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# The Metaphysics of Free Will: A Critique of Free Won't as Double Prevention

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**Abstract** The problem of free will is deeply linked with the causal relevance of mental events. The *causal exclusion argument* claims that, in order to be causally relevant, mental events must be identical to physical events. However, Gibb has recently criticized it, suggesting that mental events are causally relevant as double preventers. For Gibb, mental events enable physical effects to take place by preventing other mental events from preventing a behaviour to take place. The role of mental double preventers is hence similar to what Libet names *free won't*, namely the ability to veto an action initiated unconsciously by the brain. In this paper I will propose an argument against Gibb's account, the *causal irrelevance argument*, showing that Gibb's proposal does not overcome the objection of systematic overdetermination of causal relevance, because mental double preventers systematically overdetermine physical double preventers, and therefore mental events are causally irrelevant.

KEYWORDS: Free Will; Free Won't; Metaphysics; Mental Causation; Double Prevention.

**Riassunto** *La metafisica del libero arbitrio: una critica al veto cosciente come duplice inibizione* – Il problema del libero arbitrio è intimamente legato alla rilevanza causale degli eventi mentali. Secondo l'*argomento dell'esclusione causale* si afferma che gli eventi mentali, per essere causalmente rilevanti, debbano essere identici a quelli fisici. In tempi recenti Gibb ha avanzato l'ipotesi che gli eventi mentali hanno rilevanza causale in quanto duplici inibitori. Secondo Gibb gli eventi mentali permettono il verificarsi di effetti fisici, impedendo che altri eventi mentali inibiscano il verificarsi di un certo comportamento. Il ruolo di duplice inibitore degli eventi mentali è quindi simile a quanto Libet chiama *veto cosciente*, ossia la capacità di posizione di veto nei confronti di un'azione inconsapevolmente avviata dal cervello. In questo articolo intendo proporre un argomento contrario all'approccio di Gibb, l'*argomento dell'irrelevanza causale*, in cui si sostiene come la proposta di Gibb non riesca a superare l'obiezione della sistematica sovradeterminazione della rilevanza causale dal momento che gli eventi mentali come duplici inibitori sovradeterminano sistematicamente quelli fisici e quindi gli eventi mentali sono causalmente irrilevanti.

PAROLE CHIAVE: Libero arbitrio; Veto cosciente; Metafisica; Causazione mentale; Duplice inibizione.



## Introduction

FREE WILL IS ONE OF the most ancient and debated problems of philosophy. It is at the centre of our conception of responsibility,

and is deeply linked with the causal relevance of mental events. Not every action is free: traditionally, two conditions are thought to be necessary for a free action. First, the *principle of alternative possibilities* claims that

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being free requires the ability to do otherwise, i.e. at least two different courses of action should be available for each free choice. If a magician hypnotises me and makes me bark like a dog, my barking is not the result of a free decision, because I could not have done otherwise. Second, the condition of *autodetermination* or “control” requires that the mental states (thoughts, desires, beliefs, etc.) of the subject must be causally relevant for the outcome of the action. This condition distinguishes decisions that are taken randomly from decisions coherent with the reasons and the desires of the subject.

According to illusionists, sceptics and hard determinists, the principle of alternative possibilities is impossible to satisfy in a deterministic world, since in such a world the state of the universe at a certain time is necessarily determined by the conjunction of the laws of nature and the state of the universe at a previous time, so that no alternative course of action is actually possible. Traditionally, the experiments on conscious will performed by the neuroscientist Benjamin Libet<sup>1</sup> have been taken to support the view that, if decisions are reached unconsciously by the brain and in advance of subjects’ awareness, then the principle of alternative possibilities can never be satisfied. However, contrary to this interpretation, Libet<sup>2</sup> claims that even if there is experimental evidence against freedom, free will can be preserved in the form of the subject’s ability to inhibit unconsciously originated actions, employing the so-called *free won’t*.

