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There is Nothing (Really) Wrong with Emergent Brute Facts

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Brute facts are facts that do not have an explanation.[1] This immediately lends itself to two interpretations. One is that a brute fact is a fact for which we don't have an explanation, and thus that we accept as brute until we can get an explanation for it. Following Barnes (1994), we can call such a fact an "epistemically brute fact." Epistemically brute facts are facts for which there is an explanation but that explanation is unavailable to us either because we have not yet found it or because it is cognitively inaccessible to us. So, for example, the existence of consciousness would be an epistemically brute fact for the first reason for non-reductive physicalists and for the second reason for mysterians.

The second interpretation is that it is not our cognitive or epistemological limitations that make a fact brute but, instead, it is the world that makes it such: that is, there is no explanation for such facts even from God's point of view, so to speak. These facts simply cannot be explained, for there is no explanation beyond saying that this is how things are. In this sense, brute facts are metaphysically basic: they are what Barnes calls "ontologically brute facts." Suppose here that not even God's will is available for explanation for any such explanation, as Barnes points out, will render the fact in question non-brute after all. An example of such a fact could be the existence of the universe, or the value of fundamental physical constants. Note that a brute fact is usually understood to be a fact that cannot be explained by anything *else* (i.e., by anything distinct from itself) because explanation is usually taken to be irreflexive—*p* cannot be an explanation of *p*. However, there is also the possibility, argued for by Nozick (1981: 118–21), that a fundamental law or principle may explain itself by self-subsumption, by being an instance of itself. In such a case, if brute facts are facts that cannot be explained by *anything* then nothing is left unexplained and the said law or principle is

[1] Since the question at hand is not whether laws as opposed to, say, properties, are brute, but whether it makes sense to talk of non-physical bruteness at all, in what follows I take the liberty to use the term "fact" as a catch-all term that covers different things that obtain, like properties, entities, kinds, laws, states, events, processes, etc.

not a brute fact. If, on the other hand, a brute fact is a fact that cannot be explained by anything *else*, then such a law or principle would be a brute fact.

So there are three kinds of possible brute facts:

Ontologically brute facts are facts that are metaphysically basic because there is no explanation we or any other possible being could ever find out which explains them.

Epistemically brute facts are facts that are explanatorily basic for us in the sense that their explanation is not available to us *right now*.

Mysterian epistemically brute facts are facts for which there is an explanation that is cognitively inaccessible to us.

In this chapter, the discussion is about ontologically brute facts because it is around their existence that a large part of the debate between strong, ontological emergentism and physicalism is centered. Let me explain this a bit more.

Emergentism has been understood in many different ways but for the present purposes it suffices to say that ontological emergence is the thesis that when a system reaches a certain level of complexity it generates properties that are dependent on the system they emerged from, yet that are also distinct from it. Like emergence, distinctness has been understood in many different ways, but what it certainly includes is that the emergent is in principle non-inductively unpredictable from, and irreducible to, the entity from which it emerged and that it is causally efficacious in its own right. In a nutshell then, the idea is that when an entity reaches a certain level of complexity, as Alexander (1920: 52) put it, something new "blossoms out" of it. Based on our categorization of brute facts above we can say that these ontological buds, to go along with Alexander's metaphor, are, or at least some are, ontological brute facts. The qualification here is important because emergent facts are not necessarily brute. That is, a supervening fact, M, that does not have a reductive explanation might have some kind of explanation (e.g., a causal explanation or an explanation in terms of its supervenience on something else), and so may not be brute, even though it is emergent. So it is important to draw a conceptual distinction between supervenience being a brute fact and the supervening facts (e.g., properties) being brute. For though a supervening fact, M, might have some explanation other than a reductive one, the fact of its supervenience on P can still be a brute fact and it is this notion of a brute fact that is the interesting one in the debate between physicalism and emergentism.

Physicalists are happy to accept that there are brute facts in physics, but many will resist the idea that there are non-physical brute facts: that is, brute facts which are not the subject matter of physics. Some physicalists will resist this because they deny that there are any non-physical facts at all. But many others will allow that there are non-physical facts in this sense, so long as these facts supervene on the physical facts. Yet they resist the idea that these facts are brute or irreducible.[2] To be clear, the conception

[2] Two exceptions to this claim are Nagel and Levine. However, Nagel in *Mind and Cosmos* (2012) claims that the materialist worldview is probably false, since it cannot explain consciousness and evolution. And

of the physical that is fundamental to physicalism is the conception that is drawn from physical science (Lewis 1966, 1994; Loewer 2001). So the physical in this sense is the subject matter of physical science and so phenomenal and other mental facts are instances of non-physical facts, as are any other facts discovered by the non-physical sciences (whether or not they are brute).

