

Article

What Philosophy Contributes to Emotion Science

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Abstract: Contemporary philosophers have paid increasing attention to the empirical research on emotions that has blossomed in many areas of the social sciences. In this paper, I first sketch the common roots of science and philosophy in Ancient Greek thought. I illustrate the way that specific empirical sciences can be regarded as branching out from a central trunk of philosophical speculation. On the basis of seven informal characterizations of what is distinctive about philosophical thinking, I then draw attention to the fact that scientific progress frequently requires one to make adjustments to the way its basic terms are conceptualized, and thus cannot avoid philosophical thought. The character of emotions requires attention from many disciplines, and the links among those disciplines inevitably require a broader philosophical perspective to be understood. Thus, emotion science, and indeed all of science, is inextricably committed to philosophical assumptions that demand scrutiny.

Keywords: emotion science; science; philosophy; methodological consensus; conceptual analysis

1. Introduction

Contemporary philosophers of mind have paid increasing attention to the empirical research on emotions that has blossomed in the social sciences. Those engaged in scientific research on emotions do not always feel the need to return the compliment. The present paper was written in response to a request from the Geneva Centre for Interdisciplinary Affective Science (CISA) for a lecture addressed to doctoral and post-doctoral students of emotion science specializing in various disciplines outside of philosophy. My brief was to outline the contribution that philosophy makes to emotion science.

Since I am a philosopher and not a scientist, it would feel somewhat presumptuous to be telling other emotion researchers why they need me. So, although I will venture some remarks about what philosophy might contribute to other areas of scientific emotion research, I will begin with a meditation on the relation of philosophy to science in general, and with some ways of characterizing what is peculiar about philosophical thinking. I will recall some well-known facts about the relatively recent origin of the very distinction between philosophy and science. I will then sketch the route that has led philosophers first to demarcate a clear line between philosophy and science, and more recently to return to a point of view from which the two have again become inextricably linked.

2. The Common Origins of Science and Philosophy

In one sense, philosophy is old and science is young. It has not even been 200 years since the term ‘scientist’ was invented, at which time what we now understand by the term ‘science’ was still more commonly known as ‘Natural Philosophy’. So, the first question we might ask is how philosophy became science.

Both science and philosophy can be regarded as beginning with the pre-Socratics [1] I have in mind especially Anaximenes, who thought everything was air, and Anaximander, who thought that everything was generated out of the *apeiron* or ‘Unlimited’, which might be interpreted either as ‘infinite’ or ‘indefinite’. According to Anaximenes, the properties of the perceptible world derive from air’s basic property, which is that it admits of degrees of condensation. When air is highly condensed, it is cold and hard, making up such



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substances as stone. As it becomes more diffuse, it is lighter and warmer, and acquires the usual appearance of air or, when most diffuse, of fire.

Now you may think this is not a very plausible theory. However, Anaximenes actually provided an experiment in support of it. Here is the experiment: First, dispose your lips as if to whistle and blow on your finger. Given the positioning of your lips, the air that comes out of your mouth seems to be more concentrated and feels cool to your finger. If by contrast, you open your mouth wide and breathe more diffusely with your mouth open onto your finger, it feels warmer.

Now again, you may not think much of this experiment, for you doubtlessly know that, in fact, compressing air heats it up and decompressing it cools it. Nevertheless, Anaximenes got two things right that are crucial to the very idea of science. First, with the exception of a brief aberration in the 20th century, a fundamental scientific axiom is that the world appears to us in an almost infinite diversity of guises, but all that diversity springs from a much simpler underlying reality. Second, Anaximenes seems to have anticipated modern science's insistence on the requirement that theories justify themselves by their ability to predict and explain, subject to empirical test.

A third insight is added by Anaximander—whose speculations, incidentally, included something resembling an evolutionary origin for the human species ([1], p. 15)—namely, that the basic stuff that explains everything else need not be anything of which we have direct experience. Unlike air, or the 'four elements' associated with other Greek thinkers, the Unlimited is no more something of which we can have direct sensory experience than electrons, fields, or the Higgs Boson [1] (p. 23).

What I referred to as an 'aberration' is behaviourism, which dominated psychology in the first quarter of the 20th Century and greatly inhibited emotions research. It is particularly relevant to the question of the role philosophy can play in the articulation of scientific method, because the positing of unobservable entities has sometimes been associated with religion rather than philosophy. In fact, it is equally crucial to both. That may in part explain the fact that, contrary to all predictions that many of my own generation were confident in making half a century ago, religion has proved extraordinarily resilient despite the progress of science.

