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Interrogating the Epiphenomenalist Tradition

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Abstract Epiphenomenalism has had a long historical tradition. It is the view that mental properties are causally inert with respect to the physical world. In this paper, I argue that this tradition faces enormous challenges and needs better arguments to defend its position, and to demonstrate this, I interrogate the (mostly contemporary) strands including computationalism, the idea of the illusion of conscious will, and causal exclusionism.

Keywords Epiphenomenalism · Mind · Physicalism · Consciousness · Mental causation · Automatism

Introduction

Epiphenomenalism is the idea that the physical world (physical events and states) have causal effect on mentality (thought, cognition, consciousness, feelings and so on), but the reverse cannot hold: mentality is not causally efficacious with respect to the physical world. Rather than acknowledging that our thoughts have effects on our actions, epiphenomenalists would generally argue that our neurological processes cause our actions. In conceding (at the least) that the mental world exists in addition to the physical world, epiphenomenalists would have qualified to be called dualists. But in denying that mentality has causal efficacy, in seeing mentality in general as shadows (or echoes) that accompany physical events and states, no one would, for instance, call an epiphenomenalist a substance dualist or interactionist. They may qualify as property dualists since they regard the mental and physical as different properties of the same substance. But in regarding the substance in question as

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basically physical, and the mental as a mere side effect, this sort of dualism must be taken with a pinch of salt. In spite of this, concluding that epiphenomenalists are officially materialists would be quite hasty, since no serious materialist would accord conceptual, let alone ontological, independence to the mental. This is precisely what epiphenomenalists hoped to achieve: avoid the charge of reductive (or simple) materialism. The project of the reductive materialists (behaviourism, psycho-physical identity) seems stuck in the works (it has been stubbornly difficult to deny the existence of mental states, at least conceptually). It therefore seems wiser (as epiphenomenalists figure) to acknowledge that mental events exist and then deny that they have any causal efficacy.

I, however, find problems with the attempts of epiphenomenalists to defend this idea. It seems to me that the epiphenomenalist tradition faces no less challenge compared to the reductive tradition of physicalism, which they might be seeking to avoid. Apart from the fact that it is a problematic project to simultaneously deny strict materialism and strict dualism, it is an even greater challenge to acknowledge mentality and deny their effects. And the promise (frequently made by physicalists) that science will in future unravel the material (neurological) mechanics behind mentality does not impress some of us. In general, I will argue that epiphenomenalists need more convincing support to sustain their position.

The Precursors

Epiphenomenalism may have gained its inspiration from the *Problem of Heterogeneity*. This is the problem that Rene Descartes encountered in trying to explain how mental properties, non-physical as they are, can interact with physical properties. Although Descartes is the father of interactionist dualism (mental properties influence physical properties and vice versa), he also argued (often at very serious strains with his interactionism) that humans and animals behave in a lot of automatic ways without conscious thought. Descartes gave the first rough definition of reflex action as follows:

> The motion of the matter of a sensory nerve may be transmitted through the brain to motor nerves, and thereby give rise to contraction of the muscles to which these motor nerves are distributed; and this reflection of motion from a sensory into a motor nerve may take place without volition, or even contrary to it.[1]

Descartes argues that one way in which the brain controls the body is by memory, which arises from repeated motions of certain parts. According to him, the spirits flow more easily into pores of the brain where they have flowed repeatedly in the past, "… thereby producing in the gland that special movement that represents x to the soul, and makes it recognize x as the thing it wanted to remember".[2] Descartes thus showed that the repeated condition of brain molecules gives rise to something being remembered, which is roughly the reason why memory is made more

[1] Descartes (1989), p. 4.

[2] Ibid, p. 12.

effective through repetition. Thomas Henry Huxley has utilized this idea to show that memory is one of the examples of consciousness and that consciousness therefore is caused by the brain molecules.[3]

Another argument from Descartes that encourages epiphenomenalism is that animals (and even humans) are automata or even machines. He writes, "… no movement can take place, either in the bodies of beasts, or even in our own, if these bodies have not in themselves all the organs and instruments by means of which the very same movements would be accomplished in a machine".[4] This is quite puzzling, considering that Descartes believes that the mental (or the soul) acts upon the pineal gland that then leads the pores in the brain to open and release "animal spirits", which then lead to movements of the body.[5]

For a more specific background to epiphenomenalism, however, we turn to Henry Huxley, who argues that consciousness is generated by the nervous system.[6] Specifically, he argues that it is highly probable that consciousness in man depends upon the integrity of the anterior division of the brain and that any part of the celebro-spinal axis (of spinal cord and brain) separated from this anterior division is as completely incapable of giving rise to consciousness as we know it to be incapable of carrying out volitions. But Huxley notes that the separated part of the spinal cord is not inert, because, although the parts of the body it controls will be devoid of sensations, they will respond when tickled, which means that the action has a purpose.[7] Huxley notes that the same thing happens to a frog if its spinal cord is cut across and we have a segment separated from the brain. Huxley argues that if you touch the frog in the area controlled by nerves that are disconnected from the brain with acetic acid, which gives all the signs of great pain in an injured frog, there will be no pain, but the frog will lift up its foot to rub off the acid. And if you went as far as holding this foot to prevent it from doing what it is doing, the frog will bring the other foot around the body to do the same task. Huxley concludes from this experiment,

> It is impossible that the frog, if it were in its entirety and could reason, should perform actions more purposive than these: and yet we have most complete assurance that, in this case, the frog is not acting from purpose, has no consciousness, and is a mere insensible machine.[8]

Huxley argues that the same applies to human beings, and cites the experiment by Dr. Mesnet, a French physician. This experiment involved a French soldier who was wounded during the battle of Bazeilles by a ball that fractured his left parietal bone. The incident affects his life as follows: in his abnormal state, he does almost everything normally, except that in this state, he feels nothing even if pins are run through his body, his body produces no reaction when subjected to electrocution, he drinks vinegar or quinine as readily as he drinks water, and is affected by no

[3] Huxley 2015 (1874), 215–216.

[4] From "responses" You can substitute with a quotation from fifth meditation.

[5] Descartes, Passions of the Soul, Ch 1.1, 350–360.

[6] Huxley 2015 (1874), 220.

[7] Ibid, 222.