Emergentists, on the other hand, are quite happy to accept that there may be non-physical brute facts which metaphysically depend or supervene on physical facts. An example of a non-physical ontologically brute fact, if emergentism is correct, could be the existence of consciousness, or its supervenience on the brain.

Though it may seem that it is commonly agreed that the arguments that will be treated below are not conclusive and that emergentism has not been excluded, there is often a dismissive attitude towards strong forms of emergence. Strong emergentism is often considered to be an implausible or even an incoherent position, often quickly dismissed, precisely because it allows for the possibility of non-physical brute facts that are seen by many of its opponents as unacceptably mysterious—a characterization usually intended to show that an explanation is required or at least is highly desirable. Indicatively, Koons and Bealer (2010: xiii–xiv) write that "Brute Supervenience comes at a price: supervenience [is] an unexplainable mystery," Bedau (1997: 377) writes that "…strong emergence is one mystery that we don't need," and Craver (2007: 217) contrasting strong emergence to "unmysterious" weak or epistemological emergence writes "…one who insists that there is no explanation for a nonrelational property of the whole in terms of the properties of its component-plus-organization advocates a spooky form of emergence." McGinn sums up this attitude to emergent brute facts:

> Resolutely shunning the supernatural, I think it is undeniable that it must be in virtue of some natural property of the brain that organisms are conscious. There just has to be some explanation for how brains subserve minds…It is implausible to take these correlations as ultimate and inexplicable facts, as simply brute. (1989: 353)

My aim in this chapter is to evaluate emergent brute facts as a possibility of how things are in the world and address such commonly found dismissive attitudes. There are three main arguments that are usually put forward against emergentism which allows for such a possibility: the argument from simplicity, the coherence argument, and the argument from empirical evidence. Let's take a look at them.

1. The Argument from Simplicity

The argument from simplicity is an a priori appeal to considerations of simplicity in defense of physicalism. The argument is that physicalism posits fewer brute facts than

though Levine (1983) says that there are higher-level brute facts because he thinks there is an explanatory gap between the lower-level physical facts and the facts about consciousness, he sees this as a problem for physicalism (which he thinks is true). So both early Nagel and Levine think that there are higher-level brute facts but both see this as a problem for the intelligibility of physicalism.

emergentism (and only at the physical/fundamental level) to explain the same range of phenomena and is therefore preferable to it on grounds of elegance or theoretical parsimony. Such an argument was originally put forward by J. J. C. Smart (1959) and has been discussed by Kim (2005) and Chalmers (1996) and several other philosophers since. The general consensus is that, though appealing, this argument doesn't get one very far and hence various philosophers, including Kim, Pereboom, and Papineau have gone to some lengths to motivate physicalism without appeal to simplicity.

To begin with, simplicity is a concept that is plagued by problems. For instance, it is not quite clear how one should understand the requirement for simplicity to begin with and then there is the question of how to justify the requirement of simplicity. Alan Baker (2010) distinguishes between syntactic simplicity or elegance, that has to do with the number of basic principles in a theory, and ontological simplicity or parsimony, that has to do with the number of entities (or the number of kinds of entities) postulated by a theory. Despite this distinction questions remain: How are the two related? Do they go hand in hand? What do we take into consideration when we measure parsimony? I will not wade into these issues here because, though they are of interest, the main objection to this argument in the present context is one of explanatory sufficiency.

The real question is not which view posits fewer brute facts, it is how many (or what kind of) brute facts we need to yield the best description and, where possible, explanation of a phenomenon. Even though there is a reason that science aims to have as few brute facts as possible and it is true that we should look to eliminate bruteness, if possible, it is also true that how good our explanations are depends not only on whether our explanations conform to our epistemic values, but also on whether our epistemic endeavors are in tune with the world which we form beliefs and explanations about. If the world contains many brute facts or contains brute facts at different levels, then we have no good reason to diminish the number of brute facts in our explanations, or contain them only to the level of physics. If this is the case we will have to expand our understanding of nature to include non-physical brute facts.