The key differences between science and religion are already adumbrated in what separates the pre-Socratics from Hesiod. One novelty is that stories are no longer the main vehicle of explanation. Explanations in terms of the wrath of Zeus, or the spiteful eviction of Adam and Eve from the Garden of Eden, presuppose law-like generalizations about the human behaviour on which that of God or gods is modelled. Such explanations make sense only if we already understand how angry or spiteful people behave. As such, they are question-begging. By appealing to the supposed basic properties of fundamental elements, Anaximenes and Anaximander come much closer to invoking what we now think of as laws of nature.

The presocratic thinkers illustrate a second important difference between science and religion: air, the Unlimited, or the four elements are understood as natural elements that possess no conscious intentions or human-like motivations. They involve no appeal to supernatural entities modelled on human beings. Religious appeals to supernatural entities, by contrast, cannot satisfy the requirement of evidence which Anaximenes' experiment, however unconvincing, attempts to meet.

Why am I bringing up these fragments of ancient history? The reason is that, under the guise of some elementary observations about the history of thought, they illustrate a process of striving for rationality which is at the core of the philosophical ideal. A central feature of this quest for rationality is a certain conception of reasons and causes. Although the two words are often used synonymously, reasons, strictly speaking, are a special kind of cause, involving a kind of teleology that is most at home when we can speak of intentional agency. Nevertheless, both reasons and causes are by nature essentially universal. If A is a reason or cause of B in circumstances C, it must follow that in any other case where circumstances C also hold, A must count as a reason or cause for B.

To be sure, when we tell a story about people's emotions and behaviour, that does not generally seem to hold. We can be satisfied with an explanation of S' behaviour as having been motivated by reason R; but we will seldom be willing to be held to the prediction that anyone else—or even the same subject S—in circumstances C will be motivated by R to behave in the same way. This could certainly be a problem for those whose research concerns the 'laws' of human behaviour. Despite the brilliant insights contained in the last major work of the late Nico Frijda, boldly entitled *The laws of emotion* [2], we should be sceptical of any attempt to find, in emotion research, strict nomic laws of the kind we expect in physics.

There is a puzzle here that demands to be sorted out. The scientific worldview leads us to hope that the universality of reasons will mirror the uniformity of nature, resulting in the discovery of exceptionless laws. Yet, in psychology, and indeed in biology generally, we soon learn that the best we can expect are probabilities or statistical generalizations. Furthermore, if we find that, say, 87% of A's are B, how should we understand that? It could reflect the distribution of a certain property in a heterogeneous population, as in '87% of Canadians have brown eyes'. Alternatively, it could reflect an absolute propensity characterizing every member of a homogeneous population, reflecting, for example, the fact that every atom in a certain radioactive substance has a given half-life, from which it follows that, after a certain period of time, 87% of that population will have decayed. In biology, and specifically in psychological research, we try to study populations that are as homogeneous as possible in as many dimensions as possible; and we tend to assume that a certain determinism holds, so that the exceptions to any statistical generalization reflect differences among the individuals constituting the population. However, we do not really know that, so we have to treat our results in a way that allows for either possibility. In practice, when it seems that the same stimulus gives rise to different responses, we can chalk up the difference either to chance or to some yet undiscovered individual peculiarities.

This last remark is a fairly typical philosophical observation. However, what is it that marks it as such? So far, I have assumed that my reader has some sense of what philosophy is. However, let me draw back a bit and try to characterize philosophy at a very elementary level. To do that, I propose to list seven "definitions" (the scare quotes are important!) of philosophy that I find appealing. Each captures an important feature, and together they suggest that the question we should be asking is not *What is the contribution of philosophy to emotion research*, but *Why you cannot escape philosophy when you are trying to think about anything systematically and scientifically*. Here, then, are my seven characterizations.

3. Seven Characterizations of Philosophy

3.1. *Philosophy Is Intellectual Neoteny*

Much of philosophy consists of asking childish questions: Why? Who is to say? What is real? What is Time? Why should I be good? What does it mean to be free?

The point of putting it this way is that children tend to ask, sometimes quite irritatingly, questions about things we take for granted, and to which we lack not only good answers, but even universally agreed ways of approaching an answer. When you recall that the whole history of emotion research, from [3] to [4] and [5], involves debates about the simple question *What is an emotion?* it might occur to you that even if you regard yourself as an emotion science researcher, you are really just doing philosophy.