Other scholars have proposed accounts of free will that reject the principle of alternative possibilities. In particular, the proponents of the *source models of control* claim that autodetermination is sufficient for actions to be free, allowing agents to be morally responsible for their conduct.<sup>3</sup> According to these authors, as long as the subject’s action arises from her mental states (intentions, desires, beliefs, etc.), she is a genuine source of her action, independently of the deterministic nature of the world. Sure enough the subject is not the *ultimate* source of her action, but for compatibilism

this form of autodetermination is sufficient to ensure free will and moral responsibility. As I will argue, source models of control rest on the implicit metaphysical assumption that mental events are causally relevant as (mediated) sources of actions, and this claim is problematic because the causal efficacy of mental events has been criticized by the *causal exclusion argument*.

Recently, Sophie Gibb has defended the causal relevance of mental events claiming that free won’t represents a case of mental double prevention.<sup>4</sup> This new approach is original and promising, and in this paper I will assess Gibb’s theory, focusing on both the strengths and possible weaknesses.

In the first section of this article I will present Libet’s theory of free won’t. In the second and third sections I will present Gibb’s criticism to the causal exclusion argument<sup>5</sup> and Gibb’s theory of mental double preventers. In the fourth section I will raise an argument against Gibb’s account of the relevance of mental events as double preventers, that I will call the *causal irrelevance argument*. I will argue that the critique of the closure principle based on double prevention is fruitful and worth developing, but that it doesn’t lead to a better ground for explaining the causal relevance of mental events, and that Gibb’s theory of mental double prevention might rather be a useful ground for a compatibilist account of free will.

## ■ Determinism, free will, and free won’t

The contemporary debate on free will has recently received new nourishment from cognitive neuroscience. Sceptical positions about free will have been reinvigorated by a particular interpretation of the experiment conducted by the neurophysiologist Benjamin Libet.<sup>6</sup>

In his famous experiment, Libet wanted to examine the temporal relationship between the decision to perform a motor action and the cerebral activity underlying this decision. Libet asked the experimental subjects to look

at a clock showing a moving dot, relax, and wait for the urge to move their wrist. The subjects had to decide freely and without preparation to move their wrist, noticing the position of the dot on the clock at the moment in which they became aware of their decision. In the meantime, Libet recorded specific brain activities of the subjects with an EEG (electroencephalogram), and the precise timing of the final movement with an EMG (electromyogram).

Notably, Libet discovered that the so-called *readiness potential*, a negative brain potential originating in the supplementary motor area (SMA) during motor preparation, preceded the subjects' conscious decision to move their wrist by 350 milliseconds (on average). This result saw many draw the conclusion that the brain unconsciously makes the decision before the subject becomes aware of it, that the subject's decisions are determined by unconscious processes, and that free will is just an illusion.<sup>7</sup> The general idea is that actions are free only if we can decide in advance what we intend to do, and then our intention is translated into action by brain processes and neural impulses. But since Libet's experiment shows that decisions are unconsciously determined in advance, one is brought to conclude that subjects' decisions are always determined by previous neural activities. If so, the subject is never able to do otherwise, and therefore the first condition of a free action, the principle of alternative possibilities, is never satisfied.

Even if this interpretation has gained more and more consensus during the years, Libet draws a different conclusion from the experiment, arguing that the results leave hope for a theory of free will.<sup>8</sup> In fact, even if the subject becomes conscious of the decision to act only 350 milliseconds after the appearing of the readiness potential, this conscious awareness precedes the outcome of the action (i.e. the movement of the wrist) by approximately 200 milliseconds. In this time the subject still has the opportunity to stop the action, exercising her capacity to veto.

Even if the subject feels the urge to move her wrist and she is planning to do so, immediately before the action she might decide to stop the movement, inhibiting the motor preparation that would have caused the action. Libet concludes that even if we are not endowed with free will, our actions are not completely determined because we possess *free won't*. Hence, to a certain extent, the fact that our actions are not completely determined would preserve free will by maintaining the subject's ability to do otherwise.

