

Self-Determination: Free Will and Determinism

Michael Pauen

The problem of free will is one of the central issues in modern philosophy. In recent years, empirical studies have gained ground, and it may seem that neuroscience is about to take the place of philosophy. In fact, quite a number of scientists seem to assume that empirical studies can solve the problem of free will, and the answer is negative: free will does not exist. These claims are usually based on certain assumptions concerning necessary conditions of free actions, e.g. that freedom requires indeterminism, or that it requires conscious decisions, etc.

In what follows, I would like to demonstrate that such claims need support from a careful analysis of our commonsense concept of free will. Ideally, such an analysis yields clear and consistent criteria that capture the most important intuitions concerning the phenomenon at hand. Empirical research could then try to determine whether or not human actions meet these criteria.

Based on such an analysis, the following discussion is intended to answer three questions in particular:

- (1) Given that mental processes, including acts of will, turn out to be neurally realized, would that mean that the will can't be free?
- (2) Given that the neural activities that realize an act of will are determined, would that mean that this act can't be free?
- (3) Given that this act of will turns out to be unconscious, would that mean that it can't be free?

Self-Determination, Authorship, and Autonomy

I will begin with two basic features that can be regarded as *minimal criteria* that any action has to meet in order to qualify as a free action according to our commonsense and philosophical standards. These criteria are almost universally accepted; however, it may turn out that more demanding requirements are necessary.

It seems undisputed that any action that is said to be free has to meet the following “minimal criteria”:

- (1) *The principle of autonomy*: Freedom implies the absence of compulsion. If we say that p was free to do x rather than y under conditions c , this implies that he was not forced to do x rather than y .
- (2) *The principle of authorship*: Free actions have to be distinguished from random events. We would not say that p was free to do x rather than y in conditions c if it was only a random neural activity that brought about x rather than y . The obvious way to make this distinction is to say that free actions can be ascribed to an author.

Another way to phrase this constraint is to say that the author's desires, beliefs, and dispositions should contribute to an explanation of why she did x rather than y under conditions c .

Both criteria can be summarized in a single requirement if it is said that actions that are free in the minimal sense above are *self-determined*. In fact, nothing counts as self-determined unless the two criteria above are met. First, self-determination requires autonomy. We would not say that an action is self-determined if we know that it was brought about by external determination or force. Second, self-determination requires authorship. That's what we mean if we say that someone determines herself. Trivially, an activity that is brought about unintentionally or just by chance does not count as self-determined because determination by the self is missing. Taken together, these necessary conditions are also sufficient: If an action meets the minimal criteria of autonomy and authorship, it will count as self-determined.

Two things should be noted: First, if we talk about self-determination, we have to say something about the features of the "self" that is the subject of self determination. Second, whatever these features may be, if the self acts according to these features the it acts in a self-determined way.

Thus, although the self-determination of an action rules out certain kinds of determination, namely external determination, it seems to imply another other form of determination, namely determination by the self whose action it is. Thus, whatever the features may be that are constitutive for a particular person p : If it is due to these features, say certain beliefs, desires, and dispositions, that p did x rather than y under conditions c , then p 's doing x would count as self-determined, just for conceptual reasons. I will argue that this remains true even if the individual features, together with external factors, determine what p does.

Personal Capabilities and Personal Preferences

It is completely unclear what it means to act in a self-determined way, as long as it remains to be spelled out what the "self" is. I use "self" just as an umbrella term for those features that are constitutive for an individual agent.

Personal Capabilities

I think that, by and large, these features fall into two categories. First, there are those more general abilities that every conscious being needs in order to count as a self that is able to determine her own actions. In what follows, I will call them "personal capabilities." Since self-determination implies authorship, a robust and intelligible connection between the action and the beliefs, desires, and dispositions that are constitutive for an agent is required. It follows, first, that the agent must be rational at least in a weak sense, such that an intelligible connection can be established between the action and the agent's beliefs, desires, and dispositions – no matter what these beliefs, desires, and

dispositions may be. Without such a connection, it could not be made intelligible that she did x rather than y in situation c and the action would fail to meet the requirement of authorship. Random “decisions” cannot be reduced in an intelligible manner to underlying preferences since, trivially, any random decision is compatible with any given set of preferences in any situation.