3.2. *Philosophy Typically Asks Second Order or Meta-Level Questions: Questions about Questions*

A philosopher will ask not *What is good*, but *What does it mean to say something is good?*; not *What do I know?* but *What is it to know?* Thus, in looking at the Behaviourist school's insistence on trusting only observable phenomena, a philosopher might ask exactly what is meant by 'observable' and whether indeed any observation is free of theoretical presuppositions. They might point out that physicists 'observe' the entities they study only by using extraordinarily complicated machines, about the working of which they must make a large number of fallible assumptions. Does this pattern on the screen actually

'represent' (and what exactly does 'represent' mean?) the behaviour of the boson, or is it an artefact of the equipment? And for emotion researchers again, of course, *What do we mean by 'emotion', 'mood', 'affect'?* which according to this characterization of philosophy again suggests that much of what is disguised as 'emotion science' is in fact philosophy.

The next three characterizations focus on the commonalities and contrasts between philosophy and religion, literature, and science, respectively.

3.3. Compared with Religion

Like religion, its aim is to understand things in the most general sense, and specifically to situate humans in the Universe. Unlike religion, on the other hand, Philosophy deals in arguments, not authoritative texts. Hence *for philosophy, nothing is sacred*. Ideally, philosophy regards no question as excluded a priori as inappropriate. Here again, we are dealing with a principle or ideal that in science is generally endorsed more in theory than practice. Indeed, at some periods in the history of the subject, the very topic of emotion was one that was essentially regarded as out of bounds, as lacking sufficient definition to study scientifically. Emotions are just too messy, and so we should not even bother to talk about them.

Inevitably, every inquiry must take some presuppositions for granted. It is a peculiar and crucial function of philosophy to advocate for the scrutiny of questions that have not been asked.

3.4. Compared with Literature

Like literature, philosophy at its broadest aims at the exploration of life, and the place of humans in nature. It also frequently proceeds by telling stories. Unlike literature, however, philosophy presents stories as illustrations or set-ups for thought experiments. Stories in philosophy play only an auxiliary role. Conversely, arguments, the meat and potatoes of philosophy, can figure in both literature and philosophy, but only in philosophy are they intended to be taken seriously as reasons to believe. In literature, as in other representations of art, they are offered for contemplation, typically as attributed to some fictional character. This is neatly illustrated by Magritte's famous picture of a pipe adorned with the inscription 'Ceci n'est pas une pipe'. Whether it is or is not a pipe, the assertion is locked inside a frame that is not part of reality. A story cannot prove anything, or at least nothing more than the conceivability of a situation it intelligibly describes. By contrast, when a philosopher presents an argument, they are trying to get the reader to believe the conclusion, and when they offer a story, it is not for its own sake but as an illustration in aid of an argument.

For emotion researchers who regard an interdisciplinary approach to be indispensable, this is important because literature and art are rightly held to provide important sources of insight into emotions. The commonalities and the crucial differences between philosophy and art should therefore be kept in mind. They flag some of the subtleties to which an interdisciplinary approach must be sensitive.

How should we understand the mandate of interdisciplinarity? There is no obvious consensus about the best way to realize the mutual relevance of different approaches to the study of emotions. That, in fact, brings up the next characterization of philosophy.

3.5. The Resolution of Philosophical Questions Lacks a General Methodological Consensus

Although philosophers have several characteristic tricks and strategies of argument (including the ploy, *I didn't understand a word you said!*), there is no general agreement on the specific methods appropriate for answering typically philosophical questions. We might even say that philosophy's quest for appropriate methods is a kind of death wish, in that when it succeeds with respect to a certain class of questions, that class of questions ceases to be philosophical and instead becomes scientific. Historically, the tree of knowledge consists of a philosophical trunk which has periodically sprouted scientific branches. Ancient Greek philosophers were interested in a wide range of things, as we saw; but the only domain in which they actually created a science was Mathematics. You can see this in the transition

from the ideas attributed to the (perhaps partly mythical) tradition of Pythagoreanism [6] to the solid establishment of geometry by Euclid. The former had a quasi-mystical conception of numbers as forming the fundamental principles of order in the universe, and they were deeply shocked by the discovery of irrational numbers which appeared to undermine that cosmic order. Euclid, by contrast, constructed a body of deductive knowledge on the basis of a limited number of axioms which survived unchallenged as a theory of space until it was overtaken by the work of Riemann and Lobachevsky in the 19th Century [7]. This leaves plenty of questions for philosophers to worry about concerning mathematics; but once established, geometry could boast general agreement about what counted as a valid inference. With Newton, 'natural philosophy' became physics, forming a new branch detached from the trunk of philosophy. Chemistry became a science when it settled on experimental methods that led to the rejection of the quest for transmutation of lead into gold. A consensus arose that allowed the dismissal of the notion of phlogiston [8]. A new science of chemistry then split off from philosophy. Psychology is perhaps the latest case of philosophy spawning a science, as attested by the fact that the first psychology laboratory is generally thought to have been that of Wilhelm Wundt, at the University of Leipzig less than 200 years ago. It remains the domain of science in which philosophy is most involved, precisely because controversies about methodology continue to be active. When disputes arise concerning method (for example, the long-standing question of the relevance of subjective experience to the attribution of psychological states, including the question of whether there are or could be unconscious emotions), we are automatically back in the philosophical domain.