### ■ The causal exclusion argument

Other attempts have been made to maintain agents' freedom even without alternative possibilities, grounding free will exclusively on the condition of autodetermination.<sup>9</sup> Classical compatibilism claims that an agent is free even if she cannot do otherwise, as long as her mental states (reasons, beliefs, intentions, desires, etc.) play a relevant role in the determination of the action, i.e. if the condition of autodetermination is satisfied.

Notably, Frankfurt has provided a compelling argument for this claim.<sup>10</sup> In Frankfurt's example, a rational subject (Jones) has decided to perform a particular action. Someone else (Black) wants Jones to perform the same action. However, in order to obtain what he wants without showing his hand, Black waits until the moment in which Jones takes his decision, planning to intervene only if Jones decides to do otherwise from what Black wants him to do. There is a variety of possibilities regarding Black's means of intervention: he might threaten Jones and force him to act the way he wants, he might hypnotise him, give him a potion, or manipulate him with a brain-stimulation device.

However, Frankfurt wants us to concentrate on the case in which Jones, by his own will, decides to act in the way Black wants him to, so that Black does not need to intervene at all. Frankfurt argues that in this case Jones cannot do otherwise (because had he decided to do otherwise, Black would have intervened, for-

cing him), but nevertheless Jones is free and responsible for the result of his action, because it is autodetermined (in fact Black doesn't have to intervene). The example aims to show that there can be free will (and moral responsibility) without alternative possibilities.

Sceptics usually resort to Libet's results to claim that if our brain decides in advance then we cannot do otherwise, and therefore there is no free will. Clearly, the rejection of the principle of alternative possibilities might seem a good basis for claiming that, even in the light of the results of Libet's experiments, that conflict with it, agents possess free will. However, this move of grounding free will completely on autodetermination is not unproblematic, because brings us to confront the problem of the mental causation.

As recently discussed by Sophie Gibb,<sup>11</sup> the idea of the causal efficacy of mental events is contrasted by the so-called *causal exclusion argument*, which has been defended among others by Kim<sup>12</sup> and Papineau.<sup>13</sup> The argument moves from the fact that the following four claims are each individually plausible, but inconsistent if taken altogether:

- (1) *Relevance*: Mental events are causally relevant in the physical domain.
- (2) *Closure*: Every physical effect has a sufficient physical cause.
- (3) *Exclusion*: There is no systematic causal overdetermination.
- (4) *Distinctness*: Mental events are not physical events.

According to the causal exclusion argument, from the conjunction of (2) and (3) follows that, if we wish to maintain (1), we ought to reject (4). In other words: if mental events are causally relevant (*relevance*), if every physical effect has a sufficient physical cause (*closure*), and if there is no systematic overdetermination (*exclusion*), then mental events are identical with physical events (ne-

gation of *distinctness*).

A similar objection has been raised by Kim to the theory of emergent mental properties. In *Making Sense of Emergence*, Kim argues that emergent properties are necessarily epiphenomenal. If all physical effects have sufficient physical causes, and no physical effects are caused twice over by distinct physical and mental causes, there cannot be any irreducible mental causes. Therefore, if emergent properties are irreducible to their constituters (*distinctness*) and they are causally efficacious (*relevance*), then physical effects have both a physical and a mental cause. But these multiplication of causes is useless, and therefore physical events end up being causally overdetermined (which is in contrast with *exclusion*). On the other hand, if emergent irreducible properties have no causal efficacy, then they are epiphenomenal.<sup>14</sup>

The conclusion that mental causes are identical with physical causes is incompatible with the idea that mental events are causally relevant by themselves, so that the source models of control come across the following problem: in a deterministic world, not only can the subject not do otherwise, but she also has no autodetermination, for mental events are not causally determining her actions.<sup>15</sup>