[8] Ibid, 223.

magnitude of noise. Huxley argues that the case of the frog shows that the man may be devoid of any kind of consciousness.[9]

In Huxley's notion, if men and animals, in states of unconsciousness, perform actions as complicated and as seemingly rational as those who do not, then the idea of consciousness as *having causal powers* does not seem plausible. It seems rather to be that consciousness is a mere shadow or side effect of bodily activities. So Huxley admits to the idea of consciousness but attributes no causal powers to it:

> The consciousness of brutes would appear to be related to the mechanism of their body simply as a collateral product of its working, and to be as completely without any power of modifying that working as the steam-whistle which accompanies the work of a locomotive engine is without influence upon its machinery. Their volition, if they have any, is an emotion indicative of physical changes, not a cause of such changes.[10]

Huxley then argues that the question "How is it possible to imagine that volition, which is a state of consciousness, and, as such, has not the slightest community of nature with matter in motion, can act upon the moving matter of which the body is composed, as it is assumed to do in voluntary acts?" becomes superfluous, since "Their volitions do not enter into the chain of causation of their actions at all".[11] According to him, "… the feeling we call volition is not the cause of a voluntary act, but the symbol of that state of the brain which is the immediate cause of that act".[12]

However in my view, since all human actions are not reflex actions, citing examples with reflex actions would not, by themselves, demonstrate Huxley's thesis that all consciousness results from immediate molecular changes in the brain. (The actions of the French soldier, for instance, were not purposeful.) Nevertheless, it would be more productive to move on to examine more contemporary epiphenomenalist positions, to which I now turn.

The Contemporary Resurgence of Epiphenomenalism

Almost a century later, epiphenomenalism re-emerges because of the failures of strict reductionist physicalism. With the fall of behaviourism and psycho-physical identity theories, many physicalists no longer tend to deny the existence of mentality. They would rather deny its causality and argue that it is more like a shadow of the real, a side effect of the real, with no causal influence on the real. For instance, Frank Jackson argues that qualia (raw feels) exist. He in fact calls himself "… a qualia freak".[13] But Jackson argues that qualia are epiphenomena, side effects of other activities in the body. He sets out to, in his words, show that three reasons

[9] Ibid, 228–9.

[10] Ibid.

[11] Ibid, 241.

[12] Ibid, 244.

[13] Jackson (1990), p. 469.

given for the causality of qualia have no real force. The first is the assumption that qualia cause a change in the physical world, such as pain causing the subject to seek to avoid pain. Jackson objects to this argument by relying on Hume's scepticism. He writes, "No matter how often *B* follows *A,* and no matter how initially obvious the causality of the connection seems, the hypothesis that *A* causes *B* can be overturned by an overarching theory which shows the two as distinct effects of a common underlying causal process".[14] But, in my view, Jackson contradicts himself here. He relies on Hume's scepticism (he even made it clear that his argument is inspired by Hume) and at once admits that there is "…a common underlying causal process". Why admit causality in any way when the project is (qua Hume) to question causality in general? If, on the other hand, Jackson's project is to argue against the particular causality of qualia, then it is not clear why he should invoke Hume's scepticism of general causality, since he would believe that there is causality outside of qualia.

The project of questioning general causality does not come without its difficulties. This can be seen in the fact that it does not seem that Hume himself really believes in his interrogation of general causality, since he uses the causality pillar word "effect" in his writings. According to him, "I have found that such an object has *always* been attended with such an *effect* and I *foresee* that other objects which are in *similar appearance* will be attended with *similar effects* [italics mine]".[15] Jackson himself demonstrates in writing that he is not entirely successful or quite efficient about interrogating causality either. He says: "I *will* argue for an answer no, but in doing this, I *will* say nothing about two views associated with… All I *will be concerned* to defend… [italics mine]".[16]

Jackson next cites the second reason that can be given for the causality of qualia, a reason based on Darwin's theory of evolution. According to this reason, traits that have evolved over time are conducive to survival, and qualia are one of them (the earlier forms of life did not have them). According to the argument, if qualia are so important as to have evolved over time, then they must make a difference in the physical world. Jackson rejects this argument by arguing that it is not only survival traits that evolve over time, but the side effects of survival traits, since traits might have their side effects. And for him, qualia are side effects or by-products of certain brain processes that are highly conducive to survival.[17] So there is no connection between the idea that traits evolved and the idea that they must have causal powers. I agree with Jackson on this point: one cannot argue that something is causally efficacious simply because it evolved. And let me grant that something that has evolved may well be a side effect of something else that evolved and is causally efficacious. But it seems to me that this is an anticipated objection in Jackson's work. I do not know of anyone that has made this kind of evolutionary argument in support of the causal efficacy of qualia, and Jackson does not mention any. For instance, the argument rests on the supposition that earlier creatures did not have

[14] Ibid, 474.

[15] Hume (1955), p. 41. See also Wiredu (1996), p. 39 for similar criticism.

[16] Jackson (1990), p. 474.

[17] Jackson (1990), p. 474.

qualia, but *how do we know that earlier creatures did not have qualia*, and on what ground do we make this supposition?

According to Keith Campbell, the supposition among scientists and epiphenomenalists is that human beings evolved from singled-celled creatures.[18] Read him:

> Evolutionary theory asserts that complex modern forms, such as man, are the remote descendants of earlier species so much simpler that like the amoeba they show no signs of mental life. If minds are spirits they must have arrived as quite novel objects in the universe, some time between then and now. But when? … Any choice of time as the moment at which spirit first emerged seems hopelessly arbitrary.[19]

At the heart of Campbell's remark is the difficulty in accepting the supposition that something as *simple* as a single-celled organism can have the potential to possess spirit. He extends this difficulty to the human embryo:

> The initially fertilized egg shows no more mentality than an amoeba. By a smooth process of division and specialization the embryo grows into an infant. The infant has a mind, but at what point in its development are we to locate the acquisition of a spirit? As before, any choice is dauntingly arbitrary…. Continuity show that men and one-celled organisms have the same basic nature, and we may conclude from this that since single cells are without spirit, so must be man… Alternatively, we may conclude from the common nature of men and amoebas that as men have a spirit, so must amoebas also.[20]

This epiphenomenalist argument takes the pride of being a corollary of the evolutionary theory, but it overlooks the fact that a single cell has *enough* complexity to make a human being. To begin with, the amoeba is a single cell, while the embryo is multi-cellular. What is single cellular is the embryo's parent, the zygote. But the single-cell zygote has *all* the genetic information necessary to form a human being. As such, it is not as "simple" an organism as Campbell supposes. Moreover, the terminology "single-celled organism" covers a vast range of organisms in terms of size and complexity. For instance, one of the largest unicellular organisms, the *Valonia ventricosa* (a species of algae) has a diameter that ranges up to 3 centimetres.[21] Thus, the simplicity that Campbell ascribes to single-celled organisms may be overstretched as a reason to make us worry about whether they can develop into beings with spirits.

