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Pećnjak, Davor

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COMPLEX FREEDOM*

Davor Pećnjak**

Institute of Philosophy
Zagreb, Croatia; and

Department of Philosophy, Centre for Croatian Studies, University of Zagreb
Zagreb, Croatia

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ABSTRACT

We have a very strong intuition and a very strong feeling that we, as human beings, generally have freedom of the will and freedom of the action. It seems that in most situations we can do this or that; namely, we can do action A or we can refrain from doing action A under the same conditions. The view which argues that this is not an illusion and that we have genuine freedom is the libertarian view. I would like to examine could that view be plausible under scientific understanding of the world. It seems that physical sciences strongly support determinism. Chaos theory and indeterminism in quantum mechanics could not save freedom because chaos is a deterministic theory and indeterminate events in quantum mechanics happen by pure chance. Pure chance is not something we want as freedom. But, perhaps, we can have freedom reconciled (although maybe in a restricted form) if actions or decisions can be described by equations which allow more than one solution and if these solutions can be interpreted as refering to different contents of the will or to different actions.

KEY WORDS

free will, determinism, libertarianism, chaos theory, complexity

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**Corresponding author, η: davor@ifzg.hr; ++1-6111-996/124;
Institute of Philosophy, Ul. grada Vukovara 54, 10000 Zagreb, Croatia;;

INTRODUCTION

In this article, I would like to examine some points in the philosophical debate of free will and what points from complexity or chaos theory can be, perhaps, interesting for the debate. I will simplify things a bit, but I certainly try not to make an oversimplification!

FREEDOM AND LIBERTARIANISM

We have a very strong intuition and a very strong feeling that we, as human beings, generally have freedom of the will and freedom of the action. It seems that in most situations we can do this or that; namely, we can do action A or we can refrain from doing action A. It seems that it is the case that it is so even in situations in which there is no reason to refrain from doing A – for example in escaping from fire – still it seems that "ontological" situation is thus that nothing inside or outside us (as agents) is such that would not allow us to refrain from doing A in that circumstances. Of course, there may be, and there are, situations in which some agents are completely determined what they will do next or what will happen. There may be cases of complete determination even if our world is such that it contains real freedom for the will and action – for example, full psychological determination (psychopathological cases or acting under alcohol or drugs, etc.) or environmental situation in which there is no possibility to "exercise freedom" because we instinctively do what we do or environmental situation in which "physical forces" are so overwhelming that agent's will and agent's acting is without significance and without impact (even on agent himself).

But leaving these possible situations aside, I would like to speculate about some prerequistes that must be present for us to have freedom of the will and freedom of the action in most ordinary circumstances if all these can be scientifically described. I do not endorse compatibilism, namely the view that freedom and determinism are compatible. Moreover, I think that compatibilism is untenable. (But thorough arguing for untenability of compatibilism is not the subject of present article and is not needed for present purposes.) Only viable way for genuine freedom is the libertarian view (for an excellent overview of libertarianism and its variants see Clarke [3]). Those who endorse libertarianism are incompatibilists regarding freedom and determinism – freedom cannot be reconciled with determinism. Libertarians argue exactly for what is said at the beginning: not only that we have strong intuition and feeling of freedom – becuse that can be an illusion – but that real "metaphysical" situation is that, in most cases, under exactly the same circumstances we can do action A or we can do action not-A (refrain from doing action A). We can use the language of possible worlds and say that if in this actual world a certian agent X does A at time t, then there is a possible world with the same laws of nature and overall history up to time t as actual world, but in which, at t, agent X does not-A (refrains from doing A). (To make things shorter at this very point, I consider deliberating, agent's deciding and agent's willing as types of action as well, see for example Pink [12]) How could that be possible, especially under the scientific description of nature and agents, which seems hostile to libertarianism? It seems that modern science, especially physical sciences, strongly supports determinism and deterministic view. The cases of (genuine) indeterminism are seemingly rare and tied to some special situations; and there is widespread doubt that examples of indeterminism (in physical sciences, as it will be clear a bit later taking an example) are also not of help for libertarian construction of freedom.

INCOMPATIBILITY OF FREE WILL AND DETERMINISM

First of all, let me sketch the essence of an argument for incompatibility of free will and determinism (see for example, van Inwagen [13, 14], Lamb [9]).