There are at least four different ways to dodge the conclusion of the causal exclusion argument.<sup>16</sup> The first is to deny *relevance*, by claiming that mental events are not causally relevant in the physical domain. This strategy results in eliminativism, epiphenomenalism, or non-interactive dualism. Another possibility is to reject *closure*, hence embracing a form of interactive dualism (or causal pluralism). Another one is to deny or rephrase *exclusion*. Many forms of non-reductive physicalism try to do just this, putting the emphasis on the metaphysical relationship (of supervenience, constitution, grounding, emergence, etc.) between mental and physical events, claiming that mental events are in some way irreducible to physical events. Finally, following the causal exclusion argument, reductive physicalism simply denies

*distinctness.*

However, the solutions just described might not be the only ones. Gibb suggests that the four claims might be consistent altogether, if mental events aren't described as *causes* of physical events, but rather only as *enabling conditions*.<sup>17</sup> In order to argue in favour of the causal relevance of mental events Gibb proposes an analogy between mental causation and physical double prevention.<sup>18</sup>

### ■ Causal closure and double prevention

Interesting issues concerning the metaphysics of causation emerge if one considers double prevention. Cases of double prevention involve the prevention of a prevention, i.e. cases in which a physical effect, which would have been prevented by a preventer, is carried out because a further (double) preventer prevents the first preventer from preventing the effect.

Consider the following example offered by Gibb:<sup>19</sup> in order to win a prize at a fairground, a player named Fred throws a ball aiming to break a bottle. However, the game is rigged: the bottle is protected by a barrier, which prevents the ball from hitting the bottle. A button controls the removal of the barrier. Sally, who is running the fairground attraction, suddenly takes pity on Fred, and activates the button. Therefore, the pressing of the button by Sally prevents the barrier from preventing the breaking of the bottle caused by the hit of the ball thrown by Fred. The question raised by Gibb is therefore: is the pressing of the button (i.e. the double preventer) a cause of the breaking of the bottle?

According to the leading theory of causation among contemporary analytic metaphysicians – Lewis' *counterfactual dependence theory of causation*<sup>20</sup> – double prevention is a form of causation. However, Mumford and Anjum have argued that if double prevention is causation, then a series of counterintuitive implications arise.<sup>21</sup>

First, it would follow that causation would not be an intrinsic matter, i.e. a pro-

cess regarding only the causal relata, but it would involve all the conditions that allow the causal process to take place. Second, if double prevention is a form causation then cause and effect need not be connected by a continuous chain of events, since causation as double prevention relies upon a “non-event”, namely the merely possible prevention that would have impeded the effect. Connectedly, causation by double prevention would imply that there can be causation by absence, i.e. that the mere absence of something can actually be causally powerful. Finally, it would entail that there can be causation at a distance. In fact, cases could be imagined in which the double preventer is spatiotemporally remote.

Considering the objections to double prevention as a form of causation, one could conclude that double preventers are not causally relevant. However, Gibb claims that it is possible to distinguish between the causal role of the physical *causes* (such as the momentum and hardness of the ball), which I will call *causal efficacy*, and the causal role of the *enabling conditions* (such as the removal of the barrier), which I will call *causal relevance*. There is a fundamental difference between causing an event (such as in normal causation) and permitting an event to be caused (such as in cases of double prevention). A double preventer does not cause the event that it prevents from being prevented, but it permits or allows the event to be caused.<sup>22</sup>

Based on these considerations, a further objection to the causal exclusion argument comes from the observation that causes are not always sufficient for their effects. In the bottle example, all the events that are physical *causes* of the breaking of the bottle are not collectively sufficient for the breaking of the bottle, if considered in the absence of the relevant *enabling conditions*. Even if not causally efficacious, Sally's pressing of the button is causally relevant and it should appear in the explanation of why Fred's ball broke the bottle, because it plays the essential role of permitting the cause to bring about its effect,

which is as important as the role of the cause itself. This claim represents a more general objection to the formulation of *closure*, because if the physical causes are not sufficient for the manifestation of their effect, then it is not true that every physical effect has a sufficient physical cause. The role of enabling conditions is necessary. Given that mental events struggle with causal efficacy, Gibb's proposal is that they might be causally relevant nonetheless as enabling conditions. In order to argue for that, Gibb proposes a theory of mental double prevention.