I will call an agent who meets this requirement a “rational agent.” Consequently, if it turns out that p is not a rational agent she will not be able to act in a self-determined manner in general.

Personal Preferences

Needless to say that not every action of a rational agent will count as self-determined. In order to spell out those criteria that might help us to decide whether or not a particular action of a particular rational agent is self-determined, we need preferences that are constitutive for this very agent. I will call these preferences “personal preferences.” It seems clear that not all the features, say the desires, beliefs, and dispositions that an agent actually has, count as personal preferences in the sense that is required here. But how do we distinguish between personal and non-personal preferences?

I think that the most convincing way to determine personal preferences is to require that these preferences are possible subjects to a self-determined decision, most notably a self-determined decision *against* them. The idea is that it would be unintelligible to treat p 's doing x as self-determined, while insisting, at the same time, that his doing was determined by an attitude that that is beyond p 's control.

But how could we find out whether this criterion is met without ending up in a vicious circle? In order to determine whether something qualifies as a self-determined decision we have to appeal to personal preferences, while the identification of personal preferences, in turn, seems to require knowledge about self-determined decisions. Note, however, that it is not required that each candidate for a personal preference is actually approved. The requirement is only that a personal preference *can* be subjected to such a decision even if it is a decision against this criterion. And this criterion can be verified without reference to actual decisions.

Theoretical considerations might be sufficient in certain paradigm cases like rational beliefs. I take it that my belief that x is F qualifies as a rational belief only if I would reject it in the light of convincing evidence that x is not F . Provided that I'm a rational agent, the rejection of the belief would count as a self-determined decision and the belief would qualify as a personal preference. Likewise, my rational belief that stealing is reprehensible should be a possible subject to a self-determined decision. Conversely, physical or psychological addictions are paradigm cases for features that are *no* possible subjects to self-determined decisions. I take it that it is a defining feature of an addiction that it will persist even if I wish to get rid of it. The same is true for your will to survive: Since you cannot make a self-determined decision to give up your will to survive, this will is not a personal preference – it's a “hard-wired” feature of every living creature. That explains why actions that result from the will to survive don't count as free – even

if the underlying decision is rational in the weak sense above. It is certainly rational in this way to give the money to a bank robber rather than risking your life. Nevertheless, doing so does not count as a free action because it is not a personal preference but the will to survive that determines the action. Note that all these assessments can be made without reference to actual or hypothetical self-determined decisions of the person in question and thus to the person's other preferences. It follows that there is no circle at least in the paradigm cases.

But what about non-paradigm cases? I assume that psychological or neuroscientific investigation concerning voluntary action and the underlying neural mechanisms can help us in these cases. As a result of such investigation, it may turn out that certain dispositions are not amenable to self-determined decisions in general while others are. Extended knowledge about the neurobiology of addiction should be particularly helpful. As a result, it might be established that if the perception of certain objects correlates with activity in neural area *a* or with behavioral pattern *b*, this indicates that the person in question is addicted to the object in question and thus is not able to make self-determined decisions on behalf of related desires or dispositions. If certain areas in my brain light up in an fMRI scanner when I listen to a Verdi-aria, this might indicate that I cannot make a self-determined decision concerning my love for this kind of music. It is obvious that such assessments are fallible and that a considerable number of doubtful cases will remain; but that is what you have to expect in free will questions anyway. Still, the examples show that assessments concerning personal preferences can be made independently from any reference to actual decisions or other personal features of the agent, even in the non-paradigm cases. Thus there is no vicious circle in these cases either.