Universe is governed by the laws of nature. They are as they are and we cannot change them – no one has the power to make laws of nature different from what they are. Likewise, no one has the power over the past. It is not possible that someone acts now in a way that would make the past different from what in fact it was. No one has the power to act that something wich is a fact of the past would not have been a fact about past [5; p.9]. The doctrine of determinism says the following: for any state or event X in the universe there is a set of previous states and events that, together with the laws of nature, inevitably entail state or event X. This kind of argument is called "The Consequence Argument" as well. It is standardly interpreted causally: Laws of nature and the set of previous states and events causally necessitate X. First clear explication of such a thought had been given by Laplace. So, by Laplaceian determinism today we simply mean that when we choose certain state of the universe at any instant of time together with the laws of nature, what happend before and what will happen after that instant of time is uniquely determined. Now it follows, according to these explications, that if freedom requires the possibility to do otherwise (than what is done in fact), namely the possibility of doing A and refraining from doing A, it is incompatible with determinism.

But, to repeat the question already posed – how could that be, because it seems that modern science strongly, if not completely, supports determinism. The cases of indeterminism are seemingly rare and tied to some special situations. But certainly even some of these indeterminisms could not be of much help for a libertarian.

DETERMINISM AND INDETERMINISM

There may be some doubts whether Laplacian determinism firmly holds accross (the whole) of modern physics and it is still unresolved matter according to Earman [4]. He analyses some very interesting examples from physics – both classical and quantum – and shows where there are cases which involve indeterminism; he also try to show how some of them, perhaps, could be reinterpreted in a deterministic outset, though then other problems arise for those reinterpretations. These cases of indeterminism are special cases though maybe they could provide some framework how to think about how to help a libertarian view.

Of course, at the level of quantum mechnics, there are some cases of chance events which are really just pure chance (for example, the decay of a neutron in a free state). But that would not much help a libertarian: because at the level of decision making, at the level of will and the level of action and behaviour, pure chance or randomness in this sense is also something over which an agent does not have a control and influence just like an agent does not have a control and influence over the laws of nature and past states of the universe in the deterministic outset. Also, we do not frequently observe purely random behaviour. When we do, then in most cases it is the behaviour of a mentally ill person. So, randomness in action would not be a mark of freedom, but it is a mark of mental illnes.

The classical general relativistic physics [4; pp.34-40] also admits indeterminism in an interpretation. In a nutshell, regarding the inital value problem for source-free Einstein gravitational field equations, Earman [4; pp.35-36] says that "specifying the metric field and its normal derivative on some space-like slice Σ does not suffice to determine ... the values of the field at points of four-dimensional manifold to the future or the past of Σ. Indeed, specifying Lorentz signature metric on Σ and the entire causal past of Σ does not suffice to

determine Lorentz signature metric at points to the future." It means that we can have completely the same past of the metric field and the same causality in it, but that, from some point, the future is not the same in an evolution of the manifold.

For another example, not tied to Earman, here I shall mention the work of the so-called Bruxelles-Austin group led by Prigogine on far-from-equilibrium systems. They look at the complex systems as a whole and take a new approach to describe them. Fundamental to their description and explanation is distribution. So, the structure of the distribution of complexes of particles from which a system is build is something elementary important and not the classical description and explanation of single particle with its trajectory, momentum and direction. As, for example, says Robert Bishop [1; p.121] – these kind of theories and explanations which are concerned primarily on distribution functions open possibilities for genuine indeterminacy, namely, that macroscopic far-from equilibrium systems are irreducibly indeterministic. If so, that would mean that some indeterminism is inherent in complex macroscopic systems.

CHAOS IS OF NO HELP FOR LIBERTARIAN CONSTRUCTION OF FREEDOM

I think that it is pretty much obvious that chaos theory could not help libertarians in explaining their notion of freedom. Chaos theory is in fact a deterministic theory [6, 10, 16] and could nicely fit into Laplaceian vision of determinism. However, there are several very interesting properties of ingredients of chaos theory. Among others, the theory incorporates many non-linear equations and there is so-called sensitive dependence. A system is sensitivly dependent on initial conditions if very slight, indeed, very tiny, difference in initial conditions leads to great differences in later development. "In fact, in some dynamical systems it is normal for two almost identical states to be followed, after a sufficient time lapse, by two states bearing no more resemblance than two states chosen at random from long sequence" writes Lorenz [10; p.8]. So, a system of non-linear equations can produce huge diffrences between initially almost identical dynamical systems (for a particular example, see Wolf [17]). This means that the priciple which says that from similar conditions and similar causes we should arrive to similar effects is no longer universally valid. The other property which follows is that chaotic dynamical systems are very complicated systems: though some of them can be governed even by simple equations, their appearance is very complicated. Because of that complicated appearance, they may even look random. But they are not random: they just look random and they are just very complex and complicated.