### Free won't as double prevention: Critical remarks

Double preventers might be causally relevant even if not causally efficacious. According to Gibb, this fact could be useful to prove the causal relevance of mental events. Hence, she draws an analogy between double prevention, mental causation, and free will, according to which Libert's theory of *free won't* can be revived using the concept of double prevention.<sup>23</sup> A mental event doesn't directly cause a bodily movement, but permits a certain bodily movement to take place by allowing a neural event to cause that bodily movement. Even if not a cause, the mental event is causally relevant because it permits the causal relation by preventing a mental event that would have prevented the causal chain from the neural event to the bodily movement.

To see this, consider the following example:<sup>24</sup> in Fred's brain a neural event, call it  $n_1$ , corresponds to a mental event  $m_1$ , the desire to grab the beer on the table, and  $n_1$  causes the bodily movement  $b_1$ , raising his arm to grab the beer on the table. To do so,  $n_1$  causes an intermediate neural event  $n_2$ , corresponding to the motor preparation that leads to  $b_1$  (grabbing the beer). In this scenario the two neural events  $n_1$  and  $n_2$  constitute the complete cause of  $b_1$ . However, in Fred's mind there is also a contrasting mental event  $m_2$ , the desire to grab the remote control, which could prevent the behaviour  $b_1$ .

According to Gibb,  $m_1$  is not a cause of  $b_1$ , but it is nonetheless causally relevant because it enables  $n_2$  to cause  $b_1$ , by preventing  $m_2$  from preventing  $b_1$ . In other words:  $m_1$  is the manifestation of the subject's ability to veto  $m_2$ .

In the physical case, the analysis of double prevention as causally relevant (even if not as a form of causation) is straightforward and convincing. However, problems emerge when double prevention is used in the context of psychophysical interaction. In Gibb's example, every mental event  $M$  is linked with a neural event  $N$ , and the causal relevance of  $m_1$  is defined as its ability to prevent  $m_2$  from preventing  $n_2$  to cause  $b_1$ . But it should be noticed that on the main picture there is no symmetrical correspondence between the psychophysical pair of events  $(m_1, n_1)$  and the psychophysical pair of events  $(m_2, n_2)$ : while  $n_1$  is the neural event corresponding to the mental event  $m_1$  (the desire to grab the beer),  $n_2$  is the intermediate neural event that brings about the behaviour  $b_1$  (the motor preparation to grab the beer), and not the neural event corresponding to  $m_2$  (the contrasting desire to grab the remote).

It should be stressed that if in Fred's mind there is the contrasting desire  $m_2$ , there should be in Fred's brain a contrasting neural event, call it  $n_1'$ , corresponding to the desire to grab the remote  $m_2$ , and consequently a neural event  $n_2'$ , corresponding to the intermediate neural event (i.e. motor preparation to grab the remote) that brings about the behaviour  $b_2$ .

Given this picture of the psychophysical events involved in the decision, it could be argued against Gibb that in causing the intermediate event  $n_2$  to cause  $b_1$ ,  $n_1$  does not only play the role of causing the behaviour  $b_1$ , but it prevents also the neural event  $n_2'$  from preventing  $n_2$  to cause  $b_1$ . As in the previous example of the bottle and the barrier, physical events, and more precisely neural events in this case, are completely sufficient to explain double prevention, so that there is no need for mental events to be causally relevant, not even as enabling conditions.

To show why this is the case it is sufficient to appeal one more time to the principle of *exclusion*. The principle claims that there is no systematic causal overdetermination, and for the same reasons why there should be no systematic overdetermination of *causal efficacy*, there should be no systematic overdetermination of *causal relevance*. But this seems to be the case in the above example, because for every mental double preventer which could be judged causally relevant for the physical effect as a necessary enabling condition, there is systematically a set of corresponding physical (neural) events that are causally relevant as necessary enabling conditions (i.e. the physical double preventers), which alone are sufficient to explain the manifestation of the effect.