The third argument for the causal efficacy of qualia that Jackson anticipates seems even more obscure and likely never to be made. According to this argument, we know other people's minds because their qualia cause their behaviour. But Jackson argues that we know other people's minds, not because their behaviour is caused by their mind, but because their behaviour is caused by their brain, and the same brain also causes their qualia. So by observing their behaviour, we are

[18] Campbell (1984), pp. 48, 135.

[19] Ibid, p. 48.

[20] Ibid, pp. 48–9.

[21] Preston and Astbury (1937): 77.

observing what is caused by their brain, and epiphenomenalists assume that the same causation of behaviour is the same causation of qualia.[22] So, for Jackson, the fact that we have to know somewhat about people's minds by observing their behaviour does not mean that their behaviour is an outcome of their mind. Jackson uses an analogy of two newspapers reporting the victory of Spurs in a game. If one newspaper reported the same thing as the other, it is not necessarily because it got the news from the other newspaper, but because they may both have sent reporters to the game. So it is possible that separate observations of the game itself caused the identical reports of both newspapers. In this way, it is the brain that causes both (observable) behaviour and (unobservable) qualia, and the observation of mind through behaviour does not in any way lend causal efficacy to mind.

However, it does not seem to me that this anticipated objection and its treatment by Jackson is worth the while, since in my view, the anticipated objection is too weak to be actually made. It would not be enough, for instance, for someone who wants to defend mental causality to infer that mental events are causally efficacious simply because we have to observe them by observing behaviour. A defence of the causal efficacy of mental events will need to do better than this (if there is to really be any such defence). Secondly, I need not mention that the analogy between qualia/behaviour/brain and two newspapers reporting on a game is problematic, since it is incontestable that one newspaper can get its news information independently of another newspaper, but it is *not* incontestable that the brain must cause both behaviour and qualia.

Jackson argues pointedly: "… qualia are not necessary for survival".[23] But at the same time he argues, "At no stage in our evolution did natural selection favour those who could make sense of how they [qualia] are caused and the laws governing them, or in fact why they exist at all. And that is why we can't".[24] If, as Jackson admits, we do not know *how* qualia are caused, or "the laws governing them", how do we make positive statements about what they can and cannot do?

In a later article, Jackson re-surges epiphenomenalism by launching fresh arguments against the notion of mental causation, in particular, against the notion of intentional states. He questions the notion that beliefs and desires (intentional states in general) explain the change in the way a subject is oriented with respect to the environment, such as movement towards milk or movement away from tigers.[25] We would explain Mary's reaching for the glass in terms of her desire for milk and her belief that it contains milk.[26] Jackson agrees that it is easy to see how a neurophysiological state might explain movement towards milk in the sense of explaining movement towards milk. But, asks Jackson, how can such a neurophysiological state explain *non-accidental* movement towards the milk? Likewise, remarks, Jackson,

[22] Ibid, p. 475.

[23] Ibid.

[24] Ibid.

[25] Jackson (1996), p. 391.

[26] Ibid, p. 390.

> …we can explain the way plants non-accidentally orient themselves towards the sun in terms of how their internal states get appropriately modified by the direction of the sun's rays on the plant before the corresponding movement. When we open up the plant we find the state that does the work, and also find how it is sensitive to the sun's direction in such a way that the plant orients itself appropriately towards the sun. It would be a mistake for philosophers to write to biologists telling them that the internal states that they cite in their texts cannot, as a matter of principle, explain the relational nature of the movements of plants. The same goes for philosophers writing to animal biologists – and we are animals.[27]

On surface value, this seems a powerful argument for epiphenomenalism. But closer inspection shows an inappropriate analogy. For instance, we need to ask ourselves: what is the difference between a plant reaching out to the sun's rays and Mary reaching out to a glass of milk. The answer comes with some reflection: it is that Mary can, due to some intention or the other, decide *not* to reach out for the glass of milk, but the plant has no intentional facilities for refusing to reach out for the sun's rays when it in fact needs them. In other words, the relationship between Mary and the glass of milk is not deterministic, but the relationship between the plant and the sun's rays is. Given that Jackson needs to prove that it is not Mary's volition that causes Mary's action, citing an analogy with a clearly mechanistic plant activity and suggesting to us that it must be so with humans is a non-starter.

Epiphenomenalist Interpretations of some Scientific Experiments

In his book *The Illusion of Conscious Will,* Wegner wrote that he was attempting to reconcile the debate between advocates of mental causation and advocates of determinism (or epiphenomenalism). He remarks that, yes, these two positions have persisted for a very long time now, and they seem opposites. But he argues that the debate could disappear if we see the two seemingly opposite positions as actually complementary. To reconcile them, he argues, "Rather than opposites, (the positions of) conscious will and psychological determinism can be friends. Such friendship comes from realizing that the feeling of conscious will is created by the mind and brain. The answer to the question of conscious will, then, may involve exploring how the mechanisms of the human mind create the experience of will" (Wegner 2002: ix). To give his position the appearance of a genuine reconciliation, Wegner denies that he implies epiphenomenalism. Writes he, "And the experience of conscious will that is created in this way need not be a mere epiphenomenon. Rather than a ghost in the machine, the experience of conscious will is a feeling that helps us to appreciate and remember our authorship of the things our minds and bodies do" (ibid).

Wegner basically argues that the *fact* that we have experiences of conscious will does *not* prove that we will the things we do. I accept this argument. But it also turns

[27] Ibid, pp. 391–2.

on Wegner and let me briefly show this. To demonstrate his position, Wegner presents to us cases when people feel they are willing an act that they in fact are not doing (phantom limbs [pp. 40–44], ear wiggling [pp. 32–33]), and when they feel they are not willing an act that they indeed are doing (acting quickly and preconscious actions [pp. 56–59], auditory hallucinations [pp. 84–90], automatic writing [pp. 103–108], Ouija board spelling [pp. 108–113], the Chevreul pendulum [pp. 113–116], dowsing [pp. 116–120], ideomotor action [pp. 120–130], attributing one's intention to imagined agents or spirits [pp. 221–270], and loss of authorship of action to another person in hypnosis [pp. 271–315]). People suffering from the alien hand syndrome experience a hand (of theirs) perform acts quite autonomously of their will (2002: 4), as if "someone from the moon" was controlling their hand (2002: 6). Hypnosis produces the feeling that "your actions are happening to you rather than that you are doing them" (Lynn, Rhue and Weekes cited in Wegner 2002: 6). The problem with these cases is that they do not prove Wegner's point. The fact that there are cases where people feel they are willing things that they in fact are not doing or do not feel they are willing things they are in fact doing does not help us much in determining whether in fact all human experiences of conscious willing end in the same way (are epiphenomenal). The cases are illuminating about proving particular circumstances of epiphenomenal mental experience, but do not prove the general conclusion, since this could be like asking us to believe that all men are vegetarians because some are.