One thing that must not mislead us is that at the practical level, there could be many cases of poor predictability or predictability could be completely impossible. This is due only to sensitive dependence in chaotic or complex systems. It is not a mark of freedom. When investigating and measuring real systems, we are bounded how precise we can measure important values. So if we can, for example, be precise in measurement to fifth decimal, but two similar systems show sensitive dependence only to the sixth or further decimal, we would be in no position to predict what will happen to those systems and how much would they differ, perhaps even after just a few steps. But this situation arises only due to our limitations or the limitations of our instruments. It is not that, in reality, the systems in question are not completely deterministic systems.

So, for genuine freedom, it seems that we must steer between randomness and complete determination. Let's see what could be done.

FREEDOM AND NON-SOLVABLE EQUATIONS

In an article with the title "Free Will Remains a Mystery", van Inwagen [15] argues, among other things, precisely for that – free will is a mystery! Namely, he is an incompatibilist regarding free will and determinism, but also he thinks that free will is something that exists and that we have it. In his words: "But if free will is incompatible with determinism, we are faced with a mystery, for free will undeniably exists, and it also seems to be incompatible with indetermisism" [15; p.158]. Robert Kane [7; p.12] comments: "Van Inwagen believes that noone to date has been able to give an intelligible account of incompatibilist freedom; and he has doubts about the possibility of doing so. Yet because he also thinks the Consequence Argument is undeniably sound, he argues that we must continue to believe in an undetermined will even if we do not know how to give an intelligible account of it." If such a mysterian view is right, namely that we cannot explain how we have (if we have) free will, how can that view be reflected upon, regarding scientific view of the world?

First of all, maybe we have fundamental freedom of will and of action and indeed it is not explicable in any theory that can be available to human beings. We, with our cognitive capabilities are, to borrow the phrase from Colin McGinn [11] used in another context, "cognitively closed" for such an explanation. Simply, as chameleon is cognitively closed for a physical theory of colours and light that we, humans, have, perhaps we cannot come to formulate and understand what lies in the foundations of free will and free action and to explain them. On the other hand, perhaps we shall be able to formulate a very precise and complex(ity) theory of our deliberating and acting on the results of that deliberating. Such a theory, if it will be a mathematically formulated physical theory, will perhaps contain all, some or at least one of the equations which will be in such a form that they have no solution. Let me cite Edward Lorenz [10; p.13], though from other context, in support of this speculation: "Very often, when the flow is defined by a set of differential equations, we lack suitable means for solving them – some differential equations are intrinsically unsolvable. In this event, even though the difference equations of the associated mapping must exist as relationships we cannot find out what they look like. For some real-world systems we even lack the knowledge needed to formulate the differential equations; can we honestly expect to write any equations that realistically describe surging waves, with all their bubbles and spray, being driven by a gusty wind agains a rocky shore?"

We can interpret this in two ways: in an epistemic sense and in a metaphysical sense. Epistemic interpretation would suggest that we are limited in the possibility of knowing how something happens – but that what happens happens in a (complex) determined way. So that is not a rescue for a libertarian account of freedom and free will. The other interpretation, a metaphysical one, seems to be more promising. This would suggest that there is not a determinate process inherent in reality that would be computationlly solvable. The lack of suitable means of solving the equations may perhaps mean that there is no inherent process in reality which happens in a completely determined way (but not perhaps completely randomly).

FREEDOM AND RATIONALITY

I would like to say something about the connection of rationality and freedom as well. Here, I would not go into assesing what people actually do and how they actually behave – we know, of course, that people are too much irrational in practical everyday life – but I would like to examine what rationality would require how to choose and how to behave.

Rationality also can be an obstacle for freedom. However complex may be our intertwining of our preferences and however complex we must think about them, for most situations in

