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Eleonore Stump

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DUST, DETERMINISM, AND FRANKFURT: A REPLY TO GOETZ

Eleonore Stump

In a preceding issue of *Faith and Philosophy* Stewart Goetz criticized a paper of mine in which I try to show that libertarians need not be committed to the principle of alternative possibilities (PAP) and that Frankfurt-style counterexamples to PAP are no threat to libertarianism. In my view, the main problem with Goetz's arguments is that Goetz does not properly understand my position. In this paper, I respond to Goetz by summarizing my position in as plain a way as possible. Goetz's charge against my position has two parts, first, that it isn't libertarian and, second, that it provides no good reason for libertarians to abandon PAP. This paper briefly presents my answers to these two parts of Goetz's charge.

Introduction

In a preceding issue of *Faith and Philosophy*¹ Stewart Goetz criticized a paper of mine² in which I try to show that libertarians need not be committed to the principle of alternative possibilities (PAP) and that Frankfurt-style counterexamples to PAP are no threat to libertarianism. In my view, the main problem with Goetz's arguments is that Goetz does not properly understand my position. Rather than pointing out the ways in which my position is misconstrued, it seems to me more helpful to try to summarize it in as plain a way as possible. Goetz's charge against my position has two parts, first, that it isn't libertarian and, second, that it provides no good reason for libertarians to abandon PAP. I will divide my summary into two parts to correspond to these two parts of Goetz's charge.

The heart of my position can be thought of this way. "Dust thou art and unto dust shalt thou return", says Genesis, in the old King James English. Ecclesiastes says, "The dust shall return to the earth as it was, and the spirit shall return to God who gave it". These two passages, as well as others, have convinced Christians in past ages that the belief that a human person is made out of matter is somehow compatible with the claim that human beings have souls which can exist separated from bodies.³ The view commonly described (rightly or wrongly) as Cartesian dualism⁴ takes a different view of human persons. On that view, a human person is a soul; and the essentially human acts of thinking and willing take place only in a soul, not in a body. For both theological and philosophical reasons, including the current philosophical disrepute of Cartesian dualism, I think it is worth considering what difference it makes to our understanding of moral responsibility



if we take seriously the notion that a human person is made of matter.

In my view, this notion is compatible with a rejection of causal determinism, so that human acts of will are indeterministic. On the other hand, however, as I will explain below, taking seriously the material constitution of human persons makes it easier to construct Frankfurt stories in which an agent acts with moral responsibility, and also indeterministically, and yet is unable to act otherwise than she does. An agent's willing indeterministically is therefore not equivalent to her being able to do otherwise. Consequently, although focusing on the material nature of human beings strengthens the case against PAP, rejecting PAP is compatible with supposing that there are indeterministic human acts. The Frankfurt stories are sufficient to show PAP false, but they aren't nearly sufficient to show that morally responsible acts can be causally determined.

To answer each part of Goetz's charge, in what follows I try to spell out briefly what I take to be the implications of the view that human beings are made of matter for libertarianism and for the principle of alternative possibilities.

Libertarianism

In other papers (one of which is the focus of Goetz's attack), I have argued for what I take to be the view of moral responsibility held by Thomas Aquinas.⁵ According to Aquinas, human beings are morally responsible for at least some of their actions, and causal determinism is false. In particular, no acts of will for which a person is morally responsible are causally determined by anything outside the willer.⁶ At least for normal, sane persons, most acts of intellect are not causally determined either.⁷ Nonetheless, as I interpret him,⁸ Aquinas also rejects the principle of alternative possibilities. That is, Aquinas thinks an agent can be morally responsible for an act even if he couldn't have done otherwise. As I have argued elsewhere,⁹ this is not because Aquinas thinks that human beings never have alternative possibilities when they are morally responsible for what they do. On the contrary, most or virtually all of the time, a morally responsible human being does have alternative possibilities for what she does, on Aquinas's view. But for Aquinas, the presence of alternative possibilities is an accidental characteristic of moral responsibility; it isn't essential to it. So, in certain sorts of cases, it is possible for a human being to act with moral responsibility when only one course of action is available to her.

