Filozyn. Niezależny magazyn filozoficzny

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Are we living in a simulation?

One of the most hotly discussed topics in recent philosophy is the simulation theory. While the hypothesis comes in numerous variations, they are generally reducible to the following question: are we living in a simulation? This article attempts at providing a straighforward response to this issue. First, however, some presumptions of the problem need to be addressed. The idea of simulation comes from the science-fictional scenarios. They can be reconstructed in the following manner. Let's assume that some person is connected to a device that sends impulses to the brain, creating a perfect mapping of the real world. Let's further assume that we ourselves play the leading role in this kind of scenario. We are the person asleep that experiences simulation of the real world. Could we ever realize that we are within the simulation? Before proceeding with an answer we should consider weather our understanding of the concept of simulation is complete and ready for investigating. Our entry-level hypothesis, the definition of simulation, can be presented with the help of formal logic:

$$\forall x \{S(x) \leftrightarrow \exists(y,y') [R(y) \rightarrow V(y')]\}$$

where:

1. S denotes a simulation
2. R denotes inclusion to the set of real entities
3. V denotes inclusion to the set of entities modeled within a simulation

The formula reads as follows: given a pair of events (y,y'), an event (y) is simulated in the simulation (x) as an event (y') if and only if an event (y') belongs to the set of modeled entities, while an event (y) belongs to the set of real entities.

Some additional questions arise if we agree that simulation is supposed to perfectly mimic the real world. The real world functions with accordance to the laws of nature. Events, objects, relations between objects, etc. are occurring with respect to these laws. The perfect simulation can generate every event from the real world. It is however not widely agreed that it must recreate every natural law from the real world. There can be a simulation of the object falling from a certain height in the virtual reality, but it does not follow that there is force of gravity operating within the simulation, as it is in the real world. The object appears to be falling down in the simulation because of some very complex instructions for the central processing unit. These instructions do not necessarily provide an environment that fully reflects the way a law of gravity works in the real world. For example, they could be programmed in such a way, that only enumerates objects existing in the simulation, and determine their behaviour in case of being dropped, but the object added to the simulation some time later would not behave in the same way, as it would not be included in the list of objects that are supposed to "fall down". We could however picture a kind of simulation that recreates not only events, but also laws. In this aspect the correlates of laws in the simulation, that is its programmed instructions, would not concern individual objects, but would recreate the laws as a whole. Because of these differentiation we can provide the following typology, and divide

simulations into three categories:

1. Parallel (a kind of simulation that models every event)
2. Analogous (a kind of simulation that models every law)
3. Absolute (a kind of simulation that models every event and every law)

It is worth noting that each of these categories will fulfill the conditions of a simulation given in the definition above, as it does not determine what entities are being modeled. However, the category brought up most often, when talking the simulation problem, would probably be the second one. The idea of simulation grounded in the sci-fi scenarios assumes that while there is indeed a possibility to render any event physically possible, there is no such necessity. An agent operating within the simulation is supposed to have freedom to undertake actions of his own choosing, as opposed to merely experiencing the perfectly copied reality.

The distinctions are of secondary importance to the argument, as they only concern the operative level of the acting agent. Any event can be simulated regardless of the fact it being a conclusion of a simulated law of nature or a simulated individual event with no link to any more general principle. To put it another way, let's picture a conscious agent within a simulation who decides to pick up some object and then drop it to the floor. He is operating within analogous simulation. Now picture an agent, regardless of him being conscious, who reaches with his hand to the object on the floor, and the object follows movement of the hand, only to vertically move back to the floor in the next moment, when grip of hand looses, because of some preprogrammed instructions for this particular object, independent of any hand movement, but so precise that it is indistinguishable from the actual picking up and dropping an object. This is parallel simulation.

The considered fictional scenario assumes that in the real world there is a device, most often portrayed as a powerful computer, with some sort of brain interface, capable of recreating physical events so precisely, that a person connected to it would not be able to distinguish virtual reality from the real one. This description fits yet another object from the set we proposed to identify as the set of the real entities (R). An sci-fi idea of the simulation assumes that there must be an access point in the real world that allows a person to get connected and experience the virtual reality from the first person perspective. This access point is the real existing device. Are we going to experience this device also in the virtually generated reality? We can imagine that after being transferred into the virtual reality we find the modeled street, with the modeled building that we can enter, and we can even find the device that looks exactly like the one that we are connected to in the real world. However, this device would not possess the qualities that we are expecting. We could not get connected yet another time and enter the subsequent, meta-virtual reality. The virtual device would not be able to provide a function of generating neither a parallel, nor an analogous simulation. Since we are concerned with the simulation that is not only phenomenal, that is not only looking the same as the real world, but also functioning exactly like it, we have to admit that the simulation generating device is indeed absent in the simulation. Thus we have found an instance for the variable (y) that renders the simulation formula false.

From the considerations above follows that the idea of simulation, as depicted in the science-fictional scenarios, understood as a perfect mapping of the real existing world, is not possible. This kind of simulation would require all features of the real world to be virtually modeled, including the ability to generate a simulation itself. The conclusion is that even if we live in a simulation, it cannot be a perfect simulation.