

Sounds like Psychology to Me: Transgressing the Boundaries between Philosophy and Science

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In recent years, some eminent scientists have argued that free will, as commonly understood, is an illusion. Given that questions such as ‘do we have free will?’ were once pursued solely by philosophers, how should science and philosophy coalesce here? Do philosophy and science simply represent different phases of a particular investigation—the philosopher concerned with formulating a specific question and the scientist with empirically testing it? Or should the interactions between the two be more involved? Contemporary responses to such questions have occasionally given rise to conflict amongst members of different disciplines. Some individual scientists have dismissed philosophical objections to their scientific theories on the grounds that the philosopher lacks experience in their respective field. And some individual philosophers have rejected scientific theories on a priori grounds, without giving due consideration to the empirical evidence.

In this paper, I argue that such dismissiveness, on both sides, is mistaken. I will do so by putting forward a view that is inspired by the American philosopher and psychologist William James, who has been characterised by recent commentators as having performed ‘boundary work’. Boundary work involves transgressing the dividing lines between such disciplines, and attempting to solve certain problems without being restricted to the methodology of a single discipline. To help support this position, I will examine a series of contemporary problems that are pursued in both philosophy and science that relate to moral responsibility and free will. I will argue that in order to solve such problems we need to perform boundary work.

Background and Aims

In recent years, some startling claims about human action have been made by scientists. The neuroscientist Benjamin Libet and the psychologist Daniel Wegner, for instance, have written influential works that suggest that free will, as commonly understood, is an illusion.¹ And many eminent scientists have agreed with them. Given that questions such as ‘do we have free will?’ were once pursued solely by philosophers, how should science and philosophy coalesce here? Do philosophy and science simply represent different phases of a particular investigation—the philosopher concerned with formulating a specific question and the scientist with empirically testing it? Or should the interactions between the two be more involved? Contemporary responses to such questions have occasionally given rise to conflict amongst members of different disciplines. Some individual scientists have dismissed

¹ B. Libet, ‘Unconscious cerebral initiative and the role of conscious will in voluntary action’, *Behavioral and Brain Sciences*, vol. 8, no.4, 1985, pp. 529-566; D.M. Wegner, *The Illusion of Conscious Will*, Cambridge, MIT Press, 2002.

philosophical objections to their scientific theories on the grounds that the philosopher lacks experience in their respective field; some individual philosophers have rejected scientific theories on *a priori* grounds, without giving due consideration to the empirical evidence; and some scientists have suggested that philosophy has little, if anything, to contribute to scientific questions.

In this paper, I argue that such dismissiveness, on both sides, is misguided. Some of the questions that both scientists and philosophers have recently pursued, I will suggest, should be thought of as ‘boundary questions’, rather than uniquely scientific or philosophical. This means that we need to perform boundary work in order to solve them. Boundary work involves transgressing, trespassing, and overstepping boundaries within a particular field, for the purposes of solving a particular problem. To achieve this goal, I will draw upon the work of the nineteenth century American philosopher and psychologist William James, who has been characterised by recent scholars as performing such boundary work. In my view, there are important lessons to be learned from the way in which James viewed the boundary between science and philosophy. I will argue that in order to answer questions such as ‘are we morally responsible for our actions?’, ‘do we have free will?’, and ‘what is consciousness?’ we cannot employ the methodologies of a single discipline – we need to perform boundary work.

I will proceed as follows. I begin, in section one, by providing a brief discussion of the disciplinary boundaries that pervade the intellectual climate of our time. I then examine some recent criticisms that have been made with respect to the discipline of philosophy. In section two, I discuss the main differences between philosophy and science, and then present three competing accounts of how the interaction between the disciplines should proceed. These include: the language view, the arm chair view, and the phase view. In section three, I introduce, and formulate, the concept of boundary work. I will do so by drawing upon the work of William James. I will argue that this view should be preferred over the other views I will discuss. In section four, I apply the concept of boundary work to two topics that have recently been examined by philosophers and scientists: moral responsibility and free will.

1. Disciplinary Boundaries

Universities, and other academic institutions, are organised into various disciplines and sub-disciplines, each with their own area of study. Biologists study living organisms; historians study the past (events, culture, people); geologists study the Earth (rocks, metals, minerals), and physicists study matter and energy. Although the boundaries between these disciplines can change over time, can be hard to define, and can sometimes be blurred, they are familiar to us. Typically, we think of such disciplines, as John Aram has put it, ‘as thought domains—quasi stable, partially integrated, semi-autonomous intellectual conveniences—consisting of problems, theories, and methods of investigation.’²

What about the discipline of philosophy? What is its subject matter, and what are the problems that it attempts to solve? While philosophy is a large discipline with

²J.D. Aram, ‘Concepts of interdisciplinarity: Configurations of knowledge and action’, *Human Relations*, vol. 57, no. 4, 2004, p.380.

many sub-disciplines, traditionally the problems that its practitioners have been concerned with solving include, but are not limited to: 'does a creator exist?', 'how are we are to live?', 'what is the nature of reality?', 'do we have free will?', and so on.

Although few are likely to object to this historical characterisation of philosophy, in the last few years some have questioned whether philosophy, as a discipline, can provide us with a useful methodology for discerning truth. For example, some authors have argued that philosophy doesn't make progress; that it deals with abstract problems that do not apply to the real world; that it is too concerned with the definition of words; that it is an indulgent pursuit; and that there is too much disagreement amongst philosophers.³

I have experienced such criticism myself. I was once asked to explain to a colleague (his background was in engineering) a certain set of psychological experiments I was researching for a philosophical essay. Halfway through my explanation, I was interrupted with: 'interesting, but what has that got to do with philosophy—*sounds like psychology to me.*' He went on to say that he did not see how philosophy could contribute to such experiments, and that the questions I was asking were psychological rather than philosophical questions. My response was that sometimes philosophers are interested in such experiments because of the implications they may have for certain philosophical theories. I also mentioned that there may be philosophical assumptions in the experiments worth questioning. Ultimately, he remained unconvinced.