All this does not mean that personal preferences are subject to random changes. Actual self-determined decisions depend upon one's personal preferences, even if these decisions, in turn, concern personal preferences. If I change my former belief that abortion is acceptable, then this will be a self-determined decision only if I have other beliefs and dispositions that make it reasonable to take this decision, say because some of the basic assumptions of my former belief turned out to be unwarranted, or because I have acquired new information about the cognitive capabilities of embryos, etc. This qualification is important because it shows that beliefs or desires that I never dreamt of changing may be personal preferences. The criterion is that these features *would* change, *should* I make a self-determined decision to do so; still it may be perfectly unreasonable for me to make such a decision, given the whole system of my other beliefs and desires. Thus, my self-determined decision will be to keep this belief.

To sum up: Self-determination seems necessary and sufficient in order to meet the two minimal criteria for freedom, namely *authorship* and *autonomy*. This implies the existence of certain features that are constitutive of the self in question. Consequently, if an action can be explained with reference to these features, the action has to be counted as self-determined. Thus, *p*'s doing *x* rather than *y* in situation *c* would be free if and only if *p*'s personal preferences give an explanation of why she did so. Personal prefer-

ences in turn are those preferences that are possible subjects to a self-determined decision. So if p 's belief that stealing is unacceptable counts as her personal preference and if it is due to this preference that she pays for the goods in her shopping basket rather than stealing them, this action will count as self-determined and therefore free in the minimal sense that was explained above.

Now imagine that it turns out that we live in a purely materialistic world and this act, including the underlying beliefs, is neurally realized. It should be obvious that nothing will change. In fact, it would be only in virtue of its neural realization that p 's belief can become effective in this materialistic world. Thus, rather than impeding p 's ability to act in a self-determined manner, the neural realization of his beliefs enables p to perform self-determined acts. It would follow that we have to give a positive answer as far as the first question is concerned: An act of will can be free even if it is neurally realized. But what about the second question? The answer should follow from what has been said above. It seems clear that self-determination requires that the action is determined, namely determined by p 's personal preferences. That is just what self-determination means. Note in addition that the same is true for personal preferences: Preferences with a deterministic etiology may of course be possible subjects to a self-determined decision, thus they may qualify as personal preferences. It would follow that self-determined actions are possible in a deterministic world. The crucial question is not *whether* an action is determined but, rather, *how* it is determined. If it is determined by personal preferences, then it is self-determined and, therefore, free in the minimal sense above.

As far as the third question is concerned, I can only give a sketch of an answer. Remember that the criterion was that p 's doing x rather than y can be explained with reference to her personal preferences. So if p 's personal preferences include automatic responses in certain situations (say because p is an ambitious tennis player who has the preference to react as quickly as possible) then some of his actions may count as free even if no conscious decision is involved in the situation in question, although we would expect a conscious self-determined decision as far as the preference in question is concerned.

Let me stress that the present proposal goes far beyond the traditional "freedom of action" account. It does so because it provides criteria that allow us to identify actions that are not self-determined although they conform with an act of will. According to the present proposal, but not according to the "freedom of action" account, such an action is not free if the act of will in question is determined by non-personal preferences, that is, by features that are no possible subjects of self-determined decisions. Consequently, this account can be defended easily against the typical objections that might be brought forward against freedom of action accounts: Psychological or physiological addictions are non-personal preferences since they are no possible subjects to self-determined decisions. Actions that are determined by such features do not count as self-determined, according to the present proposal, although they may conform with an underlying act of will and thus would count as free according to a standard freedom of action account.

Freedom and Determinism

Everything that has been said so far is based on the minimal criteria that we started with. I have already argued that these minimal criteria are almost universally accepted as necessary conditions, but many philosophers think that they are not sufficient as far as genuine freedom is concerned. Genuine freedom, so one might argue, requires more than the ability to act in a self-determined manner.