What is essential to moral responsibility on Aquinas's view is that a person be the ultimate source of what she does, that her intellect and will be the ultimate causes of her acts.¹⁰ By 'ultimate cause' here, I mean that there is nothing which is prior to that person's acts of intellect and will and which causally determines her intellect and will to be in the states in which they are. If we can trace a causal chain of any sort backward from an agent's act, then the causal chain must originate only in acts of her will and intellect. That is, for any act which the agent does, if there is any causal chain at all of which that act is the effect, then the causal chain must have a first or ultimate cause, and that ultimate cause cannot be anything other than an act of the agent's own will or intellect.¹¹

If we think of libertarianism, in the common way, as the position which supposes that human beings are sometimes morally responsible for their acts but that moral responsibility is incompatible with causal determinism, then Aquinas's account of moral responsibility is a species of libertarianism. Furthermore, within the group of philosophical positions which hold that human beings are sometimes morally responsible, the two main kinds are compatibilism and libertarianism. Aquinas thinks people are morally responsible, and he expressly rejects compatibilism. So it's natural to count him among the libertarians.

On the other hand, if someone objects strongly to this terminology, it's perfectly possible to find another generic name. We can pick the Greek, rather than the Latin, analogue to 'freedom', and we can designate a genus of philosophical positions 'eleutherianism'. Eleutherianism can then be divided into two species. One species holds that (i) human beings are sometimes morally responsible for their acts, that (ii) moral responsibility is incompatible with causal determinism, and that (iii) moral responsibility requires alternative possibilities. The other species, represented by Aquinas's position, holds (i) and (ii) but not (iii). We can then reserve 'libertarianism' for the first species.

But it seems to me silly to squabble over names in this way and to proliferate technical terminology. Both species are committed to (i) and (ii), and they differ only in (iii). Given that (i) and (ii) are sufficient to distinguish a position from both determinism and compatibilism, it seems to me better to say that there are two species of libertarianism, one of which accepts and the other of which rejects PAP.¹²

There is one other point about libertarianism which is important to make clear in this context.

Aquinas knew a view virtually identical to what is now called 'Cartesian dualism'; he associated it with Platonism, and he repudiated it strenuously, in large part because he thought it isn't compatible with the claim that a human being is made of matter. Because he had little understanding of the way the brain works, some of what Aquinas thought about the relation between brain and mind is primitive or just false. Even now, we don't understand very much about the brain, but what we know just confirms the conclusion that Platonic or Cartesian dualism is wrong; there is a much stronger connection between mind and brain than Cartesian dualism supposes. For this reason, and those raised in the introduction to this paper, I think it is worth considering non-Cartesian accounts of the relation between mind and brain and asking what species of libertarianism is compatible with them.

On most contemporary philosophical and biological theories of the mind and brain, there is at least a correlation between mental states and neural states. By saying that mental states are correlated with neural states, I mean to claim that there is a strong connection between a mental act or state and a neural state, but to leave general and vague the precise nature of that connection in order to accommodate a variety of different contemporary theories. For example, those who think that the mental is identical to the physical can suppose that mental acts or states and sequences of neural firings are correlated because the mental acts or states *are* the neural

sequences or states. On the other hand, even non-Cartesian dualists willing to accept a correlation between mental and neural states can be accommodated here. It is open to them to interpret the correlation as states of soul and body which are somehow strongly and invariably connected. They might suppose, for example, that what happens in the soul is always mirrored at the same time by what happens in the body and vice versa, so that affecting the brain with drugs or other medical intervention results in a simultaneous alteration in the soul, and changes in the soul are matched at the same time by a change in the brain.

Causal determinism and reductionism have so strong a hold on many contemporary philosophers that connecting the mind to the brain in this way will seem to them to entail that mental states are causally determined by, and perhaps even reducible to, the physical states of the brain, which are in turn causally determined by things outside the agent. Both those who accept libertarianism and those who reject it are likely to suppose libertarians are committed to the position that the human will has a capacity not shared by anything else in the world, including brain states, namely, the capacity to initiate causal chains and to escape the great nexus of causation that inexorably binds everything else in the world. To philosophers under the spell of this view, it will seem impossible to accept a correlation between mental and neural states of the sort I have just outlined and also to accept libertarianism. To hold that a mental act is strongly correlated with a causal chain of neural firings in the brain will seem to such philosophers to give up the heart of libertarianism. That's because, on this sort of view, neural states — unlike libertarian acts of will — are part of a causal chain that extends outside the agent and doesn't stop until its origin in the big bang.

But reductionism, and also causal determinism, have come under increasing attack in recent years, especially in philosophy of biology, for reasons that have nothing to do with moral responsibility or human agents.¹³ I concur with those arguments. There is no space in this short paper to spell them out;¹⁴ but if they are sound, and I think they are, then we should reject both reductionism and causal determinism, not only for human agents but also for mice, rocks, and molecules. So, I think it is possible to hold that mental states and neural states are strongly correlated and also to maintain that there are states of intellect and will which are not caused by anything else. Therefore, the understanding of mental acts and states as strongly correlated with neural sequences and neural states is compatible with one of the main tenets of libertarianism, namely, that acts of will for which a person is morally responsible are indeterministic.