One may be tempted, as I was at the time, to dismiss this criticism because such a person lacks familiarity with the subject matter and the relevant forms of discourse. This may be the right thing to say to my engineering colleague, but many eminent scientists share a similar view. For example, Stephen Hawking and Leonard Mlodinow write:

How can we understand the world in which we find ourselves? How does the universe behave? What is the nature of reality? Where did all this come from? Did the universe need a creator?...Traditionally these are questions for philosophy, but philosophy is dead. Philosophy has not kept up with modern developments in science, particularly physics. Scientists have become the bearers of the torch of discovery in our quest for knowledge.⁴

Such a passage gives the impression that while philosophy may have once provided us with a useful way of making sense of the world, it has now been surpassed by a superior method: the scientific method. A similar critique is offered by the physicist Laurence Krauss in the following:

Philosophy is a field that, unfortunately, reminds me of that old Woody Allen joke, "those that can't do, teach, and those that can't teach, teach gym." And the worst part of philosophy is the philosophy of science;

³ These authors include Stephen Hawking, Leonard Mlodinow, and Lawrence Krauss, whom I quote below.

⁴ S. Hawking and L. Mlodinow, *The Grand Design*, New York, Bantam Books, 2010, p. 5.

the only people, as far as I can tell, that read work by philosophers of science are other philosophers of science. It has no impact on physics what so ever, and I doubt that other philosophers read it because it's fairly technical. And so it's really hard to understand what justifies it. And so I'd say that this tension occurs because people in philosophy feel threatened, and they have every right to feel threatened, because science progresses and philosophy doesn't.⁵

Like Hawking and Mlodinow, Krauss is criticizing the lack of progress in philosophy.⁶ And like Hawking and Mlodinow, he is optimistic that science is well placed to answer the questions that were once pursued solely by philosophers. Let us call such a view the 'elimitivist view.' It is the view that: (i) philosophy has little, if anything, to contribute to the sorts of abstract fundamental questions that they have traditionally attempted to solve; and (ii) the relationship between philosophy and science should be one of replacement, rather than interaction. In what follows, I seek to challenge the elimitivist view. I will undertake the first step of this task in the next section by expanding on the differences between philosophy and science. In subsequent sections, I examine alternatives to the elimitivist view.

2. Philosophy and Science

Modern science—roughly from the sixteenth century onwards—has been an extremely successful enterprise.⁷ It is not only responsible for the many technological advances we enjoy—from iPhones, to space travel, to modern medicine—but it has also changed the way that we, as humans, view our place in the world. No longer do we think of our planet, Earth, as being located at the centre of the universe, or that our species, *Homo sapiens*, as unrelated to other living organisms on the planet.

Although science, like other disciplines, is divided into many sub-disciplines, one commonality that is shared amongst the sciences is the use of the scientific method. This includes, as Anderson and Hepburn state, 'systematic observation and experimentation, inductive and deductive reasoning, and the formation and testing of hypotheses and theories.'⁸ Such a method is instrumental in answering questions as varied as: 'is there life on other planets?', 'how does the digestive system in human beings work?', 'what are the laws of nature?', 'what is the speed of light?', 'what

⁵ From an interview with Ross Anderson. R. Anderson, 'Has Physics Made Philosophy and Religion Obsolete?' *The Atlantic*, 23 April 2012, <https://www.theatlantic.com/technology/archive/2012/04/has-physics-made-philosophy-and-religion-obsolete/256203/>, (accessed 25 July 2016).

⁶ The question 'why doesn't philosophy progress?' might not be the right question to ask here. As David Chalmers points out, a better question to ask may be 'why isn't there *more* progress?' D.J. Chalmers, 'Why Isn't There More Progress in Philosophy?' *Philosophy*, vol. 90, no. 1, 2015, pp. 3-31.

⁷ Here I follow David Wootton, who claims that modern science was invented between 1572, when Tycho Brahe saw a new star, and 1704, when Isaac Newton published his *Opticks*. As Wootton notes, there were systems of knowledge we would call 'sciences' before 1572, but they lacked the research programmes, community of experts, and people who were willing to challenged long-established belief systems that are features of modern science. D. Wootton, *The Invention of Science: A New History of the Scientific Revolution*, New York, HarperCollins, 2015, p. 1.

⁸ H. Andersen and B. Hepburn, 'Scientific Method', *The Stanford Encyclopedia of Philosophy*, <http://plato.stanford.edu/archives/sum2016/entries/scientific-method/>

temperature does water boil at?', and 'what is a rainbow?'

While philosophers also seek to test hypotheses and, as Galen Strawson points out, say 'how things are', they generally do so by using a different methodology.⁹ Typically, philosophers are less dependent on observation and experimentation, and tend to focus on thought experiments, forms of reasoning, and logical consistency.¹⁰ A good example of this kind of practice is exemplified in René Descartes' famous *cogito* thought experiment (as it is commonly known). In this thought experiment, Descartes sought to prove his own existence by reasoning about his own consciousness. He claimed that "I am, I exist," is necessarily true whenever it is put forward by me or conceived in my mind.¹¹ Descartes thought that even if a powerful demon was deceiving him about having a body or about there being a real world, he would still have to exist. This is because for someone to be deceived, they must exist in some form. This conclusion was reached not by looking through a telescope, or by observing data, but by reasoning.