In the following section, I will scrutinize the demand that stronger criteria are necessary in order to capture what we really mean if we talk about freedom in a strict sense, rather than mere self-determination as it was characterized above. The main question will be whether the present account can do justice to the most common intuitions concerning freedom, particularly to those intuitions that seem to support the incompatibilist's demand for stronger criteria.

The Principle of Alternative Possibilities

One of the most widely shared intuitions concerning freedom is the so called "Principle of Alternative Possibilities." In addition to autonomy and authorship, freedom seems to require that p , even if she did x rather than y under conditions c , could have done y rather than x . The underlying intuition is quite strong: If p was not able to do y rather than x , how can we say that she was free when she actually did x ?

Frankfurt's Objection

According to a widely accepted interpretation, saying that " p is able to do y rather than x in conditions c " requires that y could happen rather than x under identical conditions, no matter what p 's beliefs, intentions, or desires may be. It would follow that any situation in which it is *determined* that p *refrains* from doing y is a situation in which p is *unable* to do y . Consequently, the statement " p could have done otherwise than she actually did in conditions c " might be true in a nondeterministic world only.

Since many compatibilists accept this interpretation, they have tried to show that the *Principle of Alternative Possibilities* can be rejected. In fact, Harry Frankfurt (1969) has provided a now almost classical thought experiment that seems to show that a person can act freely in the absence of alternative conditions.¹ The well-known idea is that, unbeknownst to p , a so called "counterfactual intervener" has implemented a mechanism in p 's brain that would prevent p from doing y , given the faintest hint that p might choose to do so. Still, as long as p actually does x , the mechanism remains completely passive. Now, assume that p 's doing x rather than y in conditions c would qualify as a free action according to your favourite account of freedom, as long as the mechanism is not able to interfere. Merely adding the mechanism's *ability* to interfere, should p con-

¹ The other *locus classicus* for an attack on the *Principle of Alternative Possibilities* is of course Dennett 1984, see also his 2002.

sider to do otherwise, doesn't seem to change anything as long as there is no *actual* interference. However, even under these conditions *p* can't do otherwise because the mechanism *would* interfere before *p could* decide to do so. It would appear, then, that *p* acts freely although he is not able to do otherwise.

Frankfurt's examples are very suggestive, still I don't think that he has presented a convincing objection against the *Principle of Alternative Possibilities*. I will not discuss the standard objection against Frankfurt, the "flicker of freedom" strategy because I think that there is a much more straightforward response available. My argument runs as follows:

- (1) Counterfactual scenarios with background conditions that differ from those of the factual scenario are irrelevant for the principle of alternative possibilities
- (2) The background conditions of the counterfactual scenario in the Frankfurt cases differ from those of the factual scenario
- (3) The counterfactual scenario in the Frankfurt cases is irrelevant for the principle of alternative possibilities.

(1) Although the precise interpretation of the *Principle of Alternative Possibilities* is open to discussion it seems to be beyond dispute that the principle requires identical background conditions. It may be true that the alcoholic would have refrained from drinking another beer if no bottle had been available, but this does not mean that he could have done otherwise in the sense that is required by the principle, given that there was a real chance for the unavailability of beer, because he would have refrained from doing so only because the background conditions have changed.

(2) I take it that any action of Frankfurt's counterfactual intervener would count as part of the background conditions. Thus, in becoming active the intervener changes the background conditions in the counterfactual scenario from *c* to, say, *c'*. We would then have *two different sets of background conditions*: conditions *c* in the factual scenario, i.e. if the mechanism remains passive, and conditions *c'* in the counterfactual scenario, i.e. if the mechanism intervenes. Obviously, *p* cannot do *y* rather than *x* under conditions *c'*, but since what he does is forced or externally determined by the mechanism, we would not say that his action is free under these conditions. *P* is not free and the *Principle of Alternative Possibilities* is violated. But what about conditions *c*? If the mechanism remains passive, then *p* is free *and* able to do otherwise because nothing will prevent him from doing so unless the background conditions change from *c* to *c'*.