So I think we can accept the view that a human person is made out of matter and be libertarians as well.

PAP and Frankfurt stories

Does the claim that human beings sometimes act with moral responsibility and that morally responsible acts are indeterministic commit us to accepting PAP? If human beings are made out of matter, then, in my view, the answer is 'no'. Perhaps the will of a Cartesian spirit can't be controlled by anything besides the person who is that spirit, but the will of a material-

ly constituted human being can. If causal determinism is false, even a material human person can initiate causal chains; he can control himself. But anything made out of matter, including the intellect and will of human beings, can also be externally controlled.

Ordinary Frankfurt-style counterexamples to PAP are built around preemption. In such Frankfurt stories, there is a controller who has a mechanism that is responsive to a state in the victim which is antecedent to the act the controller wants to control. For example, in one of the most discussed Frankfurt stories, a neurosurgeon has a neuroscope which detects Jones's inclination to vote a certain way. If the neurosurgeon were to detect Jones's inclination to vote in a way the neurosurgeon doesn't want him to vote, the neurosurgeon would preempt Jones's own decision and cause Jones to decide to vote in the way the neurosurgeon desires. But if there were no reliable preceding sign, such as an inclination, it seems that the neurosurgeon couldn't preempt Jones's own decision. By the time the neurosurgeon knew whether he should intervene or not, Jones would already have made a decision. So unless there is some reliable sign of how the victim is going to decide, the neurosurgeon can't preempt the victim's decision.

David Widerker has argued that Frankfurt stories built around preemption in this way are incompatible with supposing that morally responsible decisions are indeterministic.¹⁵ That is because the sign that clues the neurosurgeon to intervene has to be causally connected with the victim's decision if the sign is to function for the neurosurgeon as a reliable indicator of the decision. But if the victim's decision is indeterministic, then it isn't causally determined by anything which precedes it, and there is no reliable sign of the sort needed by Frankfurt stories dependent on preemption.

I sympathize with Widerker's objection. But Frankfurt stories need not be built around preemption. Instead, they can make use of the strong correlation between mental and neural states to allow the counterfactual intervener to interrupt, rather than preempt, neural sequences correlated with acts of will.

To understand how Frankfurt stories of the interruption sort work, it's necessary to recognize that the correlation between a mental act or state and the firings of neurons must be a one-many relation. When I suddenly recognize my daughter's face across a crowded room, that one mental act of recognition, which to me feels sudden or even instantaneous, is correlated with many neural firings as information from the retina is sent through the optic nerve, relayed through the lateral geniculate nucleus of the thalamus, processed in various parts of the occipital cortex, which take account of figure, motion, orientation in space, and color, and then processed further in cortical association areas. Only when the whole sequence of neural firings is completed, do I have the mental act of recognizing my daughter. Whatever neural firings are correlated with an act of will or intellect, I take it that in this case, as in all others, the correlation between the mental act and the firing of the relevant neurons is a one-many relation.¹⁶ Unless Cartesian dualism is correct, then, there is no mental act in an agent unless and until the correlated sequence of neural firings in that agent's brain is completed.¹⁷

It's important to be clear about this point. If the firing of the whole neural sequence correlated with a mental act is not completed, the result isn't some

truncated or incomplete mental act. It's no mental act at all. If the neural sequence correlated with my recognizing my daughter's face across a crowded room is interrupted at the level of the thalamus, say, then I will have no mental act having to do with seeing her. I won't, for example, think to myself, "For a moment there, I thought I saw my daughter, but now I'm not sure." I won't have a sensation of almost but not quite seeing her. I won't have a premonition that I was about to see her, and then I mysteriously just don't see her. I will simply have no mental act regarding recognition of her whatsoever. To suppose that there could be some sort of mental act, truncated, incomplete, or otherwise defective, when there is no completed neural sequence correlated with that mental act, is to accept some version of Cartesian dualism. It is to suppose that there can be a mental act without there being a completed neural sequence correlated with that mental act. So if the neural sequence correlated with a mental act is interrupted, then that mental act doesn't occur. If there is any mental act at all in those circumstances, it will occur only because there is some other completed sequence of neural firings correlated with *that* mental act. So although a mental act such as a decision may feel, subjectively, as if it is simple and instantaneous, the neural sequence with which it is correlated is neither.