So though it is true that physicalism is a simpler theory than emergentism when it comes to the number of brute facts posited, since currently no theory, including physicalism, can explain what are considered candidate emergent properties or their supervenience on the physical, we cannot appeal to simplicity a priori to motivate physicalism. We could appeal to simplicity if we had theories that explain such phenomena and we had to pick one. But that is not the case, so as things stand this argument doesn't carry much weight and it has been covered by the existing literature so I will not dwell on it further.

2. The Coherence Argument

Emergentists and physicalists both believe that some physical facts are fundamental and do not require an explanation. It is natural, then, to link the idea of a fundamental fact with the idea of an unexplainable fact. The coherence argument against emergentism

arises from the equally natural thought that dependent or supervenient phenomena are non-fundamental since they must have an explanation in terms of what they are dependent on. Given that, the emergentist's idea that some facts are both dependent *and* (reductively) inexplicable can appear paradoxical. For if something depends on something else, then it might seem as if it must be explicable in terms of what it is dependent on, and therefore that it is not brute. How, then, can the emergentist's idea be coherent?

The key worry here is whether the proposed dependence of emergent facts on physical facts is compatible with their proposed distinctness from these physical facts. Galen Strawson has brought up an argument in favor of panpsychism to this effect saying that physical and experiential properties seem to be so different in kind that the idea that one emerges from the other is not plausible.[3] Strawson (2006: 18) writes:

> *Emergence can't be brute*…in the sense of there being absolutely no reason in the nature of things why the emerging thing is as it is (so that it is unintelligible even to God). For any feature Y of anything that is correctly considered to be emergent from X, there must be something about X and X alone in virtue of which Y emerges, and which is sufficient for Y.

It is generally agreed that the metaphysical relation involved in strong, ontological, emergence is that of supervenience.[4] A common way of understanding the relation of supervenience is that where Y supervenes on X, there is no difference in Y without a difference in X. Supervenience in itself is a thesis of modal (at least nomological) covariation and, as such, is a quite permissive relation and not necessarily a relation of dependence—since dependence is irreflexive but supervenience isn't necessarily irreflexive. When it comes to emergence, however, supervenience is understood as a relation of dependence—since otherwise novel properties would not be emergent in any interesting sense. So though there are different ways in which the relation of supervenience can be understood, the general idea, when it comes to emergentism at least, is that the supervenient phenomena depend on their subjacent base.

Nonetheless, there is no incoherence in the thought that the supervenient fact is unexplainable in terms of subjacent facts, nor is it incoherent to maintain that one fact metaphysically depends on another fact and that the two are also distinct. Indeed, this is one reason why, according to some influential arguments in the philosophy of mind (e.g., by Kim), no kind of supervenience is a strong enough relation to establish physicalism; because it is compatible with all sorts of metaphysical theses, including ones that take the relata of supervenience to be distinct, like various forms of dualism.

Though supervenience is often understood in the literature to be a relation of dependence and determination, Grimes (1991) has shown that dependency and determination can come apart. Suppose we have two states, X and Y, in system S, and Y is

[3] Nagel (1979) also dismisses emergentism as incoherent and allows only for epistemological emergence that makes a claim only to our limited understanding of complex system behavior.

[4] There are exceptions to this; for example, O'Connor (2000) and Humphreys (1997) argue for emergence without supervenience.

dependent on X in the sense that Y happens only if X happens. In such a case, it is still possible that X does not determine Y because X can occur without Y occurring. In this sense, X is necessary for Y but it is not sufficient for Y—that is, X alone does not fix Y. More than this though, when it comes to the emergence relation, the key to the emergents' distinctness is precisely the kind of dependence involved. According to the British Emergentists, emergent properties ontologically depend for their existence on a subjacent base. To say that one entity, Y, ontological depends on another entity, X, means that in order for Y to exist, X must exist also. So X's existence is a necessary precondition for Y's existence. However, the other central idea in the British Emergentist tradition was that in the case of emergence a "new kind of relatedness" (Morgan 1923: 16) comes into the world, which makes a difference in how things run their course. With their coming into existence emergent properties introduce new causal relations into the world which allow us to individuate a new kind of thing in the world. Hence, the emergent is distinct from what it emerges from and its dependence on the base is not complete[5] (Alexander 1920: 46ff.; Broad 1925: 73ff.; Morgan 1923: 64 ff.).