Wegner remarks that people hold stubbornly to beliefs in conscious will because it fits intuition and serves religious purpose, and he reminds us that this was just like the conception of flat earth fitted religious beliefs of the earth as central in God's universe (2002: 15). But this remark only reminds us that intuitive beliefs can be wrong sometimes: it is only at the pain of inductive reasoning that we can infer from this simple reminder that this particular intuitive belief about conscious will must be wrong.

Wegner tells us that the most anatomical approach to locating conscious will involved searching the living human brain (2002: 45). Wilder Penfield had mapped a variety of sensory and motor area of patients during brain surgery, and these surgeries were conducted under local anaesthetic while the patients were conscious. This allowed Penfield to ask what happened when, for example, brain stimulation caused the person's hand to move. Some patients responded by denying conscious volition, "I didn't do that. You did" or "I didn't make that sound. You pulled it out of me" (2002: 45). This, according to Wegner, shows that the actions did not feel consciously willed to the patient who did them. In fact, according to Wegner, the stimulation yielded the occurrence of voluntary-appearing actions without yielding any experience of conscious will. Another set of experiments by Jos Delgado yielded some experiences of conscious will, but the researchers questioned whether these could not be "confabulations, convenient stories made to fit the moment" (2002: 47). Wegner drew an epiphenomenalist conclusion from these findings:

> … the comparison of Delgado's patient with the one examined by Penfield suggests that the brain structure that provides the experience of will is *separate* from the brain source of action. It appears possible to produce

> voluntary action through brain stimulation with or without an experience of conscious will. This, in turn, suggests the interesting possibility that conscious will is an add-on, an experience that has its own origins and consequences…only loosely coupled with the mechanisms that yield action itself (2002: 47).

In my view, this suggested conclusion is hasty. These were experiments that relied on the stimulation of certain local and specific aspects of the brain, aspects whose functions are specific within a larger overall function. The experiments may have shown that stimulation can tickle a brain component that causes action and may or may not tickle another that can cause feelings of willing the action in question. But what the experiment overlooks is the possibility that these components are part of a larger circuit and that the fact that each of them can perform an isolated function does not mean that it *always* or *necessarily* performs this action without the others. It would, therefore, be hasty to make general epiphenomenalist interpretations of these locally targeted experiments. So I am not quite sure that the demonstration that different portions of the brain produce voluntary actions and feelings of voluntary actions is sufficient for epiphenomenalism. But more importantly, I am not also sure that such demonstration has been successful, since Wegner reports that the complications seen in the findings "make it impossible to point to the 'feeling of doing' area of the brain, at least for now" (2002: 47). In effect, a specific brain part that causes feelings of will has not yet been found.

Wegner cites some experiments conducted by Neurologists Hans Helmut Kornhuber and Luder Deecke, and also by Benjamin Libet and his colleagues. These are called the readiness potential experiments (or RP). They demonstrated that electrical activity related to voluntary movements was recorded up to two seconds before the subject was aware of making a decision to execute the action (although the time interval of Libet and colleagues is quite shorter, but the same basic results). Libet makes his conclusions as follows: "the initiation of the voluntary act appears to be an unconscious cerebral process. Clearly, free will or free choice of whether *to act now* could not be the initiating agent, contrary to some widely held view" (Libet in Wegner 2002: 54). But this conclusion seems hasty to me, since the experiment only ascertains that RP occurs before the feeling of willing, but does not ascertain whether the RP constitutes the basis of decision-making, or indeed what the RP even constitutes. Wegner himself admits, "We don't know what specific unconscious mental processes the RP might represent" (2002: 55). So one is surprised when Wegner makes the following conclusions, "The position of conscious will in the time line suggests perhaps that the experience of will is a link in a causal chain leading to action, but in fact it might not even be that. It might just be a loose end—one of those things, like the action, that is caused by prior brain and mental events" (2002: 55). As long as the precise nature of RP is not yet determined, Wegner cannot extricate it from being part of the properties of willing, since the will could well precede its consciousness.

Bolstered by his conclusion to the readiness potential experiments, Wegner argues that quick actions, such as selecting which words to use in a sentence or reacting before we are aware we have reacted, all show that knowing what we are

doing or what stimulated our doing is "only a luxury we achieve some milliseconds after action" (2002: 59). But reflex actions do not by themselves prove epiphenomenalism. Wegner inadvertently clarifies this (and therefore undermines his argument) when he agrees with Schooler that "we may have dual attitudes towards many things in our lives, one a rapid response and the other a more studied reaction that takes into account the context and our personal theory of what we ought to be feeling" (Schooler 2000 cited in Wegner 2002: 58).

Wegner then argues that the major reason why we feel we cause our actions is that we have foreknowledge of the action before it happens. According to him, imagine if you were *always* to know that the tree branch would move before it moved. Certainly you would feel you caused the movement of the tree branch (Wegner 2002: 63–64). Here I will grant a point: it could well be that we feel that we cause our actions because we usually know the action before it happens. The point, however, is that epiphenomenalists have to demonstrate that the foreknowledge is indeed only a foreknowledge. They have to prove that the causality is really amputated from the foreknowledge. And from foregoing arguments, they have not proved it yet. It is also important to remind epiphenomenalists that the illustration of one *always* knowing that a tree branch would move is fictitious.

Wegner reminds us of Hume's and Jackson's scepticism of the obviousness of causality and remarks that in spite of the fact that day precedes night, day does not cause night because both are results of the rotation of the earth around the sun. This reminder is fine but still does not help the epiphenomenalists. This is because the cause of both day and night is known, but we cannot say the same of what is presumed by epiphenomenalists to cause both action and (feelings of) will to action. It is a reminder that there *might* be no causal connection between conscious will and action, but we do not know whether there is *indeed* no such connection.

Wegner points out that the experience of consciously willing action arises from the fact that we have no idea how our conscious mental processes work. If, for instance, you multiply 3 by 6, the answer just pops up in your head and you have no idea how your mind did it. We are only left to advance *a priori* psychological theories to explain our psychological processes. It is the same with conscious will, argues Wegner (2002: 67): in the *absence* of knowledge of what really happens, we conclude that our consciousness of will to action produced our action. But it is precisely for the same reason that it is fallacious for Wegner (and other epiphenomenalists) to argue in the opposite direction (consciousness of will *is not* the cause of action).