(3) It follows that Frankfurt's objection can be dismissed because it implies a change of the background conditions in the counterfactual scenario and thus ignores one of the most important requirements of the *Principle of Alternative Possibilities*.

That seems to be quite bad news, though. If the principle remains valid, then we are left with the incompatibility of freedom and determinism. On reflection however, doubts arise whether the above interpretation of the *Principle of Alternative Possibilities* is adequate. According this interpretation, "being able to do *y* rather than *x* in situation *c*" requires that *y* could happen rather than *x* under identical external *and* internal

conditions. The problem is that if it was *p*'s action to do *x* rather than *y*, then, even if *y* could have happened under these very conditions, this would have occurred completely independent from *p*'s personal preferences. If you consider that these preferences constitute *p* then you cannot say anymore that *p* could have been the author of the fact that *y* rather than *x* happened in conditions *c*. Thus, even if *y* could have happened for whatever reasons, we could not say that it was *p* who did *y*. The only thing we could say in this case is that *y* might have happened rather than *x*. But whatever *y* might have been, it was not an action that can be ascribed to *p*. It would follow that this interpretation has implications that are incompatible with the wording of the principle, namely that *p* performs an *action* even in the alternative scenario.

That is why I would like to suggest another interpretation. The rationale behind this interpretation is that "being able to do otherwise" cannot mean "anything else may just happen under identical conditions." What we need is *p*'s ability to perform *another action* than the one she actually performed, otherwise what happens in the counterfactual situation cannot be ascribed to *p*. If paying the goods rather than stealing them is *p*'s action in situation *c* because *p* is deeply convinced that stealing is reprehensible, then an occurrence of stealing the goods rather than paying them will not count as *p*'s action under these very circumstances. It may count as her action only if her preferences have changed. Consequently, we may not only permit a change of *p*'s personal preferences in the counterfactual situation, rather, such a change is required in order to make sure that what happens may count as *p*'s action. We would then have to interpret the demand for the ability to do otherwise as follows: Given that the author's preferences had been different, would she be able perform a different action?

Interpreting the Principle of Alternative Possibilities in this way implies a shift of focus from the outcome of the situation to the process of decision-making. What is at issue, then, is the relationship between the agent and the outcome. Asking whether different preferences could lead to different outcomes is asking whether the outcome depends upon the preferences rather than upon the external conditions. And if you consider that the agent is constituted by his personal preferences, then it turns out that the question is whether the outcome depends upon the agent, and this appears as a reasonable question in the free will debate.

But does this interpretation really capture what we mean if we ask whether someone could have done otherwise? It clearly does. Saying that it is up to the agent whether *x* or *y* happens is saying that the agent can do either *x* or *y*. Consequently, it would still be true to say afterwards that he could have done *y* even if he actually did *x*. Note that, in addition, the agent is free to change his preferences. But again, it would be absurd to require that this happens at random. What we need, again, is a self-determined decision. It follows that the present interpretation is not a compromise that was made in order to save the above theory of freedom. Rather, it does capture the entire meaning of the principle. In addition, it has been demonstrated that the seemingly stronger alternative has to be rejected because it doesn't provide an adequate interpretation within the context of the free will debate.

Determination

It would seem, then, that there is considerable evidence that the present account is strong enough to do justice to some of the most widely shared intuitions concerning freedom. Still, you might suspect that self-determination is too weak, because it is compatible with determination. Genuine freedom, so you might think, is incompatible with determination. I have already tried to show that one of the most important arguments that are brought forward in favor of the alleged incompatibility of freedom and determination can be rejected. Nevertheless I think that it is useful to demonstrate in a more systematic fashion that getting rid of determination doesn't help: Eliminate determination wherever you want – you won't get “more” freedom.

In order to show this, let's assume a deterministic world with a chain of events beginning at some time t_1 before p 's birth that ultimately leads to a self-determined decision in the sense described above at time t_5 . If you think that such a decision or the related action isn't free because it is determined, then there should be at least *one* link in the chain whose interruption gives you freedom. In what follows, I would like to demonstrate that this is not the case.