3.6. Changing Our Vision through Language

A well-known 'doodle' consists in an arrangement of a couple of straight lines and circles that is unintelligible at first sight, but immediately seen as a representation as soon as we know the caption, 'a person with a Mexican hat riding a bicycle seen from on top'. In this illustration, as in the whole series of 'doodles' [9], a verbal description provokes a radical change in what we see. In an analogous way, philosophical reflection can lead us to see things differently.

This characterization of philosophy highlights the importance of conceptual framing, which is often of crucial importance to scientific progress. The example of phlogiston already mentioned rests on conceptualizing combustion as a process that recombines substances rather than producing or releasing a new substance. Similarly, Einstein's theory of relativity rests on changing what is regarded as absolute: not space, as in commonsense intuition, but the speed of light. In biology, Darwin inverted the priority of types over individuals by seeing the former as a construction based on probabilistic features of the latter, rather than seeing individuals as more or less adequate implementations of types. Such shifts in conceptualization are essentially philosophical. For us emotion researchers, this is important in two ways: first, because all science needs to be open to reframing different questions—to perform some 'lateral thinking'; second, because of the way that emotions themselves are eminently subject to reappraisal as a mode of regulation—about which more in a moment.

How we conceptualize a situation or problem can determine how we respond to it. 'Re-gestalt'ing', or reappraisal, is something we do not just by associating a caption to an image, but more particularly in philosophy by thinking and arguing our way through a certain problem and thereby coming to see it differently. Consider, for example, the famous argument provided by Epicurus on the irrationality of the fear of death. Every animal is doubtlessly hard-wired to avoid death; it is therefore not surprising that many people regard their own death as something to be feared. If you have been brought up to believe in an afterlife in which you will suffer punishment for your sins, this seems a rational fear. However, even those who regard death as actually the end of life, rather than a transition to another stage, are not immune to that fear. In the face of that, Epicurus points out that 'when we exist, death is not yet present, and when death is present, then we do not exist.

Therefore, it is relevant neither to the living nor to the dead, since it does not affect the former, and the latter do not exist.' [10] (p. 29). Once you see this, Epicurus maintains, you see that, although you may be worried about pain in the process of dying, or worried about the consequences of your death for others, there is nothing to fear in death itself.

Not everyone is relieved of the fear of death by that argument, and it is not hard to argue that it is fallacious. However, for those who are persuaded by it, it effects a reappraisal which is successful in bringing relief. For us emotion researchers, this argument is of interest for an additional reason: it presents us with a deductive logical argument, from factual premises to a conclusion which is in the form of an imperative, or 'should-statement': you should not fear death. Now, it is a well-established principle in philosophy that no statement or conjunction of statements about facts or logic can entail an ought statement or value statement. To suppose otherwise is to commit a 'Naturalistic Fallacy'. That fallacy consists in going from *is* to *ought*, as in *This will cause unnecessary pain, therefore you ought not do it*. That inference may seem okay because its conclusion seems so obviously correct; but that is because we automatically assume a general premise to the effect that *One ought never to cause unnecessary pain*.

An argument that presupposes an unspoken premise is called an enthymeme. So, we need to stipulate that Epicurus's argument is actually an enthymeme: it assumes an unexpressed premise to the effect that you should not fear a state that will not in itself be painful. That seems an unexceptionable counsel; as a special case of a broader principle of rationality that I call the Philebus Principle, in honour of the Platonic dialogue in which it is first presented:

(P) *The valence of a state of anticipation should be proportional to the valence of the anticipated state.*

(P) is a biologically plausible principle of rationality, insofar as the valence of a state of anticipation can be expected to guide us in our choices. To rejoice in the prospect of a painful experience is likely to motivate us to pursue that painful experience, and that is something that we should presumably come to regret. Conversely, if some tremendously enjoyable experience is anticipated with dismay, I will be less likely to pursue it.

In the light of the Philebus Principle, in short, we can construe Epicurus's argument as offering good counsel. Nevertheless, its tacit principle is likely to remain unexamined. Further, in science as in philosophy, unexamined principles are likely to lead us astray in ways of which we may remain unaware.