This is enough to allow the neurosurgeon to control his victim without relying on the sorts of signs in the Frankfurt stories built around preemption. Given that human beings are made of matter, we can build a Frankfurt-style counterexample to PAP as an interruption story. In a Frankfurt story of the interruption sort, the neurosurgeon's instrument controls the victim in virtue of its ability to interrupt the neural sequence correlated with an act of will rather than by its ability to preempt that act itself, and yet it can also be true that in the actual sequence of events there is nothing which causally determines the victim's act of will. The features Widerker objects to in the preemption stories are thus missing in the interruption stories.

To see why this is so, it might help to consider what a Frankfurt interruption story looks like if we postulate the simplest sort of correlation between the mental and the neural. Suppose, *per impossibile*, that the mental and the neural are identical. Then any mental act will just be the firing of a whole neural sequence. With this presupposition, let it be the case that the neurosurgeon's victim, Jones, forms an act of will *W*. On our presupposition, there will then also be in Jones's brain a completed neural sequence *N*. And suppose further that *W* is an indeterministic act of will. If *W* and *N* are identical, then this supposition entails that neural sequence *N* just fires, without being caused to fire by anything antecedent to it.¹⁸ Consequently, there can be no reliable prior sign of *W*. Nothing causally determines *N* or *W*, and so there is nothing prior to *N* or *W* which is a reliable sign of *N* or *W*.

Nonetheless, it is clear that even in such a world, a counterfactual intervener could operate. That's because neural sequence *N* — even if it just begins to fire, without being caused to fire by anything prior — is composite and divisible. And that's enough to give the intervener scope to operate. The intervener can then use as his cue the beginning of that neural sequence. By intervening somewhere in the middle of the neural sequence, the intervener brings it about that the neural sequence isn't completed. Since the relation between a mental act or state and neural firings is a one-

many relation, if the intervener intervenes to keep the neural sequence from being completed, he prevents the victim from forming the act of will W. But he does so without taking as his cue some prior cause of W. Instead, he operates on something which is identical to the mental act.

I don't suppose that mental acts are really identical to the firing of neural sequences. Whatever the right relation between the mental and the neural is, I think it is a lot weaker than identity. I constructed the simple Frankfurt interruption story above with the supposition that the mental and the physical are identical for the sake of illustrating the difference between Frankfurt preemption stories and Frankfurt interruption stories, but a Frankfurt interruption story doesn't require that the relation between the mental and the neural be nearly so strong. It requires only that a mental act be strongly correlated with a neural sequence, in the way described above, and that the relation between them be a one-many relation. That is enough to allow the neurosurgeon to operate without relying on any prior state or event which causes the neural sequence or the act of will.

Furthermore, if a neurosurgeon did intervene by interrupting a neural sequence in this way, then the victim would form no mental act; there would be nothing the victim does. The victim wouldn't have the mental act of engaging in the beginning of a decision. He wouldn't report his condition by saying, "I was just about to make a decision but then somehow I didn't", anymore than in the face recognition example in which the sequence of neural firings beginning in my retina was terminated in the thalamus I would report my condition by saying, "I was about to see my daughter but then I didn't". Instead, the victim won't have any mental act or state to report.

Or, to put the point another way, if the victim in a Frankfurt interruption story did have a mental act or state to report, there would be a completed neural sequence correlating with *that* mental act or state — and then the neurosurgeon could interrupt *that* neural sequence.

In such a Frankfurt interruption story, then, the neurosurgeon can interrupt the neural sequence correlated with a certain act of will, if he doesn't want that act of will on the victim's part, and he can use his coercive neurological mechanism to fire instead the neural sequence correlated with the act of will he wants the victim to form. The victim can thus be controlled by the intervener without there being anything which causally determines the victim's act of will in the actual sequence of events in which the neurosurgeon does not intervene. Since the intervener controls the victim, however, it will also be true that the victim couldn't form any act of will other than that act which the intervener wants the victim to have. Consequently, in a Frankfurt interruption story, it will be true that the victim's act of will, for which he is morally responsible, is indeterministic and yet that the victim cannot will otherwise than he does.¹⁹

This does seem to me a good reason for libertarians to give up on PAP.