Wegner next argues that we usually think we authored an action if we thought of the action just before it occurred (the priority principle), we always thought of the action before it occurred (the consistency principle), and/or we noticed that there was no other external or competing candidate for apparent causality of the action except our thought (the exclusivity principle) (2002: 68–70). Regarding the priority principle for instance, "conscious thoughts of an action appearing just before an act yield a greater sense of will than conscious thoughts of an action that appear at some other time—long beforehand or, particularly, afterwards" (2002: 70). He furnishes an example, "a person who thinks of dumping a bowl of soup on her boss's head,

for instance, and never thinks about this again until suddenly doing it some days later during a quiet dinner party, is not likely to experience the action as wilful" (2002: 71). Regarding the principle of consistency, Wegner argues, "people are likely to perceive that they controlled a chance event when they achieved a large number of initial successes in predicting that event" (2002: 80). Still on consistency, Wegner also argues (and cites Oliver Wendell Holmes to support this argument) that people feel little sense of authorship when a creative breakthrough idea drops into the mind unexpectedly, even when they had been precisely trying to achieve such an idea beforehand (2002: 82). Regarding the principle of exclusivity, Wegner cites Kelley (1972) and McClure (1998), "People discount the causal influence of one potential cause if there are other causes available" (Kelley 1972 and McClure 1998 in Wegner 2002: 90). He argues that we feel as authors of our actions because there appear to be no competing candidates as causes: if there were, we would have less feelings of authorship (Wegner 2002: 90–98).

The problem with these arguments is that they are circumstantial: they do not by themselves prove epiphenomenalism. A dissenter can argue with equal strength that they support mental causation. For instance, regarding the example cited for the priority principle, one can argue that it is the mental processes set in motion by the bowl-dumping employee that ultimately led to the action, even when the decision had receded from her active memory or consciousness. And a little later in the book, when Wegner explains how people try to protect the illusion of consciousness, he offers an explanation that undermines the priority principle: people discover many actions *after* they have performed them and then seek to furnish intentions for them. According to him, "we *typically* go right along doing things and learning only at the time or later what it is we are doing. And, quite remarkably, we may then feel a sense of conscious will for actions we did not truly *anticipate* and even go on to insist that we had intended them all along" (2002: 145 [italics mine]). But the priority principle implies precisely that we should feel less authorship for such "thoughtless" actions.

Regarding the example cited for the consistency principle, the idea that people are not responsible for creative insights because they hardly feel any sense of authorship of them can be used to bolster the argument for biological determinism: if ground breaking ideas are products of purely neurological processes rather than conscious will, and if certain races dominate the world stage in producing ground breaking ideas, then the notion of inherent/neurological/biological racial differences/inequality/superiority is true. The contrary notion that producing ground breaking ideas on a massive scale is *consciously* created and nurtured into culture and institutions and can therefore be replicated by any one/society seems to avoid leading to this frightening conclusion. Epiphenomenalists should not be afraid of this criticism however, since we should not be afraid of whatever science can prove. The point, however, is that epiphenomenalists are yet to prove their case.

To further disprove the idea of conscious will, Wegner reminds us not only of cases where we do what we did not will or do not do what we willed, but do what we willed *not* to do. Why is it, for instance, that when I *decide* not to think about something, it keeps coming to my mind, probably even more than it would if I had not made such a decision? Wegner illustrates it this way, "The thought is not to do

the act. Thus, any performance of the action would seem not to have been caused by this thought. How could the thought not to do it be the cause?" (2002: 140). He suggests, "The mind appears to search, unconsciously and automatically, for whatever thought, action, or emotion the person is trying to control. A part of the mind, in other words, is looking surreptitiously for the white bear even as we are trying not to think about it" (2002: 141). Wegner calls this "the ironic process theory" and remarks that it explains why, for instance, we get depressed when we are trying to be happy, stay awake when we are trying desperately to sleep, and so on. He provides the answer:

> What seems to be happening in these cases is that mental loads or stresses can come forward to undermine our normal mental control efforts. The automatic process whereby we monitor control failures is not as distractible as these conscious efforts, and so such distractions unleash it to yield the ironic opposite of what we are trying to create (2002: 141).

A little later, he suggests, "This means that if conscious will is illusory, automatisms are somehow the 'real thing,' fundamental mechanisms of mind that are left over once the illusion has been stripped away. Rather than conscious will being the rule and automatism the exception, the opposite may be true: Automatism is the rule, and the illusion of conscious will is the exception" (2002: 143). But, a dissenter could argue, conscious will could be the only phenomenon of its own kind in the sense that any conscious decision not to think about an object is necessarily to keep the object in mind, precisely because the decision is directed at an object of consciousness. This dissent is quite consistent with the very definition/constitution of consciousness. And if we concede any logic at all to this dissent, then Wegner may need to either show that this is really not the case or shop for other ways of disproving the notion of conscious will.

Wegner has often given the appearance of conducting a genuine investigation into the possibility of epiphenomenalism. But he reveals his true belief at some point, "We perceive minds by using the idea of an agent to guide our perception. In the case of human agency, we typically do this by assuming that there is an agent that pursues goals and that the agent is conscious of the goals and will find it useful to achieve them. All of this is fabrication, *of course,* a way of making sense of behaviour" (Wegner 2002:146 [italics mine]). The last statement reflects an *a priori* belief in automatism and is therefore somewhat like a manifesto rather than an expression of genuine investigation into its possibility.

Moreover, certain statements Wegner makes contradict his argument that conscious will does not play a role in leading to action. In an attempt to demonstrate the difference between the states of hypnosis and wakefulness, Wegner writes, "In the usual waking state, things are relatively simple. A person's perception of apparent mental causation often tracks the *actual* relation between conscious thought and behaviour. *Conscious* thoughts come to mind before the behaviour and *play* a role in the mechanisms that produce the behaviour" (Wegner 2002: 305–306 [italics mine]). In describing the feelings of involuntariness that accompany hypnotized patients, he writes, "Feelings of involuntariness occur even though there remains an *actual* link between the subject's thought and action" (2002: 306 [italics

mine]). Again, "Perhaps the experience of involuntariness helps to shut down a mental process that normally gets in the way of control. And, oddly, this mental process may be the *actual* exercise of will" (2002: 310 [italics mine]).

In beginning the concluding chapter of his book, Wegner likens conscious will to a ship's compass. He asks,

> Does the compass steer the ship? In some sense, you could say that it does, because the pilot makes reference to the compass in determining whether adjustments should be made to the ship's course. If it looks as though the ship is headed west into the rocky shore, a calamity *can* be avoided with a turn north into harbour. But, of course, the compass does not steer the ship in any physical sense. The needle is just gliding around in the compass housing, doing no actual steering at all. It is thus tempting to relegate the little magnetic pointer to the class of epiphenomena – things that don't really matter in determining where the ship will go. Conscious will is the mind's compass (2002: 317 [italics mine]).