Given these different approaches, what is the best way for philosophy and science to relate to each other here? One answer to this question is the elitivist view. In this view, modern science is in a superior position to answer the fundamental abstract questions of the sort I introduced above, which philosophers have traditionally been concerned with. In what remains of this section, I will look at three alternative views that offer a less pessimistic outlook.¹² I will call the first of these views the 'language view.' In this view, it is the role of philosophy is to identify and remove confusions that have arisen in our use of language. Ludwig Wittgenstein adheres to this view. He claims that philosophical problems:

are, of course, not empirical problems; they are solved, rather, by looking into the workings of our language, and that in such a way as to make us recognize those workings: *in despite of* an urge to misunderstand them. The problems are solved, not by giving new experience, but by arranging what we have always known. Philosophy is a battle against the bewitchment of our intelligence by means of our language.¹³

Unlike the elitivist view, the language view gives a role to philosophy, which is to clear up the confusions that have arisen out of our improper use of language. The philosopher's job, in this view, is to show why there are no philosophical problems at all. This makes it seem, as Crispin Wright points out, that philosophical problems are

⁹ G. Strawson, *Selves: An Essay in Revisionary Metaphysics*, Oxford, Oxford University Press, 2009, p. 13.

¹⁰ Philosophers are also concerned with how things *ought to be* (e.g., how ought we to treat each other, how ought we to govern ourselves). We can contrast these ought questions with question that ask what *is the case*. In this paper, I will, for the most part, be concerned with issues pertaining to the latter.

¹¹ R. Descartes, 'Meditations on First Philosophy', in J. Cottingham, R. Stoothoff, and D. Murdoch (eds), *The Philosophical Writings of Descartes Volume II*, trans. J. Cottingham, R. Stoothoff, and D. Murdoch, Cambridge, Cambridge University Press, 1984, p. 17.

¹² Pessimistic from the perspective of the philosopher.

¹³ L. Wittgenstein, *Philosophical Investigations*, G.E.M. Anscombe (trans.), Oxford, Blackwell, 1953, §109, p. 47.

like ‘*muddles*’ into which we have been seduced because of our misuse of language.¹⁴ The job of the philosopher is, as Wittgenstein put it, to ‘show the fly out of the fly-bottle’ and erase such confusion.¹⁵

Even though this view—unlike the elitivist view—gives a role to philosophy, it is still far too restrictive. In my view, it rules out much useful contemporary philosophy, as well as many historical styles of philosophy—such as the style of reasoning that is present in the example pertaining to Descartes raised above. With respect to the question of how science and philosophy should interact in this view, we are faced with a description that is not too dissimilar from the one offered by the elitivist view: philosophy’s contribution to the sciences is diminished. By looking at some specific examples, in section four, I will show that this view, too, is untenable.

Before doing so, I will look at two other views that have been recently discussed: the ‘armchair view’ and the ‘phase view’.¹⁶ According to the armchair view, the difference between philosophy and science is clear cut. Scientists are concerned with finding out how the world is by empirical observations, while philosophers are concerned with finding *a priori* truth—that is, truths that do not require experience to solve. For example, Descartes’ argument above seems to be a good example of *a priori* truth, because it doesn’t require us to examine what the world is like; whereas the question of how many planets exist in our solar system is a question that requires empirical observation.¹⁷

The phase view, on the other hand, construes the difference between philosophy and science in a less distinct way. As William Hirstein describes, it is the view that philosophy and science are ‘merely different phases of a question-answering, knowledge-gathering process.’¹⁸ In such a view, the philosopher deals with a specific problem at the early stage of an investigation, when much is unclear, and then hands over the problem to scientists, when a specific question or concept is well-formed. This view is advocated by Paul Churchland who says ‘the philosopher is just another theorist, one whose bailiwick often places him or her at the earliest stages of the process by which proto-scientific speculation slowly develops into testable empirical theory.’¹⁹ To take an example, the problem of free will might require philosophers to work out the abstract parts of the problem at the early stages of the investigation, before handing it over to scientists where it can be empirically tested. Because such a process would typically lack a precise boundary, the difference

¹⁴ C. Wright, *Rails to Infinity: Essays on Themes from Wittgenstein’s Philosophical Investigations*, Cambridge, Harvard University Press, 2001, p. 437.

¹⁵ L. Wittgenstein, *Philosophical Investigations*, §309, p. 103.

¹⁶ I follow William Hirstein with this terminology. W. Hirstein, *Brain Fiction: Self-deception and the Riddle of Confabulation*, Cambridge, MIT Press, 2005, p.39.

¹⁷ This view, commonly known as ‘Hume’s Fork’, is associated with David Hume. According to Hume, there are two distinct types of propositions that we can have knowledge of. First, there are propositions about ‘matters of fact’ which are known by experience—that is, by examining empirical evidence. For example, tigers have stripes. And second, there are propositions about ‘relations of ideas’ which are necessary and can be known ‘from the arm chair’ without experience. For example, $2 + 2 = 4$. D. Hume, *A Treatise of Human Nature*, D.F. Norton and M.J. Norton (eds), Oxford, Oxford University Press, 2000.

¹⁸ Hirstein, p. 39.

¹⁹ P.M. Churchland, ‘The Continuity of Philosophy and the Sciences’, *Mind & Language*, vol. 1, no. 1, 1986, p.6.

between philosophy and science, on the phase view, is less clear cut than the armchair view.

Although the armchair view and the phase view give a more substantial role to philosophy than the elitivist view and the language view, none of them, I will argue, offer the full picture. In the next section, I turn to a competing view, the boundary work view, which I claim offers a more comprehensive account of the way in which philosophy and science should coalesce.