These objections can be summarised in the following argument, which I will call the *causal irrelevance argument*:

- (1) If mental events are not identical to physical events, then they are not causally relevant (*causal exclusion argument*)<sup>25</sup>
  - (2) There are mental double preventers<sup>26</sup>
  - (3) Double prevention is not a form of causation<sup>27</sup> but double preventers are causally relevant (as enabling conditions)<sup>28</sup>
  - (4) Mental events are causally relevant<sup>29</sup>
- However
- (5) Mental double preventers systematically overdetermine physical double preventers
  - (6) There is no systematic overdetermination (of causal relevance) (*exclusion*)
  - (7) Mental events are causally irrelevant

Gibb's argument for the causal relevance of mental events (and against the causal exclusion argument) involves propositions (1) to (4). The causal irrelevance argument

consists in contrasting this conclusion with objections (5) & (6), to reach the conclusion that mental events are not only causally inefficacious, but also causally irrelevant (7).

Since Gibb's proposal is explicitly connected with Libet's theory of free won't, it should be noticed that the objection that I propose against Gibb's model is analogous to the objection to Libet's original argument, only translated to the metaphysical ground. Libet's theory of free won't was contrasted with the conceptual counterargument that, if the subject's decision to move is related to specific brain processes that are initiated before and determine the decision itself, then there is no reason to think that the decision *not* to move (or the decision to veto the decision to move) would not be related to specific brain processes that are initiated before and determine this decision as well.

Moreover, recent neuroscientific evidence supports this objection. According to Brass and Haggard, Libet could not find any identifiable neural correlate of the veto process, and therefore he suggested that it could involve a form of downward causation.<sup>30</sup> They conducted an experiment to test this hypothesis and their study shows a significant role of the dorsal fronto-median cortex (dFMC, Brodmann's area 9) in intentional inhibition of action.

For the authors, given the results of their experiment, Libet's free won't hypothesis becomes unnecessary, because the data identify a clear neural basis for inhibiting intentions and thus show that there is a specific neural correlate of the veto process. This could be seen as an experimental confirmation of the conceptual hypothesis that, since the initiation of action is unconscious, there is no reason to think that the initiation of inhibition should follow different rules.<sup>31</sup>

## Conclusions

Mental causation is the central issue of the problem of free will. Gibb's approach to mental causation based on double prevention

is original and worth exploring for different reasons. First, double prevention is relevant for the debate on causation in general. In fact, as we have seen, the counterfactual dependence theory of causation<sup>32</sup> encounters many problems when applied to such cases. An account based on the distinction between causes and enabling conditions would likely prove more satisfying. Second, an account of mental causation based on double prevention seems to be an original and fruitful way of approaching the causal exclusion argument. In particular, the formulation of the principle of *closure*, which claims that every physical effect has sufficient physical causes, might be criticized, since cases of double prevention show that physical causes are not always sufficient for their effect in the absence of relevant enabling conditions.

Nevertheless, drawing upon double prevention to account for the causal relevance of mental events is not unproblematic. Limiting the causal relevance of mental events to their enabling role of physical effects might avoid the objection of epiphenomenalism or causal overdetermination raised against the causal efficacy of mental events. However, a similar objection of overdetermination could be casted upon the enabling role of mental events as well.

The *causal exclusion argument* might be reformulated against the causal relevance of mental events in the form of the *causal irrelevance argument*. Its main objection is that as long as mental events are linked with physical events, both the causal role and the enabling role of double preventers can be explained exclusively within the physical domain. If mental double preventers systematically overdetermine physical double preventers, and if there is no systematic overdetermination of causal efficacy (causes) or causal relevance (enabling conditions), then mental double preventers must be either identical to physical double preventers, or causally irrelevant.