Apart from the fact that there arises a problem with comparing the mind to a ship's compass, there arises yet a problem with arguing that the compass does not determine where a ship goes. Wegner has just admitted, "If it looks as though the ship is headed west into the rocky shore, a calamity can be avoided with a turn north into harbour". Obviously, the compass cannot physically steer a ship. But to prove that the compass does not determine a ship's directions, epiphenomenalists must demonstrate that the pilot steers the ship *regardless* of any information from the compass. If they are able to do this, then they face a further challenge: explaining why ship engineers went into the trouble of inventing a compass.

So if conscious will does not cause actions, what is its purpose? Why does it exist? Wegner suggests that it is the perception, emotion, or reading of what our bodies are doing, just like the gauges on the control panel of the ship tell us what the ship is doing or is happening to the ship. The purpose of feelings of conscious will is then to help us keep track of our actions and make us feel like authors of them (2002: 318, 325–328). More importantly, it is to distinguish what actions we authored and those we did not. This kind of sorting is necessary for a meaningful world, without which people would find life very depressing (2002: 329). Wegner then refers to the feeling of willing an action as *perceived control* and cites psychological studies that have revealed its importance. He writes, "The term *perceived control* is usually used to refer to the experience of conscious will in the achievement domain, and there are many studies indicating that feelings of perceived control are essential for psychological health" (2002: 329). But, I wonder, if feelings of conscious will are supposed to be mere epiphenomena, why are they *essential* to psychological health? Wegner does not stop here; he actually proceeds to cite research demonstrating that such feelings lead to action. It was discovered that people who have a phobia for something are often paralyzed in connection to *doing* anything about that thing. But if they are gradually led through practice to *picture* themselves drawing (pictures of) the thing, they eventually are able to actually draw it. From drawing it, they are led to *perceive* other people who can go close to and touch the thing, and they are eventually able to do the same (2002:

331–332). So too little perceived control leads to reductions in actual control and vice versa (2002: 329–334). Which position is strengthened by this example: epiphenomenalism or mental causation? Why would something that is supposed to be an epiphenomenon lead to results?

Computational Objections to Mental Causation

Proponents of the computational theory of the mind argue that mental processes are like computational processes, and have suggested that this may have epiphenomenalist implications. Hillary Putnam was the first to propose this theory,[28] and Ned Block has more recently elaborated it to show how it leads to epiphenomenalism.[29] According to the computer model, the mind is a system of processors that takes representations as inputs, transforms them in various ways, and sends them to other processors, as in computers.[30] We know that computers work with binary numbers (1,0) and build all the complexity in the world upon these two forms of figures. The figures "1" and "0" are basically structural, and they are simply items: they do not have meanings in them. The two numbers are therefore syntactic forms and not "meanings". As such, computational processes are sensitive to syntactic forms of representations, not meanings.

Ned Block raises and address a paradox that arises from the computational model of the mind, a paradox that if not resolved poses an epiphenomenalist challenge:

(1) the intentional content of a thought (or other intentional state) is causally relevant to its behavioural effects;
(2) our intentions (or intentional contents) reduce to meanings of internal representations;
(3) internal processors are sensitive to the syntactic forms of internal representations, not their meanings.[31]

This leads to epiphenomenalism, since the meanings contained in intentions are not causally relevant. It denies that mental events cause effects because of their meaning content. The processors of the computer (or the brain) "know" only the syntactic form of the symbols they process (what strings of 0's and 1's they are) and not what the symbols mean. But these meaning-blind processors control processes that "make sense"—processes of decision, problem solving, and so on. The "making sense" is what we may see as "meaning", and thus, the brain can be seen as a syntactic engine driving a semantic engine.[32] But this opens the way to

[28] Putnam (1960, 1967).

[29] Block (1990).

[30] Ibid, p. 140.

[31] Ibid, p. 138.

[32] Ibid, p. 145.

epiphenomenalism, since the syntactic properties do the causal work, and the semantic properties come along for the ride.[33]

To avoid epiphenomenalism, Block speculates that the first consideration would be reduction: if we can identify content properties with neurophysiological properties, then we can avoid epiphenomenalism. This is because if content properties are simply neurophysiological properties, then the causal efficacy of the neural will guarantee the causal efficacy of content. But this solution will not impress the computational theory of the mind, since any computational state is multiply realizable by physiological or electronic states that are not identical with one another, and if this is the case, then content cannot simply be identified with any one of them.[34] As such for Block, the paradox remains.

One might agree with Block that the paradox posed by the computational theory correctly leads to epiphenomenalism. But one might disagree that the computational theory accurately represents the human mind. It appears that Block's paradox exists precisely because the computational theory is itself wrong about the human mind: it equates the human mind with computer processors and hence the apportioning of causality to only syntax. There is no doubt that the computer engine is a syntactic engine, but it seems fallacious to describe the brain as a syntactic engine since, courtesy of the mystery of qualia, we do not know this. As such, one need not be impressed with the derived argument that the brain is a syntactic engine driving a semantic engine. It is only when we have no trouble reducing the human mind to a set of computer processors that Block's paradox about syntax-only sensitive processors arises. But if we have trouble doing this (which it seems to me that we do), then Block's paradox does not exist.

Let me restate the three premises of Block's paradox: intentional content is causally relevant to behavioural effects; our intentional contents reduce to meanings of internal representations, but (our) internal processors are (supposed to be) sensitive to the syntactic forms of internal representations, not their meanings. However, anyone who does not believe that the human mind is reducible to a computer processor automatically rejects the third premise and hence the paradox.

Block had remarked that he accepts the second premise as true (1990, p. 139) and a little later he confesses that it serves the computer model (p. 140). If intentional content reduces to *only* the meaning of internal representation, and internal processors are sensitive *only* to their syntax, we are on a route to denying that internal content has any causal efficacy. But there is a contradiction: saying that processors are sensitive to syntax means that internal contents cannot be reduced to only meanings. As such, it is problematic to accept the second and third premises together, as Block does, since accepting the third premise (implying the existence of both the syntax of internal representations and their meanings) means rejecting the second.

Block's overall project is to show that either computationalism or functionalism would lead to epiphenomenalism. Either we accept the epiphenomenalism implied in functionalism (which he thinks has an advantage over computationalism due to its

[33] Ibid.