In emotion research, an excellent illustration of this point is provided by Sophie Rietti's critique of the use of the concept of emotional intelligence. Rietti shows that 'EQ measures conformity or the ability to manipulate own or others' emotions, and relies on a problematic assumption that there are definitive, universal "right" answers when it comes to feelings.' [11] (p. 143). In other words, what presents itself as a scientific measure, by analogy with IQ (which itself is not, need one add, a measure of unquestioned objective validity) actually rests on unexamined and contestable ideological presuppositions.

Emotions themselves are often plausibly described as attitudes to or even perceptions of values; consequently, it matters a great deal whether the researcher who is studying emotions scientifically is themselves inclined to endorse certain values, and therefore to approve of the corresponding emotions, or on the contrary whether they subscribe to an ideology which rejects them.

Given the inherently interdisciplinary nature of emotion research, the problem of unexamined presuppositions is exacerbated by the slight differences between different disciplines' uses of the same words. For illustration, consider the concept—or concepts—of normality. Among psychologists, the word 'normative' refers roughly to what is standard or usual in a statistical sense: roughly, it applies to those cases that lie within a standard deviation or two of the highest point in a bell curve. It does not necessarily reflect an endorsement of a norm in question. By contrast, when a philosopher uses the word, it implies that something ought to be the case, or at least is generally thought to be desirable. 'Normativity' (a word used more often by philosophers than by psychologists) clearly implies a reference to, if not necessarily an endorsement of, norms that ought to be followed,

whereas for a psychologist ‘normative’ seems to refer to what is in fact usually or generally the case. There is room here for an important range of misunderstandings.

3.7. Conceptual Analysis

My last characterization of philosophy (and I do not pretend to think my list exhaustive) is one that I do not endorse, for reasons I will make clear. However, it has been highly influential. It claims that philosophy consists in, and should be limited to, conceptual analysis and clarification. Both the nature of the distinctions on which it rests, and the reasons for its abandonment by serious philosophers of mind, deserve a section to themselves.

4. The Analytic-Synthetic Distinction and Its Blurring

Antecedents of the conception of philosophy as conceptual analysis include Locke’s suggestion that for a philosopher ‘it is ambition enough to be employed as an underlabourer in clearing the ground a little, and removing some of the rubbish that lies in the way to knowledge’ [12], as well as David Hume’s so-called ‘fork’ which purports to divide all discourse into ‘matters of fact’ and ‘relations of ideas’. Hume famously, or notoriously, enjoined us to ask of any book, ‘Does it contain any abstract reasoning concerning quantity or number? No. Does it contain any experimental reasoning concerning matter of fact and existence? No. Commit it then to the flames: for it can contain nothing but sophistry and illusion’ [13] (Sec. 12, Pt. 3). Abstract reasoning concerning quantity or number can be equated with ‘relations of ideas’, or what we now call analytic truths; matters of fact and existence of those that can be ascertained by the use of our senses. This is a neat idea, but unfortunately it seems to violate its own injunction. For the claim that there are only two kinds of statements—concerning matters of fact or relations of ideas—is not itself either one or the other. So, whatever it is that we might have in mind by the expression ‘conceptual analysis’ cannot be exactly the same as what Hume had in mind as ‘relations of ideas’. Locke, Hume, and more recently the Logical Positivists, set great store on the clarification of concepts, and rather optimistically believed that if we could just define all the terms we used in an absolutely unambiguous way, much of what philosophers have debated would result in agreement.

The conception of philosophy as conceptual analysis went with a neat distinction that arrayed analytic propositions, necessary truths, and a priori knowledge on one side of a divide, and synthetic propositions, contingent truths, and a posteriori knowledge on the other. However, beginning with Kant, who insisted that some propositions—such as truths of arithmetic—were synthetic and yet necessarily true and known a priori, that neat picture fell apart. In the mid 20th Century, Quine rejected the analytic-synthetic distinction, thus ‘blurring the distinction between speculative metaphysics and natural science’ [14] (p. 20). He replaced it with a distinction of degree: some statements such as truths of logic and mathematics, are just so central to our ‘web of belief’ that to reject them would seem to entail that we must reject practically everything we believe. Rejecting a statement on the web’s periphery, by contrast, might require us to revise very little else. What lies behind this idea is a pragmatist attitude to meaning, reflected nowadays in the much discussed area of ‘conceptual engineering’ as well as attempts to construct ‘ameliorative definitions’ with an eye to serving clusters of purposes, including socially desirable ones [15,16]. Furthermore, Saul Kripke showed that some necessary truths (such as that water is H₂O) are a posteriori [17]. Given the demise of the neat equivalences of Analyticity, Necessity, and the A Priori on one side, and of the Synthetic, the Contingent, and the A Posteriori on the other, many philosophers have been keen to recover philosophy’s kinship with science. Once we accept that semantics do not mirror a world of objective meanings, but rather evolve in the service of pragmatic ends, the line between conceptual analysis and empirical science is no longer rigid. Making adjustments in our understanding of words is sometimes more expedient than changing our beliefs about empirical facts. Particular observations and general principles are tested against one another, and adjustments can go either way.

