The Jocaxian's Paradox

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Abstract

There are several theories and hypotheses that state that our universe may be simulated on some alien computers. It would be a Virtual Universe without physical existence. It is also discussed whether Robots (or Computers) might ever have a conscience. In both cases, there would be feelings and emotions being produced on these machines, as the feelings of beings in a virtual universe would be produced on these computers. The paradox comes when we know that every computer can be replaced by a Universal Turing Machine. Since this machine essentially writes and reads symbols on a tape, so the simple "back and forth" of the tape being read and written by Turing's machine should produce the same feelings as the electronic computer produce in its simulation! Or does it just prove that these feelings could not be generated on a computer?

Subject Areas

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Keywords

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1. Introduction: Feelings

Have you ever wondered if there were no feelings in the universe?

What would the universe be like if there were no pleasure? suffering? Desire etc? In short, if there were no kind of sensation or feelings?

It would be equivalent to an empty universe, wouldn't it?

We know that all that has been done, all that is done and all that will be done, whether human or not; by biological beings or not; absolutely all morals, all ethics, and all justice are related to feelings.

Pleasure is sought and suffering is avoided to the fullest. The happiness is the

goal.

If in the universe, there was no ability to feel, if there were no feelings of pleasure or suffering then nothing would make sense. There need not be morality, ethics or justice. For what reason? Progress, evolution? If there were nothing he could feel?

For this reason, I chose what I consider to be the most important question in the universe:

"What is Feeling?"

2. Consciousness

We will consider that all consciousness has the capacity to feel. Without it, the term would lose its meaning and would not matter. What would a consciousness be without its ability to feel?

This explanation of consciousness is quite adequate:

"*Consciousness is everything you experience. It is the tune stuck in your head, the sweetness of chocolate mousse, the throbbing pain of a toothache, the fierce love for your child and the bitter knowledge that eventually all feelings will end*" [1].

"Qualia" [2] is the name commonly given to this sentient capacity of consciousness.

We can then consider that "feeling" would be the minimum level of consciousness and "self-consciousness" would be merely a sensation of existence itself.

3. Virtual Universe

Many researchers, scientists, thinkers, and philosophers at various times have wondered if our own universe could be a computer simulation. That is, the Physical Universe we live in could not exist physically but rather be "executed" or simulated in an alien supercomputer, in which the laws of physics and virtual particles had been inserted into its memory and subjected to a simulation.

Some examples are enlightening:

"*If we are living in a simulation, then the cosmos that we are observing is just a tiny piece of the totality of physical existence*" (Oxford philosopher Nick Bostrom) [3].

"*Believers in the simulation hypothesis say our world may have been created by beings more technologically savvy than ourselves*" (Johanna Walderdorff/for NBC News) [3].

"*We are within a generation of being those gods who create those universes* (Rich Terrile—a computer scientist)" [3].

"*The simulation hypothesis*, he said, "*starts to look like a religion*", *with a programmer substituting for god*" (University of Maryland Physicist Sylvester James Gates).

"*Brent Silby asks, is this the real life, or is this just fantasy? The Simulated Universe Argument suggests that the universe we inhabit is an elaborate emula-*

tion of the real universe. Everything, including the people, animals, plants and bacteria are part of the simulation" [4].

The idea of the "Simulated Universe" is not new, and is very similar to a concept called "Solipsism" [5]. Solipsism is an ancient philosophical precept where every perception of the universe would actually be just an illusion of a single being (you) who would imagine it all.

In this case, the "simulator" would be the mind itself—the only thing that would actually exist—of the human being that would imagine everything that seems to exist, but in fact would not exist outside of its own mind.

4. The Turing Machine

The Turing Machine (TM) [6] [7] is a mathematical-theoretical construction, created by the British mathematician Alan Touring [8], capable of simulating any computer:

"*A Turing machine is a mathematical model of computation that defines an abstract machine, which manipulates symbols on a strip of tape according to a table of rules. Despite the model's simplicity, given any computer algorithm, a Turing machine capable of simulating that algorithm's logic can be constructed*" [6].

No computer is more powerful than a Universal Touring machine:

"*A hypothesis called digital physics states that this is no accident because the universe itself is computable on a universal Turing machine. This would imply that no computer more powerful than a universal Turing machine can be built physically*" [9].

Any algorithm that can be computed on a physical computer can also be computed on a TM:

"*A universal Turing machine can calculate any recursive function, decide any recursive language, and accept any recursively enumerable language. According to the Church-Turing thesis, the problems solvable by a universal Turing machine are exactly those problems solvable by an algorithm or an effective method of computation, for any reasonable definition of those terms. For these reasons, a universal Turing machine serves as a standard against which to compare computational systems, and a system that can simulate a universal Turing machine is called Turing complete*" [7].

Simplicity

The advantage of TM is its simplicity. All she needs is a (potentially infinite) tape so she can record and read symbols; a read and write head; A state register and instruction table [6].

With these few elements, any processing on any computer can also be made a Turing Machine. So if we do not consider the processing time we can say that there is no computer more powerful than a TM.

5. The Jocaxian Paradox

For me, a convinced materialist, it has always been quite clear that from the si-

mulation of the dynamics of the universe, where the laws of physics would be inserted into the computer, (along with perhaps a set of elementary particles) we could simulate a good part of the universe, with the formation of planets, stars, and later the emergence of life, its Darwinian evolution until we reach consciousness and feeling.

This whole procedure is intuitively very simple. In this simulation, there would be no technical impediment to the emergence of life, nor to the development of the brains of its virtual creatures and the feelings that should arise (pain, hunger, desires etc.).

I have always sneered at opinions that denied the possibility that feelings might emerge from computer simulators such as Tononi's theory of consciousness (IIT):

"..*Integrated information theory* (*IIT*), *developed by Tononi and his collaborators*, *including me* (*Christof Koch*)...*IIT also predicts that a sophisticated simulation of a human brain running on a digital computer cannot be conscious—even if it can speak in a manner indistinguishable from a human being. Just as simulating the massive gravitational attraction of a black hole does not actually deform spacetime around the computer implementing the astrophysical code, programming for consciousness will never create a conscious computer. Consciousness cannot be computed: it must be built into the structure of the system*" [1].

If we consider that our universe is the result of a simulation processing then all the processing that would generate life, brains and even consciousness could be achieved in a Turing machine where the processing effect and its dynamics *where feelings are produced*-simply lies in a sequence of symbols on a tape and the movement to the forth and back of the tape and symbols being read and recorded.

Then the question arises:

How can feelings occur with a simple mechanical back and forth of a paper tape and symbols being read and written to this tape?

This is the "*Jocaxian Paradox*".

I haven't found an answer yet, which makes me very embittered. It sometimes reminds me of Netflix's film "The OA" [10], in which a set of specific arm and leg and body movements (such as perhaps the MT paper tape) triggered "magical" processes around this movement.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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