[34] Ibid, p. 146.

counterfactual nature) or in computationalism (whose argument he shows to be either invalid or unsound). He examines the third premise (of computationalism) (1989, p. 139) and rejects it with the distinction between observer-related and autonomous meanings, concluding variously that "the argument [paradox] is unsound because the third premise is false" (p. 152) and "the original argument is sound but invalid" (p. 153). Due to the obviously epiphenomenal feature of computationalism, Block then examines functionalism to show how it can lead to epiphenomenalism. But in this examination, there are epiphenomenalist arguments that Block makes that I find it imperative to evaluate.

Block deploys an argument of a technical nature to demonstrate that the meaning content (which Fred Dretske calls "informational value") of mental events does not have causal contribution to behaviour. According to Block, "…informational value can be causally responsible for our representations' functional roles without being involved in the 'triggering' of any actual behaviour (in the usual sense of behaviour)".[35] He asks us to consider how a frog processes information about a fly that leads to the launching of the frog's tongue to catch the fly. There are two things involved. First, there is a purely internal function, such as flashes of movement on the frog's retina and the controlling aim of the tongue's launchings. Second, there is the informational content regarding flies and their locations. Block argues that the latter may have been causally relevant to the former, but more in an evolutionary way. It is possible that the informational value of ancestors of the frog played a causal role in the shaping of the current internal functional system in regard to the frog's response to flies. "We may speculate that evolution recruited a primitive motion detector that provided a modicum of information about winged bugs to guide the pre-frog's tongue, thereby improving the pre-frog's chances of a meal. As the bugs evolved into (or were replaced by) flies, the detector was turned to flies".[36] So generational information about flies has contributed to the functional role of the frog's internal representation of flies, including fly movement and tongue guide zapping. But Block argues that even if this argument is correct in its own terms, it "does not show that the informational content of a representation is part of what is causally relevant to (in the sense of 'triggering' cause) the behavioural output that the representation causes…".[37]

Block asks the question: is the informational fly word ("FLY") causally relevant to the production of any particular zapping of the frog's tongue? His answer is: no. His reason is: "X can have causally promoted the pattern of Y to Z without in any way triggering (the current token of) Z. Specifically, Block argues, "X can have causally promoted Y to Z without now causing Y or enabling Y to cause Z".[38] To support this apparently bizarre argument, Block starts by arguing, "The informational content of 'FLY' does not contribute to the appearance of this token of 'FLY' in the frog's head. That is done by the fly that caused it. And once 'FLY' has appeared in the frog, the informational content does not enable or aid 'FLY' in

[35] Ibid, p. 153.

[36] Ibid.

[37] Ibid, p. 154.

[38] Ibid.

producing a zapping".[39] But it seems to me that Block contradicts himself here. He has said that X can have promoted the causal chain of Y to Z without particularly causing Y or enabling Y to cause Z. Yet he then says that the physical fly (which is the position of X) must have directly caused Z instead of the information FLY (which is in an intermediate causal position such as Y). This is because the physical fly must have caused the information FLY, which in turn must have caused the functional processes including the zapping of the tongue. So why would Block deny the information FLY of causing the zapping and argue that it is the physical fly? Why not acknowledge the causal chain including the informational value of FLY? It is because Block wants to deny the meaning-content FLY of a causal role and give this causal role to a physical event (the physical fly). But this attempt destroys his very reference to a causal chain. As anyone can see, this argument is not convincing.

To dramatize his epiphenomenalist objection, Block asks us to suppose that FLY is a misrepresentation caused by another (presumably physical) object, a B–B. Although the history of the correlation of FLY tokens with physical flies has contributed to the functional role of FLY tokens in the frog, the correlation now becomes irrelevant because FLY is, on this particular occasion, caused by B–B.[40] In this case, FLY has a wrong cause, but completes the causal process that makes the frog's tongue launch out (in this case towards the B–B). But it seems to me that this example rather shows that it is the internal representation (in this case misrepresentation of B–B as FLY) that caused the launching, since the frog would obviously not launch its tongue if the cause of launching were the physical B–B. No frog would want to catch a B–B if it were to depend on the B–B directly for launching its tongue and knows, for instance, that B–B is some poison that would kill it. A misrepresentation is possible only because there is a representation, and it is the representation that does the causal work. It is precisely because of the causal efficacy of a *mis*representation that the frog mistakenly launched its tongue to catch a B–B. An internal misrepresentation of a B–B as a fly can only mean that there is an internal representation in the first place, since the former is a distortion of the latter.

Block's next argument for epiphenomenalism is the argument of causal over-determination and, therefore, causal exclusion. This argument ushers in an era of exclusionist arguments for epiphenomenalism carried on by Stephen Yablo and Jaegwon Kim. To this section, I now turn.

The Causal Exclusionists

Ned Block again projects the epiphenomenalist thesis by arguing that we normally understand mental properties to be second-order functionalist properties. A second-order property consists in having some other properties (such as first-order properties) that have certain causal relations to one another.[41] Functional properties

[39] Ibid.

[40] Ibid.

[41] Ibid, p. 155.

are also categorized as part of a wider categorization of second-order properties. Block asks us to consider a bullfighter's cape (a piece of red cloth with which the bullfighter provokes the bull). We can say that the cape provokes the bull because of its red colour. In other words, the cape has the second-order property of being provocative, of having some property that provokes the bull. But, asks Block, is it *provocativeness* of the cape that provokes the bull? Is the provocativeness causally relevant to the bull's anger? Block's answer is: no. If we say that the redness caused the provocativeness, and the provocativeness caused the bull's anger, Block thinks that this is causal over-determination (too many causes claiming one effect). It is the redness that caused the bull's anger and also caused the provocativeness. So provocativeness and bull's anger are both *effects* of the redness of the cape. As such, for Block, second-order properties are causally inefficacious. But mind is a second-order property, so mind has to be causally inefficacious.

Block uses another example of pills that cause sleep (Valium and Seconal). The possession of some property or another that is causally relevant to sleep is referred to as dormitivity. A sleeping pill that causes sleep has the property of dormitivity. But is it dormitivity itself that causes sleep? Block says: no; it is the chemical properties of the pill, the first-order properties.[42] Again for Block, this shows that second-order properties (including mental properties) are causally inefficacious in terms of the effects that they are described as causing.

To say that provocativeness and dormitivity are causally relevant in addition to their grounding first-order properties (redness and chemical properties of sleep) is to accept causal over-determination. If we have causal over-determination, we must choose only the relevant causes and exclude others (causal exclusion). That would mean choosing only the first-order properties (redness and chemical properties of sleep). In the case of mind and body, this would mean that we choose the first-order property (being the body) as the only causally relevant property in a mind–body relationship.