3. Boundary Work

So far, we have looked at four different ways in which philosophy and science might potentially coalesce: the elitivist view, the language view, the armchair view, and the phase view. With the exception of the elitivist view, I will argue that we do not need to think of these views as rivals—that is, I do not think we need to decide which of them accurately describes the *right* way to practise philosophy; or which one *best* characterises the way in which the interaction between philosophy and science should occur. Given the complexity and variety of some of the questions that philosophers and scientists are attempting to solve, I think we need a view that is less restrictive, yet can still accommodate all the activities described by them.

In this section, I consider such a different approach, which I will call the ‘boundary work view.’²⁰ This view draws upon the concept of boundary work, which involves, as Francesca Bordogna explains, ‘creating, maintaining, and protecting, but also debunking, blurring, cracking and crossing the boundaries that separate disciplines, fields of knowledge, kinds of discourses and social groups.’²¹ Such activities relate back to the role of philosophy as a practice, because not only can philosophical methods themselves be difficult to demarcate, but so too can the boundary between philosophy and science, which is often blurred. Rather than prescribe one type of activity for philosophy, what is needed is a view that is pluralistic in nature—that is to say, one that does not prescribe *one* type of activity that philosophers should perform. This is because I think we need to recognise that different questions will require different types of philosophical analysis. Some philosophical problems will require the philosopher to just focus on language; other times the problem may just require *a priori* reasoning, from the armchair; and other times the philosophical work required may be of the sort described by the phase view—that is, to provide scientists with a well-formed question. At other times, all three activities may be required. The boundary work view can be thought of as a pluralistic view embracing all three, and potentially more, of these methods.

With respect to the question of how philosophy and science should interact in

²⁰ I borrow the term ‘boundary work’ from sociologists and historians such as: Thomas F. Gieryn, Julia T. Klein and Steve Fuller. T.F. Gieryn, ‘Boundary-Work and the Demarcation of Science from Non-Science: Strains and Interests in Professional Ideologies of Scientists’, *American Sociological Review*, vol. 48, no. 6, 1983, pp. 781-795; T.F. Gieryn, *Cultural Boundaries of Science: Credibility on the Line*, Chicago, University of Chicago Press, 1999; J.T. Klein, *Crossing Boundaries: Knowledge, Disciplinarity, and Interdisciplinarity*, Charlottesville, University Press of Virginia, 1996; S. Fuller, *Kuhn Vs. Popper: The Struggle for the Soul of Science*, Middletown, Icon, 2003.

²¹ F. Bordogna, *William James at the Boundaries: Philosophy, Science, and the Geography of Knowledge*, Chicago, The University of Chicago Press, 2008, p. 7.

the boundary work view, my answer is: this, too, will vary. Depending upon the nature of the specific question being asked, different input from each discipline will be required. What is first needed is to properly examine the problem in question, and then determine what parts of it require philosophical analysis, and which parts require empirical investigation. For example, a proponent of the eliminativist view may think that the question ‘do we have free will?’ requires no philosophical work, and can be solved with only the methodology of science. This, as I will demonstrate, would be a mistake. In the boundary work view, to answer the question ‘do we have free will?’, we must use the methodologies of both disciplines.

An example of someone who practiced the sorts of activities I have just been describing is the influential philosopher and psychologist (who was also a trained physician) William James.²² In two series of public lectures in 1878—at John Hopkins University and at the Lowell institute of Boston—James spoke of the relationship between philosophy and science in a way that exemplifies the boundary work view.²³ According to Francesca Bordogna, in these lectures

James took pains to distance himself from those men of science who indulged in uninformed philosophical speculations, and especially from those who arrogantly contented that physiology had replaced, once and for all, the old philosophical inquiry into the human mind.²⁴

Not only was James critical of those scientists who thought that philosophy could be dismissed, but he was also critical of those philosophers who attempted to do the same with respect to science. Bordogna goes on to say that ‘James was critical of those “professed philosophers” who “having hardly opened a treatise of physiology,” felt authorized to dismiss physiology with the charge of medical materialism’.²⁵

Here we can see James pointing out the need for boundary work. His main contention here is that, since certain problems require attention from both disciplines, we put ourselves in an impoverished position by only implementing the methodology of a single discipline. To see how this works in practice, let us consider a problem that James himself addressed. With respect to problems concerning the mind and the brain, James stated:

As proprietors of a body we ought to feel the insufficiency of every theory of the mind which leaves the body out. As owners of a mind we ought to feel the worthlessness of all explanations of our feelings which leave out that which is most essential to be explained...I have felt most acutely the difficulties of understanding either the brain without the

²² Bordogna calls James a “‘serial” transgressor of boundaries’, who was also interested in questioning the boundaries between professionals and amateurs, and maintaining friendships with marginal figures. Bordogna, p. 5.

²³ The John Hopkins Lectures are titled ‘The Senses and the Brain and Their Relation to Thought.’ The Lowell Lectures are titled ‘The Brain and the Mind.’ James’ notes from these lectures were published in W. James, *Manuscript Lectures*, F.H. Burkhardt and F. Bowers (eds), Cambridge, Harvard University Press, 1988.

²⁴ Bordogna, *William James at the Boundaries*, p. 69.

²⁵ Bordogna, p. 69. The term ‘medical materialism’ refers to a form of reductionist explanation.

mind, or the mind without the brain.²⁶

In this passage, James is criticising the philosophers who seek to leave out the body from their theories of mind, in addition to criticising the scientists who leave out feelings themselves in their own theories. Because such questions are best thought of as ‘boundary questions’, their solution requires both science and philosophy.