In fact, contrary to Strawson who seems to understand emergentism as saying that there cannot be absolutely no reason why the emergent is as it is, emergentism appeals not only to a physical subjacent base but also to emergent (trans-ordinal) laws. It is in virtue of the physical base *and* these fundamental, inter-level and irreducible laws (e.g., psychophysical laws) that emergent properties supervene on physical properties. Once these are included in an explanation, emergent properties cease to be brute (Van Cleve 1990: 219) and the bruteness moves over to the laws connecting the emergent to the base. Also, if Strawson means that there cannot be absolutely no reason *given the physical facts (and laws) alone* why the emergent thing is as it is, the bruteness in this case is no worse than any other bruteness of fundamental facts that are accepted by physicalists. And there doesn't seem to be anything inherently incoherent about fundamental physical facts. What it means to accept something as fundamental in this sense is that we must rest content with the explanation that there is (e.g.) a lawful connection without there being a further reductive explanation of this connection. As Chalmers (1996: 170–1, 379 n.42) points out about the case of gravity, the lawful gravitation force exerted between two bodies is no less brute than a lawful but brute supervenience of conscious states on physical states—both have no explanation. And this is right, for though what kind of supervenience each metaphysical thesis involves helps us see what sort of relations are involved in each, it does not really explain why such relations hold. Even a physicalist global supervenience thesis doesn't really explain much in terms of the relation of mental states to their subjacent physical base, or about the nature and working of mental states. In fact, there is a clear sense in which, if the connection between emergent brute facts and their subjacent base is merely nomological, as some argue, it is less mysterious than a (possibly metaphysically necessary)

[5] For an elaboration of this view see Wyss (2010) and Chapter 12, this volume.

connection that we do not understand, like that of the gravitational force between two bodies.

What may make it seem that emergent properties cannot be distinct from the base from which they emerge is the physicalist thesis that two possible worlds that are identical in terms of physical properties and physical laws will be identical in all other respects too (Lewis 1986: ix–xvi; Armstrong 1989; Lewis 1994: 292). Or, to use Kripke's metaphor, that if God fixes all the physical facts, all other facts will come for free. If this is the case, then every time a mental property is instantiated in the world, that follows from the way that the world is in its physical respects and from this it seems to follow that, as Armstrong puts it, "What supervenes is no addition of being" (Armstrong 1997: 12). So the metaphor of fixing makes it natural to think that what does the fixing is the (only) fundamental entity and, what is more, it makes the supervenience relation look like a reductive relation in which the supervening entity is nothing over and above its subjacent base—very much as Lewis and Armstrong took it to be.

But barring such physicalist intuitions there is no independent reason to think that it is incoherent to maintain that what depends on something else for its existence cannot be distinct ("something over and above") from what it depends on, or that it cannot be fundamental. To use Wilson's example of a kind of Malebranchean occasionalism (2012: 9), if in all possible worlds every time a certain physical arrangement is instantiated God makes it so that some mental property is also instantiated, then the mental would supervene with metaphysical necessity on its physical base, yet also be distinct from it. Though this example may seem unconvincing because it invokes God, it does show that the idea of the pairing of ontological dependence and distinctness is not incoherent.

Of course, a reductive explanation that explains supervenient facts in terms of subjacent physical facts is not the only kind of explanation that is acceptable to physicalism in general. There are also causal explanations and 'embedding' explanations which describe/demonstrate how explananda phenomena are related to other well-understood phenomena. It is widely agreed that supervening properties or states are not caused by their subjacent bases so in the present discussion explanation should not be understood as causal explanation. And when it comes to 'embedding' explanations, non-physical brute facts do not fit in in this sense within physical theories, i.e., the only thing we can say about them is that they occur nomologically under certain physical conditions. So it is understandable that physical brute facts that are part of a highly explanatory theory seem more acceptable than non-physical ones. This is why in this debate many physicalists require a reductive explanation of the non-physical. But just as there is no 'embedding' explanation of emergent brute facts (in the sense that they fit in within a physicalist picture of the order of nature), there is no reductive explanation available or foreseeable either—as in the case of consciousness, for example. And this is a reason for thinking that we may have to expand our metaphysics to include non-physical brute facts.