First, eliminate determination at some time t_2 before p becomes a rational agent. As a consequence, p 's action cannot be predicted before t_2 , but since p is not a rational agent yet, he will be unable to make use of the additional opportunities that follow from the break in the causal chain. So eliminating determination at this point does not enhance p 's freedom.

Since the problem was that p had yet to become a rational agent at t_2 let's interrupt the chain a bit later at t_3 after p became a rational agent but quite some time before p makes his self-determined decision at t_5 . Assume that this interruption leaves it open whether or not p keeps a personal preference that is critical for his decision to do x rather than y in conditions c . The important point is that if this change is not determined at all, it cannot be determined by p , either. Thus, it is not up to p whether or not this change in his preferences happens, and, because this change is critical for his decision at t_5 , this decision is not up to him. From his point of view, an undetermined change in his preferences is like an externally determined change. It seems to follow that this interruption does not enhance p 's freedom.

But maybe we still got the wrong point in time. My third suggestion is an interruption at t_4 *during* the process of decision-making. Consequently, there should be at least one situation *during* this process where it is really open what will happen. One part of the process would be detached from the rest. This means that any result that might have been achieved during the first part of the process before t_4 would lose its effect on the second part and the ensuing decision. Assume that, during the first part of the process, you have found good and almost decisive reasons to do x rather than y . Interrupting the process afterwards would make these considerations void as far as the outcome of the process is concerned. It seems clear that such an interruption would lead to a destruction

of the whole process of decision making rather than giving us “more” freedom.² Of course, disrupting the process might waive the effects of force or compulsion, but force or compulsion are incompatible with freedom anyway.

Fourth, you might eliminate determination *after* the process of decision-making, but it should be obvious that this would be of no help either, since it would detach *p*'s doing *x* from her previous decision. So even if *p* has finally decided to do *y*, it might happen that *x* comes about. I assume that this isn't either what you expect if you ask for freedom.

It would seem, then, that waiving determination does not help. The present account can do justice to the Principle of Alternative Possibilities and it can block further demands, primarily because such demands, due to their incompatibility with the requirement of authorship, can be met by random events only.

Empirical Results

While this confirms the compatibility of freedom and determinism, it remains to be established by empirical science that free actions *actually* exist in the real world. The above considerations have demonstrated that the relevant criteria for such experiments can be derived from an analysis of our commonsense intuitions. Although it is certainly true that the criteria have yet to be spelled out with much more precision than it could be done under present circumstances, it may be of interest to apply them to current empirical research.

Probably the most vigorously discussed studies in this area are those of Benjamin Libet (1985). Recent experiments, performed by Haggard and Eimer (1999) have basically confirmed Libet's results, namely that an unconscious neural activity, the so-called readiness-potential, arises considerably earlier (350 ms according to Libet) than the conscious acts of will. According to a widely accepted interpretation, Libet's experiments demonstrate that at least certain actions are not free because they are initiated by subconscious brain activity rather than by conscious decision.

The above criteria raise doubts whether this conclusion is warranted. First, it is not necessary that each self determined action is based on a conscious decision. According to the above analysis, freedom requires only that the action can be reduced to the originator's personal preferences. I have already demonstrated above that even automatic responses may count as free, given that they can be reduced to personal preferences.