To further illustrate this concept, let us consider a metaphor that James himself employed. James compared philosophy and psychology to two adjacent lots in ‘the field of human knowledge’.²⁷ He likened the philosopher and the psychologist to the two owners of these two lots, and considered the fight between them as one involving a dispute over the location of the boundary fence—with each one attempting to reduce the size of their neighbour’s lot. Using this analogy, we can think of the proponents of the eliminitivist view as those who wish to eliminate philosophy from the lot; and those philosophers who are dismissive of science, attempting to gain ground in the field by pushing science out. What we should do instead, according to the boundary work view, is to take advantage of the whole field. James encouraged his audience to adopt the attitude of the man who owns both lots because such a man does ‘not care where the fence stands and being master of all the land tries to cultivate every sq. ft. of it impartially.’²⁸

In what remains, I will look at some contemporary problems that have interested philosophers and scientists, and argue that we need to adopt a boundary work approach if we are to successfully solve such problems.²⁹

4. Boundary Questions

Now that the concept of boundary work has been explicated, and the boundary work view presented, I will examine two cases studies that involve the kinds of abstract fundamental questions that philosophers have traditionally been concerned with, as raised in section one. Here I will limit myself to just two of these—namely, ‘are we morally responsible for our actions?’ and ‘do we have free will?’ Following on from the discussion above, I will suggest that these questions should be thought of as ‘boundary questions’ rather than solely philosophical or scientific. My aim here is not to provide answers to these questions, but rather to show that such problems cannot

²⁶ James, *Manuscript Lectures*, p. 32.

²⁷ James, p. 31. This appears in the Lowell lectures titled ‘The Brain and the Mind.’

²⁸ James, p. 32.

²⁹ For an alternative view that also highlights the importance of philosophy to the scientific enterprise see Stephen Boulter’s defence of ‘immodest’ metaphysics. S. Boulter, ‘The Aporetic Method and Defense of Immodest Metaphysics’ in E. Feser (ed.), *Aristotle on Method and Metaphysics*, Basingstoke, Palgrave Macmillan UK, 2013. This view consists of the three following theses: ‘(1) that metaphysics as traditionally conceived is indispensable to the philosophical enterprise; (2) that many non-trivial metaphysical claims can be justified without being “simply more science”; and finally (3) that accepted interpretations of mature scientific theory will on occasion have to be overturned on the basis of metaphysical reflection’, p. 29. This view draws upon the work of Aristotle (see his *Metaphysics* and *Topics*), and is thus historically important. It shares with the boundary work view the claim that: science alone cannot suffice to answer the kinds of abstract fundamental questions of the sort we have discussed. In this article, Boulter targets philosophers who have sought to eschew metaphysics from their own philosophy—an issue I have remained neutral about here, even though I am sympathetic to it. Boulter’s view should not be seen as a rival to the boundary work view, but rather an exemplar of it.

be solved by the methods of a single discipline—thus motivating the need for boundary work, and the rejection of the elitivist view.

4.1 Moral Responsibility

In this subsection, I will look at remarks made by the neuroscientist David Eagleman, who argues that recent findings in neuroscience require us to rethink long held views about moral responsibility.³⁰ In Eagleman's view, '[n]euroscience is just beginning to scratch the surface of questions that were once only in the domain of philosophers and psychologists.'³¹ The particular claim I will examine is Eagleman's remarks about the connection between neuroscience and the legal system. In his view, the question 'is this person blameworthy or not?' is the wrong question for the legal system to ask. He thinks we should 'remove...[the term 'blameworthiness'] from the legal argot.'³² Eagleman is not claiming that we should simply let criminals run free, but rather he thinks that the act of blaming is incompatible with the results of neuroscience. In what follows, I will look at an example of the evidence that he provides for this claim. I will suggest that the question 'can human beings be held morally responsible for their behavior?' is a boundary question and the conclusion that Eagleman reaches is premature because he does not address certain philosophical issues.

Although Eagleman provides a series of examples to support this position, I will focus on just one case—that of a forty-year-old man Eagleman refers to as 'Alex.'³³ In this case, Alex's wife, Julia, started to notice a change in Alex's sexual preferences. After knowing him for two decades, Julia noticed that Alex began to show an obsession with child pornography: he began to visit child pornography websites, read illicit magazines, solicited prostitution from a young woman, and exhibited other such behaviours from which he had previously abstained.

After complaining of head pains, Alex visited a neurologist. It was found that there was a large brain tumour in his orbitofrontal cortex. After neurosurgeons removed the tumour, his behaviour returned to normal. Eagleman states that the lesson to learn from this case, and others like it, is that 'when your biology changes, so can your decision making, your appetites, and your desires'.³⁴ This lesson is reinforced, he claims, by the fact that six months after the initial surgery Alex's behaviour returned. It turned out that the neurosurgeons had missed a part of the tumour, and it had regrown. Once again it was removed, and once again Alex's behaviour returned to normal.

According to Eagleman, the lesson here is clear: the behaviour of a subject cannot be separated from his or her biology. And since no one chooses his or her biology, '[p]erhaps not everyone is equally "free" to make socially appropriate choices.'³⁵ Eagleman's reasoning is that if you change the brain, then you change the person. Thus, he concludes, no one is ever truly responsible for their actions, and the term 'blameworthiness' should be removed from the legal argot.

³⁰ D. Eagleman, *Incognito: The Secret Lives of the Brain*, New York, Pantheon Books, 2011.

³¹ Eagleman, p. 192.

³² Eagleman, p. 191.

³³ Eagleman, pp. 154-155.