The causal exclusion argument has exerted dominance on contemporary philosophers of mind. Stephen Yablo expresses it as follows: "How can mental phenomena affect what happens physically? Every physical outcome is causally assured already by pre-existing physical circumstances; its mental antecedents are therefore left with nothing further to contribute".[43] Jaegwon Kim expresses the same sentiment as follows:

> Given that [physical effect] p has a physical cause p^*, what causal work is left for [putative mental cause] m to contribute? The physical cause … threatens to exclude, and pre-empt, the mental cause. This is the problem of causal exclusion…. [T]he question ultimately involves the causal efficacy of mental properties.[44]

As Kim expresses, many modern philosophers of mind are of the view that if events have physical causes, then the physical causes are sufficient to exclude mental causes.

[42] Ibid, pp. 155–6.

[43] Yablo (1992), p. 246.

[44] Kim (1998), p. 38.

Yablo's and Kim's sentiments are based on the notion of the individuation of mental events: mental events can be said to have both mental and physical properties. The mental property will be the thoroughly and yet-to-be-understood non-physical aspects of life such as consciousness, volition, and internal deliberation. The physical property of mental events will be the process in the brain that corresponds to the mental property. So if I *think* of drinking coffee, it is the mental property of a mental event, and the physical property of this mental event will be the firing of certain brain cells (neural events) which will lead to my making a physical motion to drink coffee. Epiphenomenalists argue that the firing of the brain cells responsible for my making a motion to drink coffee is sufficient cause of my drinking coffee; that the thought of having coffee is causally excluded from my drinking coffee and, in fact, is only a *feeling* occasioned by the brain firing that makes me feel (illusively) in control.

The causal exclusionist arguments depend on the assumption that property individuation paves the way for the patent exclusion of certain properties from the business of causation. Does property individuation necessitate a causal exclusion of an individuated property? Not in my view, since there are intra-substance property individuations that do not warrant causal exclusion between one property and another. The fact, for instance, that my hand is conceptually individuated from the rest of my body (which includes my head and brain) does not automatically mean that my hand alone can always take causal credit for an action performed by it. (This is the kind of hasty generalization that is wrong with Wegner's examples). Just as we are yet to be fully aware of the entire range of causal processes that take place between the rest of myself and my hand to make the action possible, so epiphenomenalists are yet to take full stock of the entire range of processes between the mental and physical properties of mental states (such as my thought and the corresponding firing of brain cells) in order to be sure that *there are really no causal processes between the mental and physical properties.* So it is still possible for us to deny the causal exclusion of an individuated property without denying property individuation. Epiphenomenalists must provide justification to warrant a move from property individuation to the causal exclusion of individuated properties.

In short, one can argue that, although mental and physical properties are conceptually distinguishable, they are nevertheless *causally homogenous* in the sense that in the instance of my drinking coffee, if one of them did not occur, I would not have drunk coffee? This is just as it is possible to imagine that although my hand is conceptually distinguishable from the rest of my body, it is possible to imagine that if my hand were to function without the rest of my body, it would likely not do what it did. It calls for detailed study of whatever relationship exists between my hand and the rest of my body. To be sure, these examples do not prove causal homogeneity, but epiphenomenalists need to show that they need not lead to belief in causal homogeneity.

Likewise, if we are to accept the thesis that a mental event has both mental and physical properties, then the epiphenomenalist argument overlooks what may be the *relationship* between the mental and physical properties of mental events. What is this relationship? Since the physical and the mental properties belong to the same (mental) event or state, nothing stops a dissenter from arguing that there is a

relationship of internal causality between them (or between a thought and a neural event) and that it is not yet known whether the causality is from the mental to the physical or the physical to the mental properties. The onus is on the epiphenomenalist to clear these issues. In the absence of any detailed disquisition of the relationship between mental and physical properties of mental events, there seems no tangible ground why I would not suppose that both mental and physical properties of mental events are necessary for physical effects?

To go further, why would a dissenter not argue that the physical property of a mental event is a *result* of the mental property, or that a neural process is a result of a thought? The upshot of this is that epiphenomenalists need to make detailed and convincing arguments for the sufficiency of physical properties. In fact, to make their case, epiphenomenalists must first have to show that the mental properties of mental events can cease to exist and then that the physical properties of mental events can bring about all physical effects regardless of mental properties. For given that both mental and physical properties are necessarily present for the requisite physical effects, there is as yet no sustained demonstration of why the mental properties would not share credit for causal efficacy.

References

Block, N. (1990). Can the mind change the world? In George Boolos (Ed.), *Meaning and method: Essays in honor of Hilary Putnam* (pp. 137–170). Cambridge: Cambridge University Press.

Descartes, R. (1989). *The passions of the soul (Les Passions de l'Ame)*. Indianapolis: Hackett Publishing Company. http://www.earlymoderntexts.com/pdfs/descartes1649.pdf. Accessed 13 Jan 2015.

Campbell, K. (1984). *Body and Mind (Second Edition)*. Notre Dame, Indiana: University of Notre Dame Press.

Hume, D. (1955). In C. W. Hendel (Ed.), *An inquiry concerning human understanding*. New York: Macmillan.

Huxley, T. H. 2011 (1874). On the hypothesis that animals are automata, and its history. *Journal of Cosmology 14*. http://journalofcosmology.com/Consciousness137.html. Accessed 13 Jan 2015.

Jackson, F. (1990). Epiphenomenal qualia. In W. G. Lycan (Ed.), *Mind and cognition: A reader* (pp. 469–477). Oxford: Blackwell.

Jackson, F. (1996). Mental causation. *Mind, 105*(419), 377–413.

Kim, J. (1998). *Mind in a physical world: An essay on the mind-body problem and mental causation*. Cambridge, Mass: MIT Press.

Preston, R. D., & Astbury, W. T. (1937). The structure of the wall of the green alga Valonia ventricosa. *Proceedings of the Royal Society of London. Series B: Biological Sciences, 122*(826), 76–97.

Putnam, H. (1960). Minds and machines. In S. Hook (Ed.), *Dimensions of mind*. New York: New York University Press.

Putnam, H. (1967). Psychological predicates. In W. H. Capitan & D. D. Merrill (Eds.), *Art, mind and religion*. Pittsburgh: University of Pittsburgh Press.

Wegner, D. (2002). *The illusion of conscious will*. Cambridge, MA: MIT Press.

Wiredu, K. (1996). *Cultural Universals and Particulars*, Bloomington and Indianapolis: Indiana University Press.

Yablo, S. (1992). Mental causation. *The Philosophical Review, 101*(2), 245–280.