Of course, all the above is not enough to establish the reality of emergent brute facts since that is ultimately an empirical matter, but my point so far has been that there

doesn't seem to be anything incoherent about the idea if one puts aside the idea that physics is the arbitrator of metaphysics—the very idea, that is, that emergentism denies. It is possible that it is just a brute fact about the world that when certain entities come together in a certain kind of way, certain properties or relations strongly emerge. That is, contrary to Strawson's insistence that there *must* be something in the subjacent base that makes the emergent property come about, there might be nothing other than a nomological covariation peculiar to our world and worlds similar to ours. This might not satisfy our sense of understanding or curiosity. We might feel uncomfortable or unsatisfied because the world cannot offer what we hoped for and we can derogatorily call this a mystery or a miracle. But this is just to restate that we don't have an explanation for the fact in question when we feel that we ought to. Yet maybe this feeling is merely the result of our expectation that all fundamental entities and laws are to be found in the realm of physics. Surely though, this is an empirical thesis that we will have to give up if our best science can't resolve what Chalmers calls the 'hard problem' of consciousness and Levine has named the 'explanatory gap'. And so far, we are at a loss.

3. The Empirical Evidence Objection

Though many philosophers, critics of emergentism included, agree that emergentism is internally coherent and logically possible (McLaughlin 2008; Papineau 2001; Wilson 2002, 2005), there is one more objection that strikes at the heart of the emergentist position. For what is central in emergentism is that it is a view argued for on purely a posteriori grounds. Lloyd Morgan characteristically writes:

> Now I take it that from the emergent standpoint, with which we are concerned, we must accept this situation with natural piety. Cognitive relatedness just emerges . . . That, however, does not preclude—nay, rather, it imperatively demands from us as evolutionists—a resolute attempt to analyse the situation and to trace, if possible, subsidiary stages of emergence, on the understanding that, in evolutionary progress, there is never any breach of continuity in the sense of a gap or hiatus. (1923: 39)

This paragraph reveals the attitude at the core of the emergentist tradition shared by Samuel Alexander and C. D. Broad: a willingness to accept with an attitude of "natural piety" (Alexander 1920, 1922), *if the evidence so compels us*, that there are, indeed, non-physical brute facts. And the empirical objection focuses on precisely this question of plausibility: the availability of evidence in favor of emergentism. In other words, the empirical objection states that though there *could be* emergent brute facts, there *actually* aren't any, and that all things considered the evidence favors physicalism. Indeed, according to McLaughlin, the fall of British Emergentism came about not because of any philosophical/conceptual mistakes, but simply because it flew in the face of empirical evidence (McLaughlin 2008: 38–50).

Part of the empirical evidence objection against emergentism comes from the idea that there must be a reductive explanation of emergent facts. For many physicalists the

considerations that lead them to this requirement involve an inductive argument about other phenomena deemed mysterious in the past, that have now been explained by physical science; or arguments in defense of the causal closure of the physical. Arguments based on these considerations are meant to show that though certain facts may seem at first sight to be non-physical brute facts, what we know from science points to the fact that they are not really such. As a matter of fact, for many physicalists we should be committed to the in principle existence of reductive explanations.[6] Levine (1983: 358–9) expresses such a view together with its consequence for brute facts:

> Materialism, as I understand it, implies explanatory reductionism of at least this minimal sort: that for every phenomenon not describable in terms of the fundamental physical magnitudes (whatever they turn out to be), there is a mechanism that is describable in terms of the fundamental physical magnitudes such that occurrences of the former are intelligible in terms of occurrences of the latter. While this minimal reductionism does not imply anything about the reducibility of theories like psychology to physics, it does imply that brute facts . . . will not arise in the domain of theories like psychology.

So a reductive explanation is either held to be desirable a posteriori or it is a requirement for a position to be properly called physicalist.