³⁴ Eagleman, p. 155.

³⁵ Eagleman, p. 157.

Now that we have examined Eagleman's argument, I will raise three main problems with it. In doing this, I will argue that because Eagleman fails to treat moral responsibility as a boundary question, he fails to consider philosophical issues that are relevant. His conclusion, thus, is premature.

First, we need to determine what conditions an agent must meet to be considered worthy of praise or blame. Before we can even begin to see if any agents can meet these conditions, we need to determine what these conditions themselves are. Scientific evidence may be necessary to determine if anyone meets these conditions, but the conditions themselves cannot be discerned by simply looking at the brain. Before deciding whether Alex is a person that can be held to account, we need to work out what the conditions of accountability are. Eagleman may think it is obvious that because no one chooses their biology, no one can be responsible for their actions. But this is a complicated philosophical assumption, that cannot be answered by looking at a brain scan.

Second, we need to address the issue of self-constitution—that is, how responsible must a person be for their psychology? Eagleman is right to think that no one determines their own biology, but is this reason enough to strip us of moral responsibility? We have long known that early childhood experiences, and the environment that we are placed in, are important in shaping the way that we grow up, which in turn influences how we act. But we do not usually think that this is enough to rob us of moral responsibility. Whilst it may be true that we do not choose our biology or the place we are born, we do have some control over our actions. It is true that we are not *ultimately responsible* for our actions, because we are not ultimately responsible for the way we are—but do we need to be? The answer to this question is, I maintain, a difficult philosophical one, and must be settled before we look at the scientific evidence.³⁶

Third, we need to look at the concept of compulsion in more detail. For Eagleman, it is obvious that Alex is not responsible for his actions. But clearly there are different ways to interpret the data. Should we say that an agent *S* is compelled to perform action *X* when it is very hard for *S* to resist performing action *X*? If not, should we limit the concept of compulsion to cases where it is literally impossible for a person not to perform action *X*? Such questions matter, because if we think of Alex as being similar to a drug addict/alcoholic who has some control of his behaviour, but finds it very hard to stop drinking or taking drugs, we may wish to blame him to some extent (e.g., for not seeking help sooner). If we think of him as being similar to a sleepwalker who has no control over his behaviour, we may not want to blame him at all. The reasons for, and the concepts of, praise and blame, are complicated; and while the data from brain scans are clearly important, the abstract philosophical assumptions that ground our concept of praise or blame cannot be determined by just looking at the brain.

In this section, I have argued that Eagleman's conclusion is premature. By neglecting important philosophical questions, Eagleman has not treated the question

³⁶ Galen Strawson is one philosopher who argues that moral responsibility is impossible, because we cannot be self-caused. This philosophical position is controversial, however, and does not rely on empirical evidence of the sort that Eagleman cites. G. Strawson, 'The Impossibility of Moral Responsibility', *Philosophical Studies: An International Journal for Philosophy in the Analytic Tradition*, vol. 75, no. 1/2, 1994, pp. 5-24.

of moral responsibility as a boundary question. I do not mean to imply that neuroscience is irrelevant here—on the contrary, it is of the utmost importance to finding out how human beings are—but rather, the point is that boundary questions require philosophy and science. We cannot, therefore, exclude one or the other from our analysis.

4.2 Free Will

In this subsection, I will look at the problem of free will, which, like moral responsibility, has long interested philosophers. In recent years, neuroscientists have also made significant contributions to this problem. Here I will discuss the results of a well-known experiment that has led some authors to claim that human beings lack free will. While I do not agree with this claim, my aim is not to contest it, but rather to show that the question ‘do human beings have free will?’ should be considered as a boundary question, so that any attempt to answer it by using only the method of philosophy or only the method of science is misguided.

In a series of experiments, the neuroscientist Benjamin Libet placed electroencephalogram (EEG) electrodes upon subjects’ heads, and asked them to lift their finger or wrist whenever they ‘felt the urge’ to move.³⁷ Subjects were instructed to watch a clock on a wall and note the exact time that they felt an urge to raise their finger or wrist. (The purpose of getting the subjects to watch the clock was so that the experimenters could get an accurate time of when the subjects felt the urge to raise their hand.) The surprising result that emerged from this experiment was that EEG reading showed that activity in the participants’ brains (known as the readiness potential) had started, unconsciously, about 300 milliseconds before the subjects reported having the urge to raise their hand. Given that we typically think of ourselves as the authors of such actions, this result suggests that action was initiated without the agent having anything to do with it—thus jeopardizing their free will.

Although much has been written about the results of this experiment over the past few years, I will consider three ways in which scientists have interpreted the results. One possibility, put forward by Libet, is that although we may not be the authors of our actions, we can still ‘veto’ such actions—thus giving us the ability to *stop* such actions from occurring.³⁸ Although this is not the way most of us feel that action works, it would give us some control over final outcomes of our actions. A second interpretation, from David Eagleman, holds that such a strategy might not be enough to save free will, because the veto itself might be unconscious.³⁹ A third, and more radical, interpretation is from the psychologist Daniel Wegner, who says:

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.⁴⁰

³⁷ Libet, ‘Unconscious cerebral initiative’, pp. 529-566.

³⁸ Libet, ‘Unconscious cerebral initiative’.

³⁹ Eagleman, *Incognito*, p. 168.

⁴⁰ D. Wegner, *The Illusion of Conscious Will*, p. 55.

Wegner's comments seem to suggest that conscious willing is an epiphenomenon—that is, it is a byproduct of the process, and not efficacious in the causal chain. This is a conclusion that is wildly at odds with what most people think. In what remains, I will not directly challenge any of these three interpretations; rather, I will show that there are philosophical assumptions that are relevant to all three, that cannot simply be ignored.