5. An Invasive Philosophical Problem: Free Will

To illustrate the entanglement of empirical and philosophical research, let me turn to an example of a classic philosophical problem that has interesting implications for psychology: the problem of free will. Though quintessentially philosophical, that problem cannot be evaded by emotion theorists. This can be illustrated in two areas.

Consider first emotion regulation. The very idea presupposes that we can make sense of the claim that an agent, call them 'I', can to some extent freely choose to aim at feeling or not feeling some emotion. The claim might be purely descriptive of the fact that certain changes in our emotional states occur. Observation shows that they occur as a result of situation selection, situation modification, attention deployment, cognitive change or reappraisal, and response modulation [18,19]. On the other hand, these five ways are referred to as strategies, and as such they presuppose that if I find my current emotional state unsatisfactory, I can choose to adopt them. Nevertheless, can we know that this presupposition is correct? From the fact that some agent actually does this, it does not follow that an agent who has not, nevertheless could have done so. The possibility cannot be excluded that where emotional regulation is put into practice it could not have been avoided, or that where it was not, the agent could not have done so.

Common sense has it that in our emotional life we are to some extent passive, and to some extent active. The former is attested by the very word, passion, once a preferred term for what we call emotions or affective states. However, psychology and philosophy have tended to treat the problem of free will as all or nothing. Sartre [20] famously said that we are 'condemned to be free'. If I ask you to wave your finger, you might or might not comply, but you cannot avoid deciding. If you wave your finger, that is a decision; if you refuse, it is one too. Additionally, if you simply ignore me, that too is a decision. Anyone observing you can just wait and see what the random processes or causal chains that govern your behaviour will determine you to do. However, you yourself cannot just wait and see, for that too is a decision. Some philosophers have opted for the view, argued a priori, that free-will is an illusion. So have some psychologists, notably Daniel Wegner who has presented a number of ingenious experiments to demonstrate empirically 'the illusion of conscious will' [21]. One is based on the technique of so-called psychic 'table turning' and shows that agents are actually pushing the table, even while entirely convinced of having merely followed its movements. Wegner also devised experiments to generate the opposite illusion, in which subjects are convinced that they are doing something which in fact is entirely out of their control. This shows that the subjective sense of control is not always veridical. Wegner surmised that the consciousness of having willed something is often a confabulation, an explanation devised after the fact, based on conventional assumptions about what would constitute an acceptable reason for it. This raises a wider issue that is also of great interest to both philosophers and psychologists, namely the extent to which we have reliable access to our own mental states, intentions, and motivations. Descartes's claim that we cannot be mistaken about our own conscious states has been convincingly refuted both on philosophical grounds [22] and on the basis of experimental inquiry [23]. Many of our attributions of emotion, even to ourselves, are based on what we believe would be appropriate or expected in a situation of the sort in question, rather than on any inner experience.

Further evidence against free will has come from the now well-known experiments of Benjamin Libet [24], which seemed to show that in situations like the simple finger-wagging case above, the conscious decision lags behind the activation of the *Bereitschaftspotential*, or readiness potential, that signals that the machinery of motion has already been triggered. We seem to be forced to conclude—on the pain of giving up the axiom that causes precede their effects—that free-will cannot be assimilated to the causal efficacy of conscious decision. That would make 'deciding' a mere effect of some other cause, just as the act itself appears to be the effect of a decision.

The Libet experiment has given rise to much debate (e.g., [25–27]), and in the end may turn out to be largely irrelevant to the problem of free will. At least if we are persuaded

by a re-conceptualization of Libet's research and the related empirical data by researchers who have found a clever way of interpreting the so-called *Bereitschaftspotential* as an artefact [28,29]. Yet, in the end, it makes little difference to the philosophical problem that continues to legitimately affect psychology and perhaps even sociology and politics as well.