Conclusion

For the reasons given in the two main sections of this paper, then, Goetz is mistaken. Aquinas's account is appropriately designated 'libertarian', and

there are two species of libertarianism, not just one. Consequently, libertarians need not be committed to PAP; one can reject PAP and still hold a species of libertarianism. Furthermore, Frankfurt interruption stories, which are compatible with libertarianism, provide a good reason for rejecting PAP. So, of the two species of libertarianism, the better one is Aquinas's, which doesn't require alternative possibilities for moral responsibility.²⁰

St. Louis University

NOTES

1. "Stumping for Widerker", *Faith and Philosophy* 16 (1999): 83-89.
2. "Libertarian Freedom and the Principle of Alternative Possibilities", *Faith, Freedom, and Rationality*, ed. Daniel Howard-Snyder and Jeff Jordan, (Rowman and Littlefield, 1996), pp.73-88.
3. Cf. my "Non-Cartesian Dualism and Materialism without Reductionism", *Faith and Philosophy* 12 (1995) 505-531.
4. For an interesting recent paper which argues that the view Descartes actually held is much more sophisticated and complicated than Cartesian dualism, see Paul Hoffman, "Cartesian Composites", *Journal of the History of Philosophy*, forthcoming. In this paper, I will use 'Cartesian' to refer to the view commonly attributed to Descartes, but I make no claim that this is a view Descartes himself actually held.
5. These papers include "Intellect, Will, and the Principle of Alternate Possibilities", in *Christian Theism and the Problems of Philosophy*, ed. Michael Bealy, (Notre Dame: University of Notre Dame Press, 1990), pp. 51-91, reprinted in *Perspectives on Moral Responsibility*, ed. John Martin Fischer and Mark Ravizza, (Ithaca, NY: Cornell University Press, 1993), pp.237-262; "Libertarian Freedom and the Principle of Alternative Possibilities", in *Faith, Freedom, and Rationality*, ed. Daniel Howard-Snyder and Jeff Jordan, (Rowman and Littlefield, 1996), pp. 73-88; "Persons: Identification and Freedom", *Philosophical Topics* 24 (1996) 183-214; and "Aquinas's Account of Freedom: Intellect and Will", *The Monist* 80 (1997) 576-597. See also "Alternative Possibilities and Moral Responsibility: the Flicker of Freedom", *Journal of Ethics*, forthcoming, and "Augustine on Free Will", in *The Cambridge Companion to Augustine*, ed. Norman Kretzmann and Eleonore Stump, (Cambridge: Cambridge University Press, 1999).
6. There is some question whether grace isn't an exception to this rule for Aquinas. For present purposes, I'm going to leave grace to one side. I take up the issue in detail in "Aquinas on Grace and Free Will", forthcoming; see also my discussion of grace and free will in "Augustine on Free Will", op. cit., where I spell out some of the philosophical issues at stake in this connection.
7. I have argued that this view of Aquinas's about the intellect is compatible with taking the intellect to be a reliable cognitive faculty in "Aquinas's Account of the Mechanisms of Intellectual Cognition", *Revue Internationale de Philosophie* 21 (1998) 287-307.
8. Very little in the interpretation of a figure whose work is so much discussed as Aquinas's is uncontroversial, so the qualifier "as I interpret him" has to be understood throughout. To avoid tedium I won't spell it out every time but will leave it to be understood by the reader.
9. See especially "Aquinas's Account of Freedom: Intellect and Will", *The Monist* 80 (1997): 576-597.

10. There is a complication which I am leaving to one side here. According to Aquinas, God is the creator of every created thing and any created cause is always dependent on the operation of divine causality. In my view, however, this position of Aquinas's and his account of grace and free will are both compatible with what I say here, if his views are properly understood; but there is no space in this paper to argue for this claim. For the sake of simplicity in this paper, therefore, the reader should take ultimate or first causes as restricted to created causes.

11. Robert Kane has argued that what matters to philosophers who value indeterminism as a requirement for moral responsibility is just our having ultimate responsibility for what we do. I think that his point is right and that Aquinas would have agreed with him. See Robert Kane, *The Significance of Free Will*, (Oxford: Oxford University Press, 1996), p.192; see also my discussion of this issue in "Alternative Possibilities and Moral Responsibility: the Flicker of Freedom", op.cit.

12. Goetz may want to say that (i) and (ii) entail (iii), so that the Thomistic position as I've described it is incoherent. But, of course, whether this is so or not is part of the contention around the Frankfurt stories, and so it can't just be assumed to be true without begging the question. I have argued that (ii) does not entail (iii) in "Alternative Possibilities and Moral Responsibility: the Flicker of Freedom", op.cit.