First, we need to look into the nature of intentions in a bit more detail. One assumption that is shared in all three interpretations above is that the intention to raise one's arm came after the motor activity began. Even if we accept this result—which I should say is controversial—there is still an issue of whether it is reasonable or not to generalize from this type of intention to *all* types of intentions. In other words, just because some intentions may not cause human action, should we think none do?

One reason to take this question seriously is because intentions can be quite different from each other. The philosopher Alfred Mele, for instance, distinguishes between two main types of intention: proximal and distal.⁴¹ A proximal intention is one that occurs *directly* before an action occurs—such as the intention to turn the ignition on in one's car, right before one actually does it. A distal intention is one that occurs *long* before an action occurs: such as one's intention in January to celebrate New Year's Eve in Hawaii. What is noteworthy about this distinction is that while the latter type of intention involves active planning—such as booking flights, clearing one's schedule, and so on—the former involves little conscious activity. The type of intention that features in the above experiment is best characterised as proximal. It occurs just before the subject's hand rises. It is thus like one's intention to turn the ignition on in one's car, rather than the intention to holiday in Hawaii that is formed months before. This point is significant, because if the results of the experiment apply only to a certain class of intentions, then the implications of the experiment will not be as far reaching.

Even if we grant that a certain class of seemingly intentional actions do arise from unconscious mental processes, we may still be hesitant to classify all of them as unintentional. As the philosopher Daniel Dennett points out, a professional tennis player can return a serve within 100 milliseconds or so—giving the player virtually no time at all to consciously plan where they intend the ball to go. Dennett notes that '[t]he 78 feet from base line to base line can be traversed by a serve from Venus Williams (averaging 125 mph) in less than 450 milliseconds.'⁴² In such a scenario, we may want to say that such a shot is just a reflex, as there doesn't seem to be enough time for the tennis player to plan a response. What we will not want to say, in my view, is that the shot is unintentional, or random. Given that the player who returns a Williams-like serve wants to win the match, and given that she would have trained for hours in preparation for such a moment, all she needs to do is get herself in the right position, and her reflexes will ensure the shot is placed with some direction. The fact that some of our actions are not the result of a conscious process does not mean that they are not intentional.

⁴¹ A.R. Mele, *Effective Intentions: The Power of Conscious Will*, New York, Oxford University Press, 2009, p. 10.

⁴² D.C. Dennett, *Freedom Evolves*, New York, Penguin Books Limited, 2004, p. 238.

Second, there are conceptual and terminological issues that need to be addressed. Even if certain experimental results, such as the ones I mentioned above, were enough to rule out a particular conception of free will, they might not be enough to show that all conceptions of free will are false. As Dennett has pointed out, there may be many versions of free will that we can conceive of, but not all of them will be worth wanting.⁴³ For instance, a view of free will that says that we are free only if we can break the laws of nature, or control every facet of our mental lives, will have the consequence of no one having free will. But this is setting the bar implausibly high.

What we need to do, then, is to think carefully about the concept of free will. This may seem like a trivial point, but I want to suggest that it is not. To see why, consider the following remarks by the biologist Jerry Coyne, who argues that recent scientific results, such as those cited above, support the claim that free will is an illusion. He writes that

The debate about free will, long the purview of philosophers alone, has been given new life by scientists, especially neuroscientists studying how the brain works. And what they're finding supports the idea that free will is a complete illusion.⁴⁴

But what does Coyne actually mean by 'free will'? He says, 'I mean it simply as the way most people think of it: When faced with two or more alternatives, it's your ability to freely and consciously choose one, either on the spot or after some deliberation.'⁴⁵ Although this description might seem plausible to many, Coyne's elaboration of it is, in my view, highly counterintuitive:

True "free will," then, would require us to somehow step outside of our brain's structure and modify how it works. Science hasn't shown any way we can do this because "we" are simply constructs of our brain. We can't impose a nebulous "will" on the inputs to our brain that can affect its output of decisions and actions, any more than a programmed computer can somehow reach inside itself and change its program.⁴⁶

If this is what is meant by free will, then I agree with Coyne: free will is an illusion. But why should we accept that Coyne's definition captures the everyday common sense notion (referred to by philosophers as the 'folk conception') of free will? This question gives rise to another question, which is difficult to answer—namely, how should we go about determining whose conception of free will is the right one, or, in Coyne's terminology, what counts as '*true free will*'? Suppose I have a different

⁴³ D.C. Dennett, *Elbow Room: The Varieties of Free Will Worth Wanting*, Cambridge, MIT Press, 2015. Dennett also takes seriously the idea that we should get rid of the term 'free will'.

⁴⁴ J. A. Coyne, 'Column: Why you don't really have free will', *USA Today*, 1 January 2012, <http://usatoday30.usatoday.com/news/opinion/forum/story/2012-01-01/free-will-science-religion/52317624/1>, (accessed 23 October 2016).

⁴⁵ Coyne, <http://usatoday30.usatoday.com/news/opinion/forum/story/2012-01-01/free-will-science-religion/52317624/1>.

⁴⁶ Coyne, <http://usatoday30.usatoday.com/news/opinion/forum/story/2012-01-01/free-will-science-religion/52317624/1>.

conception of free will that is compatible with such scientific results—whose concept should be considered the correct one?