Finally, even if double prevention might not be a useful basis for an account of mental causation, weaker perspectives might be

worth exploring. A sketchy idea is that mental double prevention could serve as a basis for a compatibilist theory of free will. If mental events are constantly supervening on (grounded on, or constituted by) physical events, and if they are systematically overdetermined by them, then they might not be *causally* relevant, but they might still be relevant in some other respect. This approach would be close to Frankfurt's hierarchical mesh compatibilism.<sup>33</sup>

The core idea is that freedom is based on mental events that are nested within more encompassing elements of the self. In particular, Frankfurt distinguishes between first-order and second-order desires, and mental double preventers in the form of veto processes may be seen as second-order desires (desires which have as their objects desires of the first-order).

However, Frankfurt's theory has been under intense scrutiny and at least two issues have emerged. The first is the *hierarchical problem*, according to which Frankfurt's theory is incomplete, because as there can be a conflict at the level of the subject's first-order desires, there can also be a conflict at the higher-order levels.<sup>34</sup> The second and more serious is the *mesh problem*, according to which how an agent came to have a particular mesh of first and second-order desires *does* matter.<sup>35</sup>

It is beyond the purpose of this paper to propose a detailed account of compatibilism based on double prevention. Nonetheless, there are good reasons to think that it seems more suitable. The concept of mental double prevention is useful for exploring in deeper detail the relationship between contrasting mental events, especially desires of different orders. Sure enough, one of the challenges of a mesh account based on double prevention would be to face the problems of Frankfurt's theory, and a lot of work has to be done on that.

In any case, Gibb's metaphysical account of mental causation is a good example of how a priori arguments can have a fundamental role in advancing research on complex issues

such as free will. This path is original and promising, and it brings new life to philosophical debate on mental causation. Gibb's work proves that metaphysics still has a fundamental role in reflecting on these issues, even in an era in which cognitive neuroscience is literally invading philosophy. The approach to the problem of free will based on the metaphysical analysis of mental causation is probably the most promising, and this direction of research is the one to which this paper hopes to contribute.

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## Notes

<sup>1</sup> See B. LIBET, C.A. GLEASON, E.W. WRIGHT, D. K. PEARL, *Time of Conscious Intention to Act in Relation to Onset of Cerebral Activities (Readiness-potential): The Cerebral "Time-on" Factor*, in: «Brain», vol. CVI, n. 3, 1983, pp. 623-642.

<sup>2</sup> See B. LIBET, *Mind Time. The Temporal Factor in Consciousness*, Harvard University Press, Cambridge (MA) 2004.

<sup>3</sup> Examples of *source models of controls* are H. FRANKFURT, *Alternate Possibilities and Moral Responsibility*, in: «Journal of Philosophy», vol. LXVI, n. 23, 1969, pp. 829-839; J.M. FISCHER, *The Metaphysics of Free Will*, Blackwell Publishers, Oxford 1994.

<sup>4</sup> See S.C. GIBB, *Mental Causation and Double Prevention*, in: S. GIBB, E. J. LOWE, R. INGTHORSSON (eds.), *Mental Causation and Ontology*, Oxford University Press, Oxford 2013, pp. 193-214.

<sup>5</sup> Versions of the *causal exclusion argument* were proposed by J. KIM, *Mind in a Physical World*, MIT Press, Cambridge (MA) 1999; J. KIM, *Physicalism, or Something Near Enough*, Princeton University Press, Princeton 2005; D. PAPINEAU, *Philosophical Naturalism*, Blackwell, Oxford 1993; D. PAPINEAU, *Thinking About Consciousness*, Oxford

University Press, Oxford 2002.

<sup>6</sup> See B. LIBET, C.A. GLEASON, E.W. WRIGHT, D.K. PEARL, *Time of Conscious Intention to Act in Relation to Onset of Cerebral Activities (Readiness-potential)*, cit.; B. LIBET, *Mind Time. The Temporal Factor in Consciousness*, cit.

<sup>7</sup> See D. WEGNER, *The Illusion of Conscious Will*, MIT Press, Cambridge (MA) 2002.