The bearing of experiments on the issue of free-will obviously depends on just what that term is taken to imply. The Libet experiment appeared to show that conscious decision cannot be what philosophical 'libertarians' require, namely that conscious choice be the determining causal factor in ordinary action. Philosophers, however, claim that we could know that by just thinking about it. A classic argument, due to David Hume, runs as follows: chance, not freedom, is the opposite of determinism or 'necessity' [13] Sec. VIII Pt. I). However, randomness is not what libertarians are after. They think there must be room for absolute origination by the self, a pure act of uncaused creation that is neither determined nor random. A truly free choice in the libertarian sense would be one that I, rather than anything or anyone else, originated. However, if my origination of the act was unrelated to any previously existing wants, inclinations, or prior intentions, then it cannot count as mine. If, on the other hand, my act did have immediate causal antecedents in my states of mind and character, then those states in turn may have been determined by others of which I am not and could not possibly be aware.

In short, the libertarian requirement posits impossible conditions. Therefore, we did not need any scientific input in the first place: simple a priori reasoning suffices to show that the libertarian position is untenable on grounds of conceptual incoherence, and not only for the empirical reasons developed by Wegner.

The problem of free will bears on another issue which could serve to illustrate how philosophy might feed a scientific research program. That issue is 'Imaginative Resistance'. This phenomenon was first noticed by David Hume, who observed that although we can imagine practices that are radically different from our own, it requires 'a very violent effort' to imagine approving of such practices in such a way as to be able to respond to them, or at least empathize with those who respond to them, in ways characteristic of the alien cultures in which they are regarded as normal. Hume writes:

There needs but a certain turn of thought or imagination to make us enter into all the opinions, which then prevailed, and relish the sentiments or conclusions derived from them. But what requires an effort, or may even be altogether beyond our powers, is to change our judgment of manners, and excite sentiments of approbation or blame, love or hatred, different from those to which the mind from long custom has been familiarized. And where a man is confident of the rectitude of that moral standard, by which he judges, he is justly jealous of it, and will not pervert the sentiments of his heart for a moment, in complaisance to any writer whatsoever. [30] (§33).

Hume himself appears to hesitate between the claim that we cannot perform this feat of imagination and the claim that we should not do so: 'where vicious manners are described, without being marked with the proper characters of blame and disapprobation . . . I cannot, nor is it proper I should, enter into such sentiments'. (Ibid). Given a long-standing principle that we cannot be required to do the impossible, 'ought implies can', the distinction is important. We often urge people to empathize with those who are very different from ourselves, and we may even be tempted to blame those who fail to do so. However, what if our inability to empathize is beyond our control? My own favourite application of this idea concerns a certain kind of derisive laughter, 'at' as opposed to 'with' someone. In order to find something funny enough to laugh at it, that kind of humour requires us to endorse, and not merely to understand and identify, certain negative attitudes. In particular, certain racist or sexist jokes rely not on cleverness or wit but on a shared contempt toward members of a gender or racialized group. Here is an example provided by Jenny Diski, who relates it as told to her by Moira, a white South African acquaintance:

'An Englishman, a Thai and an African were all together at Oxbridge. After some years the Englishman goes to visit the Thai who is hugely rich. How come? asks the Englishman. See that road? I own 10 per cent of it, the Thai tells him. The Englishman goes to visit the African, who is also hugely rich. How come? See that road? says the African. What road? the Englishman asks.' Moira waited for me to burst out laughing, but it was a minute or two before I could make anything at all of this story. Besides, what were the overseas students doing in Oxbridge in the first place if they weren't rich already? [31].

The point here is that after reflection, Diski is able to understand the joke, in the sense of detecting why Moira finds it funny. However, as she does not share Moira's attitude towards Black Africans—an attitude of contempt based on the belief that they are corrupt—there is nothing in the joke that is funny for her.

So, how does this relate to the question of free will? The answer is that if imaginative resistance is a matter of being unwilling to 'imagine' in the sense of even fictionally endorsing Moira's attitude, then an effort might overcome it, and that will be good where the attitude in question is a desirable one. If it is genuinely impossible, that will signal that there is an insuperable barrier to mutual understanding between members of cultures that differ widely in their values. How can we tell? Let some ingenious psychologist devise an experiment to differentiate the unwillingness to imagine something from the impossibility of doing so. As a philosopher, I am asking the question; as a scientist, it is your job to devise a method for providing an answer.

6. Conclusions

Many of my examples and observations have focused on intellectual issues of epistemology, the devising and criticism of explanatory models, and so forth. On all these issues, science and philosophy are collaborators rather than alternatives. Insofar as sciences not infrequently find themselves in need of new paradigms and methods, they dip back into philosophy according to my fifth characterization, based on philosophy's want of consensus on the proper methods for resolving its questions.