One way of identifying folk concepts has been suggested by the philosopher Frank Jackson.⁴⁷ He thinks that a folk theory of a concept can be revealed by considering various cases, both possible and actual, that pertain to that concept. For example, if one wants to identify what one's own concept of free will is, one should consider a variety of different cases of human action and then, by consulting one's intuitions, decide whether such cases are best described as free actions. Eventually, after considering enough cases, one's concept of free will should emerge. Jackson says:

my intuitions about possible cases reveal my theory of free action...your intuitions reveal your theory. To the extent that our intuitions coincide with those of the folk, they reveal the folk theory.⁴⁸

Jackson adds that 'often we know that our own case is typical and so can generalize from it to others'.⁴⁹

Can this approach help settle the question, 'how can we determine the right conception of free will?' Although it seems like it might, several problems with this approach have recently been raised. One is that indoctrination, or training, could potentially skew one's own intuitions.⁵⁰ Thus, when one generalizes from one's own conception of free will to the folk conception, it will not be clear to what extent one's own intuitions are representative of the folk. Suppose Coyne were to generalize from his own view of free will to the folk view. How could he be confident about the extent to which his own view of free will is representative of the folk conception? Jackson says that we often know that our own conception is typical, but it is not clear to me, and others, how one could be confident about the reliability of intuition alone.

To circumvent this and other problems, alternative accounts of conceptual analysis have been sought. One such account is given by Shaun Nichols, which he calls 'empirical conceptual analysis'.⁵¹ In this view, one attempts to identify the folk understanding of a concept by employing the methods of the social sciences, as opposed to consulting one's intuitions alone. By using empirical methods, researchers can study people's responses to questions about philosophically interesting topics, and then record their responses.⁵² One advantage this method has over the armchair approach is that it allows researchers to isolate and investigate the different answers people give—enabling them to analyze the patterns that emerge. For example, suppose biologists' intuitions about free will differ from those of philosophers, accountants, or lawyers. Nichols' approach, being more objective, would offer a framework in which to determine, with more precision, what the folk view of free will is.

⁴⁷ F. Jackson, *From Metaphysics to Ethics: A Defence of Conceptual Analysis*, Oxford, Oxford University Press, 1998, pp. 31-32. This view is called 'traditional conceptual analysis'.

⁴⁸ Jackson, p. 32.

⁴⁹ Jackson, p. 37.

⁵⁰ This objection is due to Shaun Nichols. S. Nichols, 'Folk Intuitions on Free Will', *Journal of Cognition & Culture*, vol. 6, no. 1/2, 2006, p. 62.

⁵¹ Nichols, p. 64.

⁵² Nichols, p. 64.

Although this approach provides us with a good example of how the scientific method can contribute to questions that some may consider to be purely philosophical, it cannot be the whole story. This is because, while Nichols' account may tell us what the folk conception of free will is, it doesn't tell us what it ought to be. It may be the case, after all, that an alternative conception of free will, that is not the folk view, should be adopted. Suppose we were to discover that human beings do not have the freedom that we commonly think we do. Might an alternative concept of free action, that provides a framework for appraising human behaviour, still be worth adopting? As previously stated, there may be many possible conceptions of free will. It does not follow that because one is false, all are false. How far removed from the folk view of free will this new conception of free will could be, while still being classified as a free action, is a question which I do not pretend to offer a solution to here. But it is one which cannot be resolved by looking only at empirical data.⁵³

In response to concerns such as these, Libet has stated

It is interesting that most of the negative criticism of our findings and their implications have come from philosophers and others with no significant experience in experimental neuroscience of the brain.⁵⁴

This is unsympathetic to the boundary work view, and thus problematic. Just because one does not have significant experience in experimental neuroscience, does not mean they are unqualified to ask fundamental abstract questions of the sort that I have raised above—philosophers were, after all, asking these questions long before neuroscience started to address them. If one is attempting to ask the boundary question 'do human beings have free will?' then one will of course need neuroscience to understand how free will works. However, as shown above, there are important philosophical considerations that cannot be ignored. The problem of free will is a boundary question, and we need to employ the methodologies of both philosophy and science to solve it.

5. Conclusion

My central thesis has been that some of the questions that scientists and philosophers are attempting to answer have a philosophical as well as a scientific dimension. To solve them, then, it will not suffice to use the methodology of only a single discipline. We need to employ the methodologies of both—that is, we need to perform boundary work. Although this thesis may strike many as merely stating the obvious, this is not necessarily a bad thing. As David Chalmers has recently said, 'sometimes the obvious is worth saying so that less obvious things can be said from there.'⁵⁵ The less obvious point that I have hoped to make clear in this paper is that boundary work is underappreciated. While some blatantly disregard the importance of boundary work, others do so implicitly. I have argued that we need to think harder about the

⁵³ See Manuel Vargas for a defence of revisionism: the view that our current concepts of free will and moral responsibility need revision. M. Vargas, 'The Revisionist's Guide to Responsibility', *Philosophical Studies*, vol. 125, no. 3, 2005, pp. 399-429.

⁵⁴ B. Libet, 'The Timing of Mental Events: Libet's Experimental Findings and Their Implications', *Consciousness and Cognition*, vol. 11, no. 2, 2002, p. 292.

⁵⁵ D.J. Chalmers, 'Why Isn't There More Progress in Philosophy?', p. 4.

boundaries between philosophy and science, and take seriously the notion of boundary work. Although I have not had the space to fully develop an account of boundary work here, I hope to have done enough to make it a serious issue worth more of our attention.⁵⁶

⁵⁶ The following recent publications are good examples of what I consider to be boundary work. M.R Bennett and P.M.S. Hacker, *Philosophical Foundations of Neuroscience*, Oxford, Wiley-Blackwell, 2003; R.J Gennaro, *Disturbed Consciousness: New Essays on Psychopathology and Theories of Consciousness*, Cambridge, MIT Press, 2015.