Review of: "How to Amend Christian List's Theory on Free Will to Answer the Challenge from Indeterminism"

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The article presented a good analysis of the problem of freedom in the traditions of analytical philosophy. But, there are two fundamental questions for analytical philosophy itself that determine the correctness of philosophical conclusions:

1. Are all the categories discussed in the article sufficiently defined?
2. Can we apply the formal (Boolean) logic to solve the problem of free will?

Let's start with the first question. The article provides substantiated definitions of determinism and indeterminism: "A system is deterministic if and only if, given the total state of the system at one time t1 and the laws that govern the development of the system, then at any later time t2, there is only one state in which the system can be. A system is indeterministic if and only if it is not deterministic." It follows that if we consider a person as a physical system, then the first case corresponds to a classical system, which does not have branching points on the phase trajectory, the second - a quantum one, the phase trajectory of which has branching points. From a physical point of view, both systems can only have physical levels of organization. There can be no psychological or intentional level. A physical system can be organized in a complex way with different levels of organization, but these levels remain purely physical (for example, a car or a quantum computer). From this point of view, it is not clear what is meant by the term «agent». Is an agent a certain level of the system, the system as a whole, or Ego in the sense of Descartes?

If we consider a person as a classical physical system, then he/she cannot have free will, since his/her phase trajectory does not have branching points. In this case, a person is an analogue of a train that travels along rails that do not have branching points. Free will is possible only in the case when a person (his brain) is a quantum system (see, for example, Solovyev N.A. «The structure of consciousness and the quantum paradigm». Proceedings of the Institute of Psychology of the Russian Academy of Sciences. 2022, 2(4):29-46 (in Russian)). Then a person has a multivariate world of potential possibilities from which the agent can choose alternatives. In this case, the agent is an extraphysical Self, which, according to the concept of von Neuman and the Copenhagen interpretation of quantum mechanics, can collapse the wave function of a quantum system. This extraphysical Self does not contain any information but may observe the system at different levels of the physical/information hierarchy, but these levels remain the physical/information levels of the physical system exclusively. In this case, the agent corresponds to the concept of Ego in Descartes' philosophy.

And here we move on to the second question: the applicability of Boolean logic. In quantum mechanics, Boolean logic does not work because there can be not only the alternatives of yes or no, but also yes and no at the same time. This is called quantum superposition that changes the entire logic of considering the problem of choosing alternatives. Now a

person, or more precisely his agent or extraphysical Self, can see both alternatives at once and assess the likelihood of their implementation. Let's say the agent sees the probability of implementing alternatives A and B as 90/10. For a physical system such as an electron, this would mean that in 100 measurements the electron would choose the A alternative 90 times and the B alternative 10 times. But a person is not an electron, he cannot choose 100 times, being, like an electron, in one state. A person chooses only once. In this case, the probabilistic nature of the choice lies in the fact that impulses (spikes) coming to the neurons responsible for choosing A or B arrive with a probability of 90/10. But a less probable impulse may come first. If the agent has not the awareness of spike arrival (the desire to choose an alternative), then the choice will occur automatically. If the agent is aware of the desire, then he can veto or approve its execution, i.e. the exercise of truly free choice: “only those actions that are endorsed (in addition to fulfilling the conditions that it was possible for the agent to do otherwise) can be free”, as stated in the article. This is consistent with the results of B.Libet's experiments («Do we have free will?» Journal of Consciousness Studies. 1999, 9: 47–57). After the veto, further thinking about the situation with the next attempt of choosing is possible. This mechanism is, in fact, a combination of the determinism of the Schrödinger equation for choice probabilities and the indeterminism of the collapse of the wave function of a quantum system. It turns out that the probabilities are determined by external conditions and the state of the system itself, and free choice is carried out in a quasi-random manner, taking into account the corresponding probabilities.