In the first case, which is the one relevant here, some physicalists argue from past successes and claim that things deemed irreducible in the past have now been reduced and that gives us reason to believe that the same holds for everything that is, supposedly, emergent (Melnyk 2004; Papineau 2001; Stoljar 2010). However, so far, and to our best efforts, such explanations still elude us and none seem to be forthcoming when it comes to candidate emergent properties or relations, as in the case of consciousness or its supervenience on the brain. We don't have a commonly accepted, or even a plausible, empirical model of how consciousness emerges from the brain, nor any inkling of what such a thing might look like. Of course, a physicalist may say that the fact that there are, at present, no explanatory reductions available, does not establish that an explanatory reduction is 'in principle' impossible. And he would be right. But the fact that reductions are neither available nor foreseeable is of fundamental importance when one constructs an argument based on empirical evidence. And

[6] Though not all physicalists agree with this requirement (e.g. Block and Stalnaker 1999) many physicalists explicitly endorse it (e.g., Tye, Melnyk, Horgan). It might seem that some currently popular versions of physicalism do not make this a requirement, but at closer inspection they do. For example, it might seem that Jackson's and Lewis' global supervenience thesis does not involve the claim that there should be an explanatory reduction since it is just a claim about metaphysically necessary determination. But for Jackson physicalism requires something more, it needs to "locate" apparently non-physical things in the physical world. This is what his 'entry by entailment' (1998: chs. 1–2) thesis attempts to solve: from a conceptual analysis of the higher-level terms you can in principle deduce the higher-level truths from the lower-level truths. But such a deduction would serve as an explanation of why those truths are true, thus making it an explanatory reduction of the higher-level truths. This is why Jackson's physicalism involves a commitment to explanatory reduction. And Colin McGinn's 'mysterian' physicalism is also linked to the idea of an explanation since he is committed to the view that there must be some sort of account of how the mind is related to the physical world, even if it is cognitively inaccessible to us. Lewis (1994: 53), on the other hand, thinks of his supervenience thesis as ontologically reductive.

though one cannot exclude the possibility that physicalists may turn out to be right after all, as things stand, physicalists are not entitled to assume that they will.[7]

By no means do I intend to deny that a large part of science involves breaking entities up into their constitutive parts and that this method has been very fruitful in many cases. And though some (or many) philosophers and scientists may be methodologically committed to the search for reductions, and maybe even for good reasons, this does not mean that actual empirical evidence supports that all irreducible phenomena will eventually be reduced. As C. D. Broad very nicely put it, we should not confuse "the Author of Nature with the Editor of *Nature*" (Broad 1925: viii). What I am contesting, in other words, is that reductive explanations can go as far as physicalists claim they can. And given the lack of a commonly accepted research framework and the nature of what neuroscientific research produces, the evidence seems to support the irreducibility and, in some cases, even the bruteness of emergents.

The empirical objection does not stop at the question of reduction, however, but also challenges the irreducible (and, in this sense, brute) causal efficacy of emergent properties. This is an important objection precisely because strong/ontological emergence of the British Emergentism kind identifies the distinctness of emergent properties with their being causally efficacious *qua* mental.

It would be an understatement to say that a lot has been written about emergent mental causation and I cannot address here the question in its entirety but I will say a few things concerning the parts of it that relate to what I have dubbed the empirical evidence objection. When it comes to evidence, there are two main lines of argument against emergent causation.

The first objection says that there is no evidence for what Broad (1925) called "configurational forces" (forces that appear only when a system reaches a certain level of complexity) or as we would put it today, emergent forces. Papineau (2001) has argued that there are no non-physical forces and that, hence, mental causes are physical causes, and McLaughlin (2008) has argued that there is no evidence for emergent forces. The underlying assumption in these arguments is that causation is efficient causation, but this idea, as well as the related idea that only forces can be real causes, is contestable. As Burge observes (1993: 115), thinking of causes in terms of forces is already thinking of them on a physical model, and this directs our thinking about them in a way that makes them difficult to understand in a different way. Of course,

[7] Vision (2011) has argued that science itself seems to exclude the possibility of reductive explanations of consciousness because science gives functional explanations and the very nature of neuroscience is to produce functional descriptions and correlations of mental states to neural states. In this sense, the problem is not that we do not have available reductive explanations or that none are foreseeable, it is that given science as we know it, such explanations seem to be beyond its reach. Though the scope of neuroscience is limited the way Vision describes, an argument based on the inherent limits of sciences can only establish epistemological bruteness at best. That is, an argument for bruteness based on the premise that no (explanatory) reductions seem possible given the nature of physical science, is open to the objection that we are confusing the limits of our explanatory tool with the limits of the world and positing ontological bruteness where only epistemological bruteness can be established.

causes *can* be forces, but they don't *need* to be. For example, we can say that increased money supply in an economy causes inflation and we can talk of social causes without positing any social forces (in the normal physical sense). One could argue in response that underlying such causal relations are physical causal chains, but it is not at all clear how, as things stand, that would help understand how the higher-level causal pattern could be translated in terms of the lower level and, also, how the myriads of micro-interactions would be relevant in a causal explanation in such cases.