13. For a helpful discussion of the general problem of reductionism relevant to the issues considered here, see Alan Garfinkel, "Reductionism", in *The Philosophy of Science*, ed. Richard Boyd, Philip Gasper, and J.D.Trout, (Cambridge, Mass.: MIT Press, 1993), pp.443-459. Garfinkel argues against reductionism by trying to show that reductive microexplanations are often not sufficient to explain the macrophenomena they are intended to explain and reduce. He says, "A macrostate, a higher level state of the organization of a thing, or a state of the social relations between one thing and another can have a particular realization which, in some sense, "is" that state in this case. But the explanation of the higher order state will not proceed via the microexplanation of the microstate which it happens to "be". Instead, the explanation will seek its own level..." (p.449). Aquinas would agree, and Aquinas's account of the relation of matter and form in material objects helps explain Garfinkel's point. A biological system has a form as well as material components, so that the system is not identical to the components alone; and some of the properties of the system are a consequence of the form of the system as a whole. Garfinkel himself recognizes the aptness of the historical distinction between matter and form for his argument against reductionism. He says, "the independence of levels of explanation ... can be found in Aristotle's remark that in explanation it is the form and not the matter that counts." (p. 449). See also Philip Kitcher, "1953 and All That: A Tale of Two Sciences", in *The Philosophy of Science*, op.cit., pp.553-570. Particularly helpful and interesting on this subject is a recent book by John Dupre, *The Disorder of Things. Metaphysical Foundations of the Disunity of Science*, (Cambridge, MA: Harvard University Press, 1993). Dupre argues that causal determinism falls with the fall of reductionism.

14. But I do discuss them in the paper Goetz criticizes, "Libertarian Freedom and the Principle of Alternative Possibilities", pp. 81-84.

15. David Widerker, "Libertarian Freedom and the Avoidability of Decisions", *Faith and Philosophy*, 12 (1995) 113-118, and "Libertarianism and Frankfurt's Attack on the Principle of Alternative Possibilities", *The Philosophical Review* 104 (1995) 247-261.

16. What kind of one-many relation one takes this to be depends on what theory of the relationship of mind to brain one adopts. For those who think

that mental states are identical to neural states, for example, the correlation between mind and brain has the implication that a mental act is temporally extended throughout the microseconds it takes for all the neurons in the correlated sequence to fire. (Something needs to be said to explain why, even on this view, there is no mental act without a completed neural sequence. Perhaps the proponents of this view might want to say that a mental act correlated with a completed neural sequence doesn't exist unless and until all its components exist and that its components are subjectively indiscernible.) On other theories of the relation of mind to brain, it could be the case for other reasons that the mental act comes into existence simultaneously with the firing of the last neuron in the sequence.

17. If a neural sequence and a mental act or state are correlated in the way at issue here, then the neural sequence exists if and only if the correlated mental act or state exists. To ward off the sort of confusion which sometimes arises in this connection in philosophy of mind, it is probably helpful to add that nothing in my presuppositions makes it necessary that mental acts and states be correlated with neural sequences in this way — there might be creatures for whom the mental is correlated with states of silicon instead, for example — or that there be one and only one neural sequence which is correlated in a law-like way, for all human beings or even within the life of just one human person, with one particular mental act or state. All that is required for the correlation at issue here is that a particular embodied human being in this world be such that he has some mental state or engages in some mental act if and only if the neural sequence correlated with that act or state in him is completed. And, as I have explained, this is a position which even some dualists can accept. If a mental act or state in the soul is simultaneously mirrored by a neural state in the brain and vice versa, then if that neural state exists, it is true that the correlated mental act or state does also, and if the neural state does not exist, it's true that the correlated mental act or state doesn't exist either.

18. If there are indeterministic brain states, they are bound to be more complicated than this; but the biology doesn't need to be perfectly right for the philosophical point. One attempt to provide a biologically acceptable account of indeterministic neural events can be found in Kane *op. cit.* While Kane's account is scientifically sophisticated, I don't think it is correct because it is reductionistic; as far as I can see, Kane limits any real indeterminism to the microphysical realm.

19. Some philosophers have supposed that even in the most tightly constructed Frankfurt stories there is still a "flicker of freedom". For an excellent discussion of the flicker of freedom strategy, see John Martin Fischer, *The Metaphysics of Free Will*, (Oxford: Blackwell, 1994), chapter 7. See also my "Alternative Possibilities and Moral Responsibility: the Flicker of Freedom", *op.cit.*

20. I'm grateful to John Dupre, John Martin Fischer, and Norman Kretzmann for comments on an earlier version of this paper.