever someone will pass the TT, then this is not the end of the research about intelligence. That day may just be a day like the one when Kasparov lost the chess game against Deep Blue. It will just make clear how complex the whole subject is.

## 2. Is the Total-Turing-Test (TTT) as proposed by Harnad better suited as a test for intelligence? Why?

In the Total Turing Test we no longer got this teletype kind of conversation. The candidate should be a robot that represents a real person.

The TTT includes aspects of the so-called embodiment. The agent no longer is bound to his virtual world, the one that was limited to typing words in the traditional Turing Test. As soon as the agent is embodied, as soon as he's a real creature similar to a human being, he is acting in the "real world". This makes things significantly more complicated. He has to be kept in tune with the environment as the environment is always changing. In every way such a robot has to adapt. This is much more than just giving an answer to a question by manipulating symbols following specific deterministic rules.

If we would be able to construct such a robot, I guess this would be a prove for understanding intelligence. But I'm pretty negative about that. I think we will never succeed to create such a robot unless we use a comparable material out of which we human beings are "built". By creating a model of a human body there is always something missing. Otherwise we wouldn't call it a model. That's the point were I agree with John R. Searle's thoughts.

### 3. What is the relation between the Chinese Room and the Turing Test?

John R. Searle tried to prove that passing the Turing Test hasn't anything in common with understanding intelligence. A machine would be able to manipulate symbols and construct correct answers to any kind of questions, in case it is provided with a large enough amount of rules containing instructions on how to process the questions. By just giving the correct answers there is no proof that the machine actually understands what it is doing. If it doesn't understand anything, it cannot be intelligent.

Searle turns down the Turing Test. The Chinese Room was just a symbolic example to show up how narrow-minded the whole TT is.

Embodiment belongs to intelligence and embodiment does not exist in the traditional TT at all.

### 4. symbol grounding problem

Symbols are not just symbols. There is always a meaning of them. A human is able to map a meaning of a specific symbol because he or she knows the whole environment and is able to place it in the real world.

The example with the cup of coffee is a pretty good way to explain how complex the symbol grounding problem is.

If we look at natural language, we realize that there is a lot of interaction with the real world required. First of all we have to form a sentence. We cannot just add characters after each other; we need to know the grammar and syntax. Then comes the emphasis: Do we shout, do we speak softly, do we pose a question, are we afraid, are we proud, ... ? Natural language can be an expression of our feelings.

Next, we cannot just talk and talk. We also need to listen to the person next to us. We need to show interest in what the other person is saying. If not, we could just ignore her/him. Again, this requires feelings that are bound to our way of talking. Also, natural language is not just talking about the weather and saying "Hello" and "Bye". It's much more. Through natural language we can show our knowledge.

There are tons of other aspects we can express by natural language. The ones I mentioned were just a few to show how complex it is.