Indeed, some philosophers have recently argued in discussing downward causation that we may need to introduce different kinds of causation in the sciences other than efficient causes—e.g., a difference making, irreducible formal causation. That is, different kinds of causes and causes at different levels may be needed to explain an effect that cannot be adequately explained in terms of one kind of cause alone. Whether this is the kind of macro-determination involved in the case of mental downward causation remains to be seen. But if, as Moreno and Umerez (2000: 105ff.) argue discussing biological systems, such macro-constraints are not reducible to physical laws, physical laws alone will not suffice to explain such instances of downward causation. If this is the case and there are two different kinds of causation at play, this can overcome the problem of causal exclusion which is part of what makes downward causation look questionable.

Granted, these considerations are mere suggestions rather than a knock-down argument but given the inability of physicalism to explain away the appearance of downward causation, an alternative way of understanding it challenges the strength of this part of the empirical objection.

The second, and most usually cited, objection to strong emergence is the causal exclusion argument (Pepper 1926; Kim 1999, 2005). The gist of the problem put forward by this objection is the following. In order for emergent mental properties to have causal powers there must be some form of mental causation. However, if every physical effect has a sufficient physical cause then, barring overdetermination, it is not clear what role mental states can play in bringing about physical effects. Emergent mental states thus seem to be merely epiphenomenal and their existence is threatened.

The deeper worry here is that irreducible mental (and downward) causation of the type advocated by emergentism violates the principle of the causal closure of the physical world. The principle of causal closure is, roughly, the principle that all physical effects are entirely determined by—or have their chances entirely determined by—prior physical events.[8] This principle has been defended by physicalists on empirical grounds, namely that empirical evidence gives us good grounds to believe that physical causes have physical effects, and we haven't come across any disconfirming instances. So, if the physical level is causally closed then all events at the physical level

[8] Papineau (1990, 2001). Note that to say that every physical effect has a sufficient physical cause does not by itself exclude the possibility of other kinds of causes. What does exclude this possibility is the denial of overdetermination.

are caused by other events in the same level and there is no work to be done by emergents. Seen this way, it almost becomes trivially true that there is no mental causation since the principle of causal closure seems to exclude *ex hypothesi* causally efficacious emergent properties.

The first thing to note is that the argument from empirical evidence for causal closure is problematic, as the sample used as the premises of the argument is unrepresentative of the population it generalizes to. That is, the evidence is lacking precisely where it is needed, for it leaves out the class of physical effects for which, if we put physicalist assumptions aside, it is not clear that they have (sufficient) physical causes. Mental causes seem to be required for some physical effects to come about, and this is a challenge to the causal closure principle. Put otherwise, it seems, at least prima facie, that mental causes exist—e.g., I am thirsty and I get up to get a glass of water—and given the availability of the mental style of explanation of behavior and the non-existence of anything approaching a physical explanation, we need a reason to believe that the merely possible physical explanation is fundamental. Of course, appealing to the success of our explanatory practices is clearly not enough to establish ontological conclusions, but, still, a case can be made that the burden of proof falls on defenders of the causal closure principle.

More importantly, the principle of causal closure is not a principle that has been scientifically proven and though it is connected to the physical sciences, it is a core tenet only of physicalism, so to deny it—which would allow the emergentist to evade the problem of overdetermination—need not be a problem for emergentists. Also, it is not the case that physics is hemmed in by the causal closure principle. If it were to be violated by future findings, say instances in which the principle of conservation of energy is violated, that would not be a problem for physics. In such a case, either different kinds of causes would be introduced that are currently not understood to be in the realm of the physical or the principle of conservation of energy would be amended to not conflict with such cases.[9] After all, physics is in search of physical causes, but if other causes were to be found, physics would not be any worse for it, though physicalism would. Recall that earlier we defined the physical as the subject matter of physics so if physics were to incorporate mental forces of one kind or another, then they would fall under physicalism also. In this case though physicalism would have to be redefined not to include the causal closure principle and would become a position that would be compatible with non-physicalist/dualist views, including emergentism.