<sup>8</sup> See B. LIBET, *Mind Time. The Temporal Factor in Consciousness*, cit.

<sup>9</sup> See H. FRANKFURT, *Alternate Possibilities and Moral Responsibility*, cit.; J.M. FISCHER, *Responsibility and Control*, in: «Journal of Philosophy», vol. LXXIX, n. 1, 1982, pp. 24-40; J.M. FISCHER, *The Metaphysics of Free Will*, cit.

<sup>10</sup> See H. FRANKFURT, *Alternate Possibilities and Moral Responsibility*, cit.

<sup>11</sup> See S.C. GIBB, *Mental Causation*, in: «Analysis», vol. LXXIV, n. 2, 2014, pp. 327-338.

<sup>12</sup> See J. KIM, *Mind in a Physical World*, cit.; J. KIM, *Physicalism, or Something Near Enough*, cit.

<sup>13</sup> See D. PAPINEAU, *Philosophical Naturalism*, cit.; D. PAPINEAU, *Thinking About Consciousness*, cit.

<sup>14</sup> See J. KIM, *Making Sense of Emergence*, in: «Philosophical Studies», vol. XCV, n. 1-2, 1999, pp. 3-36.

<sup>15</sup> There is still the possibility to claim that mental events are causally relevant even if identical with physical events, because if they supervene on physical events then they borrow their causal power, however this move introduces the more problematic issue of defending the metaphysical reality of mental events devoid of causal powers, i.e. epiphenomenalism. For objections to epiphenomenalism see J. KIM, *Making Sense of Emergence*, cit. For modern versions of epiphenomenalism see W. ROBINSON, *Understanding Phenomenal Consciousness*, Cambridge University Press, Cambridge 2004.

<sup>16</sup> See S.C. GIBB, *Mental Causation*, cit.

<sup>17</sup> *Ivi*.

<sup>18</sup> See S.C. GIBB, *Mental Causation and Double Prevention*, cit.

<sup>19</sup> *Ivi*.

<sup>20</sup> See D. LEWIS, *Causation*, in: «Journal of Philosophy», vol. LXX, n. 17, 1973, pp. 556-567.

<sup>21</sup> See S. MUMFORD, R.L. ANJUM, *Double Prevention and Powers*, in: «Journal of Critical Realism», vol. VIII, n. 3, 2009, pp. 277-293.

<sup>22</sup> See S.C. GIBB, *Mental Causation and Double Prevention*, cit.

<sup>23</sup> *Ivi*.

<sup>24</sup> The example is slightly modified with respect to Gibb's original one, in which the contrasting desi-

re is the desire to stay still.

<sup>25</sup> See J. KIM, *Mind in a Physical World*, cit.; D. PAPINEAU, *Thinking About Consciousness*, cit.

<sup>26</sup> See S.C. GIBB, *Mental Causation and Double Prevention*, cit.

<sup>27</sup> See S. MUMFORD, R.L. ANJUM, «*Double Prevention and Powers*», cit.

<sup>28</sup> See S.C. GIBB, *Mental Causation and Double Prevention*, cit.

<sup>29</sup> *Ivi*.

<sup>30</sup> See M. BRASS, P. HAGGARD, *To Do or Not to Do: The Neural Signature of Self-control*, in: «The

Journal of Neuroscience», vol. XXVII, n. 34, 2007, pp. 9141-9145.

<sup>31</sup> *Ivi*.

<sup>32</sup> See D. LEWIS, *Causation*, cit.

<sup>33</sup> See H. FRANKFURT, *Freedom of the Will and the Concept of a Person*, in: «Journal of Philosophy», vol. LXVIII, n. 1, 1971, pp. 5-20.

<sup>34</sup> See G. WATSON, *Free Agency*, in: «Journal of Philosophy», vol. LXXII, n. 2, 1975, pp. 205-220.

<sup>35</sup> See J.M. FISCHER, M. RAVIZZA, *Responsibility and Control: An Essay on Moral Responsibility*, Cambridge University Press, Cambridge 1998.