Second, a materialist should not be surprised that there is neural activity before a conscious event takes place. He should be surprised, however, if preceding neural activity already *determines* that *p* will do *x* rather than *y* before *p* knows what she will do. However: Does the readiness potential in Libet's experiment really *determine* the subject's action? This is at least unclear. One of the reasons is that Libet's experimental

² Note that this is not saying that the second part of the process has to be determined by the first part. It may of course happen that you find even better reasons to do *y* rather than *x* in the second part of the process. The difference is, however, that your final decision will not ignore the first part of the process but can be regarded as an overall result of the whole process.

subjects had no choice between two options. The relevant action was fixed by the instruction, so it is unclear whether the emergence of the readiness potential really determined that they would flex their right hand, rather than, say, their left hand. Given that the task required that the subjects had to repeat the movement a considerable number of times, one might speculate that the readiness potential is just an *unspecific* “preparation” of the brain for expected reoccurring movements.³ This hypothesis was confirmed in a study performed by Herrmann et al. (forthcoming). In this study, the subjects had to press one of two buttons with either their right or left hand, depending on a stimulus. It turned out that the readiness potential emerged much earlier than the stimulus showed up, that is, before the subject or the subject’s brain “knew” which button to press. It seems to follow that the readiness potential is only an *unspecific* preparation of a forthcoming movement, but it does *not* determine, say, that the subject will move his right, rather than his left hand. This result is consistent with the findings of Keller and Heckhausen 1990.

It would seem then, that philosophical considerations can provide analyses of prescientific concepts and intuitions, thus building a bridge between commonsense and empirical science. Second, it seems that there is at a considerable chance for free will to survive in a deterministic world; the mere fact that mental events like decisions are neurally realized but also the empirical data that are available so far do not disprove the existence of free actions.

References

- Dennett, D. C. (1984) *Elbow Room. The Varieties of Free Will Worth Wanting*. Cambridge MA.
- Fischer, J. M. (1994) *The Metaphysics of Free Will*. Oxford Cambridge.
- Frankfurt, H. G. (1969) Alternate Possibilities and Moral Responsibility. *Journal of Philosophy* 66, 828–39.
- Haggard, P. & Eimer, M. (1999) On the Relation Between Brain Potentials and the Awareness of Voluntary Movements. *Experimental Brain Research* 126, 128–133.
- Herrmann, C.S., Pauen, M., Min, B. K., Busch, N.A., Rieger, J., (in preparation) Analysis of a choice-reaction task yields a new interpretation of Libet’s experiment.
- Keller, I. & Heckhausen, H. (1990) Readiness Potentials Preceding Spontaneous Motor Acts: Voluntary vs. Involuntary Control. *Electroencephalography and Clinical Neurophysiology* 76, 351–361.
- Libet, B. (1985) Unconscious Cerebral Initiative and the Role of Conscious Will in Voluntary Action. *The Behavioral and Brain Sciences* 7, 529–539.

³ It should be noted that this question is not answered by the experiments of Haggard & Eimer (1999), although some of their subjects had a choice between two options. One problem is that Haggard and Eimer could not determine the onset of the symmetrical readiness potential, another problem is that their experimental design cannot guarantee that it captures the timing of the subjects’ choice between the two options. For a more detailed criticism see Pauen 2004b.

- Moore, G.E. (1912) *Ethics*. Oxford.
- Pauen, M. (2000) Painless Pain. Property-Dualism and the Causal Role of Phenomenal Consciousness. *American Philosophical Quarterly* 37, 51–64.
- (2003) Does Free Will Arise Freely? *Scientific American*. Special Edition: *Mind*. Winter 2003.
- (2004a) Freiheit: Eine Minimalkonzeption. In: Friedrich Hermanni, Peter Koslowski (Hrsg.), *Der freie und der unfreie Wille – Philosophische und Theologische Perspektiven*. München: Finck/UTB.
- (2004b) *Illusion Freiheit? Über mögliche und unmögliche Konsequenzen der Hirnforschung*. Frankfurt/M.: S. Fischer.
- Van Inwagen, P. (1983) *An Essay on Free Will*. Oxford: Oxford University Press.
- (2002) Free Will Remains a Mystery. In: R. Kane (ed.), *The Oxford Handbook of Free Will*. Oxford: Oxford University Press.
- Wegner, D.M. (2002) *The Illusion of Conscious Will*. Cambridge MA: MIT Press.