which we can find ourselves, there is one and only one solution which is the best solution for that situation. Rationality would dictate that we take the solution which is the best and take a course of action which it prescribes. There may be situations in which more than one action would be equally rational for us to take, so it would not matter which one of that equal actions is undertaken (from the viewpoint of rationality). But, in most cases, there is only one solution available as the best solution. So, according to rationality, there would not be genuine choosing – only one course of action is possible as the most rational and, if we want to maximize our rationality and be completely rational beings there will be no freedom for us. But, of course, anyone who would like to argue for libertarianism, would not like to lose rationality. Libertarian would like to have a situation that we (can) act rationally, but that we do so freely. So, rationality (or maximization of rationality) somehow has to be reconciled with freedom. I have no offhand solution for this problem (but Thomas Pink [12; pp.44-54] offers a plausible solution) but I would like to say the following: Perhaps we should distinguish abstract theory of rationality on one side and how that rationality is realized in human beings as, for example, a complex interaction of components of a system of beliefs, desires, preferences and representations of the situations in which subject finds himself. This system is mentally and physically realized as dispositions and/or states and processes in the brain. The physical description (if somethnig as that would be ever available) should be then in some form which does not yield a unique solution which would be a definite determination of the undertaking of the most rational action of the agent. That description should allow for diferent possible outcomes in this situation. In other words, the physical situation of the agent should be so that it allows for different actions and not only the most rational. So, we shall perhaps have descriptions and explanations at two levels: at more abstract level – the rational (intentional) level there would be only one solution which would be the most rational for the agent and at the more basic level – let's provisionally say physical level – we shall have a situation of the realization of that rationality as part of a complete (physical) situation of the agent which does not uniqely determine and causally necessitate undertaking the most rational even though an agent does the most rational action.

CONCLUSION

So, bearing in mind what is said above, where should freedom be between determinism and chance? I'll try to sketch just a general frame and I admit that there are many ifs in my conclusion!

First, perhaps, we should narrow the scope of possible actions under the same set of circumstances. It would mean that not everything is possible to will and to do under the same set of (antecedent) circumstances. But it would also mean that not only one inevitable action is possible but a certain range of them. So, both at the level of rational (intentional) explanation and "physical" explanation we should have descriptions which do not (causally) necessitate. Rational reasons provide what is best or most rational for an agent to do but they do not causally necessitate that agent would inevitably do what it prescribes; and rational explanation in virtue of these reasons does explain why agent does according to it if agent really takes that course of action which is prescribed by what is most rational to do. But it does not explain agent's actions as inevitable and comlpetely determined by previous states and laws of nature. So, perhaps "physical" situation of an agent should also be such that it does not necessitate the outcome what agent will do.

There are equations or systems of (differential) equations which have multiple solutions (more than one solution). If we could interpret these different (numerical) solutions that they refer to different contents of the will or to different actions, then it could mean that different actions are compatible with the same situation which obtains before taking a certain action.

So, an agent would be in situation with open possibilities, though it could be a restricted range of possibilities. But, in that range there would be a genuine openess (which action to take and whichever action is then taken, it would not be one that inevitably followed). But that what is chosen and which action is undertaken would not be random on the other hand, because it would be compatible with some intentional (broad) rational explanation, even in the cases where the action undertaken is not the most rational, and it would be compatible with specified previous states and a physical description of a situation; and whatever else is in that range what equations allow, is, by that very fact, compatible with previous states and a physical description of a situation.

Of course, details of such an approach, if possible at all, are yet to be worked out, but it seems that it provides a general framework how libertarian and scientific worldviews could be reconciled.

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KOMPLEKSNA SLOBODA

D. Pećnjak

Institut za filozofiju
Zagreb, Hrvatska; te
Odsjek za filozofiju, Hrvatski studiji Sveučilišta u Zagrebu
Zagreb, Hrvatska

SAŽETAK

Naša intuicija i osjećaji da mi, kao ljudska bića, općenito imamo slobodu volje i djelovanja. U mnogim situacijama djeluje kao da možemo napraviti jedno ili drugo, tj. možemo provesti djelovanje A, ili se možemo suzdržati od provedbe djelovanja A pod istim uvjetima. Libertarianizam je pogled prema kojemu to nije privid, nego izvorna sloboda. U radu ispitujem može li taj pogled biti moguć pri znanstvenom razumijevanju svijeta. Djeluje kao da fizikalne znanosti snažno podržavaju determinizam. Teorija kaosa i indeterminizam u kvantnoj mehanici ne mogu održati slobodu jer je teorija kaosa deterministička teorija, dok se nedeterminirani događaji u kvantnoj mehanici odvijaju nasumično. Nasumičnost nije nešto što želimo kao slobodu. Ali, možda, možemo ponovo uključiti slobodu (iako možda u reduciranom obliku) ako djelovanja ili odluke mogu biti opisane jednadžbama koje omogućavaju višestruka rješenja te ako ta rješenja možemo interpretirati kao da se odnose na različite sadržaje volje ili različitih djelovanja.

KLJUČNE RIJEČI

slobodna volja, determinizam, libertarianizam, teorija kaosa, kompleksnost