This is the case with some contemporary disputes in physics, such as the viability of string theory or the multiverse interpretation of quantum theory. These are discussed by philosophers of science as well as professional physicists. Another example, drawn from biology, concerns the interpretation of teleology within the framework of evolution. In the second half of the 20th Century, it seemed that the aetiological account of natural teleology of the sort developed by Ruth Millikan [22,32] afforded a conclusive solution to the problem of explaining functional processes in biology. However, recently there has been a revival of the idea that organisms in some stronger sense drive their own evolution [33]. In emotion theory, there continues to be vigorous debate about the best framework in terms of which they should be understood. Are some emotions basic? What does that mean? Can there be basic functions without necessarily requiring them to have localizable 'signatures in the brain'? Are emotions caused by, do they result from, or do they consist in appraisals? All these questions are partly conceptual, and largely concerned with identifying the most productive paradigms in terms of which to design empirical investigation. They remain, even as they are debated on the basis of empirical evidence, methodological, conceptual questions, on the solution of which consensus is lacking—and therefore philosophical.

I want to end these observations by highlighting three particularly significant ways in which philosophy and science remain entangled. One lies in the unavoidable character of questions about values; the second is the threat presented by the temptation of essentialism on biological and social sciences; and the third is the importance to scientific and philosophical thought of what we might call intellectual anarchy.

Value theory is one of the proprietary domains of philosophy. By contrast, it has sometimes been presented as an ideal of science that it should be, or at least aspire to be, 'value free'. That idea has been much disputed [34]. Emotion theory, of all scientific disciplines, is the least likely to be conducted without consideration of what we care about

as persons and as members of societies. But for the existence of emotions, it is impossible to imagine how any human life could be thought to have meaning. Further, when we ask what emotions are, and how they should be managed, we have seen that the intrusion of value questions cannot be evaded. As recent work on cultural dimensions of emotion has shown, the very conceptualization of emotions needs to be constantly aware of the evaluative presuppositions that any given researcher might be unintentionally importing into their research. [35]

Closely related to the inevitability of questions of value is the difficulty of freeing ourselves from the grip of essentialism. Essentialism is a philosophical attitude which induces the expectation of finding necessary and sufficient conditions for anything to count as a member of a certain class. In physics or chemistry, essentialism may be inoffensive: that a substance consists of H₂O molecules is necessary and sufficient for it to count as water. Even there, however, that condition is relative to the different concerns of chemistry and physics, since it does not distinguish between 'ordinary' water and heavy water ²H₂O, or between H₂¹⁶O and H₂¹⁸O. When we turn to biology and its subspecies, including psychology, the theory of evolution makes nonsense of the quest for essences. Given the fact of evolution, every living organism's phenotype occupies a unique place in a lineage of which the members are subject to a variety of genetic, epigenetic, and developmental variants. Even such an important biological category as sex cannot be defined in terms of 'essential' necessary and sufficient conditions [36]. In emotion science, the assumption that we might characterize emotions in terms of necessary and sufficient conditions either at the individual or the species level would seem to require fixity of species of the sort generally attributed to Aristotle. In addition, it ignores the crucial role played by culturally variable social construction [37]. The vain philosophical quest for essences has therefore plausibly been held to have impeded scientific progress. As Lisa Barrett stresses, essentialism is 'so powerful that it can twist the words of great scientists and misdirect the path of scientific discovery' [5] (p. 161). Essentialist ideas prevented scientists from appreciating the malleability and complexity of our emotional life. That illustrates that the contribution of philosophy to science, because of long-standing philosophical assumptions, can be negative as well as positive.

Let me end with the more positive suggestion that what unites both science and philosophy at the most creative level is best characterized as a tolerance, if not indeed a cultivation, of intellectual anarchy. I return to William James for a compelling description of the best thoughts of the best minds:

Instead of thoughts of concrete things patiently following one another in a beaten track of habitual suggestion, we have the most abrupt cross-cuts and transitions from one idea to another, the most rarefied abstractions and discriminations, the most unheard-of combinations of elements, the subtlest associations of analogy; in a word, we seem suddenly introduced into a seething caldron of ideas, where everything is fizzing and bobbing about in a state of bewildering activity, where partnerships can be joined or loosened in an instant, treadmill routine is unknown, and the unexpected seems the only law [38] (p. 146).

Now that, though it was not in my list, might be a good characterization of the best kind of philosophical thought. It is also, I suggest, a vivid picture of the best of scientific thinking.

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