It is important to remember that to deny causal closure is not to deny the relatively innocuous principle that all science accepts, and that Hendry calls "the principle of the ubiquity of physics," according to which physical principles apply universally and constrain the motions of all physical systems (Hendry 2010: 217ff.; Cartwright 1999). This principle is compatible with emergentism because firstly, mental causation need not

[9] For an example in which a new fundamental force was introduced in physics to explain the apparent violation of the principle of conservation of energy see Wilson (2005).

violate physical laws and, second, the principle of ubiquity does not entail that physical principles determine every physical effect. So cases of emergence will violate causal closure but they will not violate the ubiquity of physics, which is a principle that we want to keep.

So the tenets of emergentism do not conflict with contemporary physics as even critics of emergentism are willing to attest (McLaughlin 2008; Papineau 2001; Wilson 2005). Indeed, C. D. Broad talking about whether configurational forces conflict with Newtonian laws of motion makes precisely this point: "… laws of motion do not profess to tell us in detail how motions are caused or modified. What they do is to tell us the general conditions which all motions, however produced, must conform to" (1923: 177). This is right. Such laws set the general framework to which all motion must conform, but they are silent about what causes the motion and they give plenty of leeway for further factors to play a causal role without violating these laws.

The question of whether the physical world is causally closed is a controversial question with a complex history, to which I cannot do justice here. I have offered some considerations against this view but I don't want to digress too much because arguing against causal closure is not directly relevant to the purposes of this chapter, nor is it really part of the empirical evidence objection. All I mean to suggest with the above brief remarks is that though physicalists hold on to the principle of causal closure with tenacity, their certainty is not proportional to the evidence they have for it. And, since physical explanations continue to elude us and fundamental physics cannot account for, or explain away, higher-level causation, we should be cautious about our expectations and the metaphysical principles on which they depend. For though causal closure and the search for reductions has been fruitful in the past, they may just turn out to be useful rules of thumb that science itself might lead us to revise. So the point to retain here is that the empirical evidence objection relies heavily on the assumption of the causal closure of the physical and since that is controversial so is the empirical evidence objection.

What's more, if the debate between emergentism and physicalism revolves around empirical evidence, physicalism is in a tight spot. Physicalism makes a strong modal claim that the mental supervenes on the physical in all possible worlds so the physicalist must provide empirical evidence for that. But what is evidence for this claim? Such a claim not only does not provide us with an explanation of supervenience or of the supervening facts, but also, it is not clear what would be evidence in support of it. On the other hand, emergentists can point to the lawful correlations between the physical and the mental that resist explanation. Of course, we should not rush to the conclusion that something is a brute fact based on insufficient evidence any more than we should rush to any conclusion in that manner. But at some point it is inappropriate to insist that there somehow *must* be an explanation of a certain kind of a phenomenon or a relation beyond a nomological correlation, when our best investigations reveal no such explanation, and we have no idea even what such an explanation could be like.

4. Conclusion

In this chapter I have argued that the three main lines of argument against emergent brute facts—the simplicity argument, the coherence argument, and the empirical evidence argument—do not suffice to refute them. But I conclude with a stronger claim that, in the end, the question of whether we should accept emergent brute facts in our ontology boils down to evidence and that given the available evidence we ought to accept that at least certain emergent phenomena are ontologically brute.

Note that this is a stronger position than saying that there is no conclusive evidence either for or against the existence of emergent brute facts and so we must balance the evidence available to us and, ultimately, withhold judgment or claim that their existence is merely a viable option. Given how things stand at the moment such an agnostic position is the least we can hold. The position put forward here, however, is not an agnostic position. An agnostic is someone who suspends judgment, not one who believes that the best currently available evidence points against a certain position—in this case, the position that there are no emergent brute facts. What's more, if we understand the naturalist requirement to be that of proportioning our beliefs to the empirical evidence available, accepting brute facts is, I believe, the position that a naturalist in the philosophy of mind should adopt.[10] This does not mean that scientific investigation must come to an end. Indeed, as Lloyd Morgan says in the quoted passage above, such a position should not stop us from further inquiry. Still, at some point we need to accept that after our best efforts to find an explanation this is the conclusion we are led to. Of course, we might turn out to be wrong, but a good naturalist is not one who is always right, but one who is committed to being led by empirical evidence alone.

In closing I want to point out another advantage to a view that accepts non-physical brute facts. This is the response available to emergentism to the persisting problem for physicalism of the explanatory gap. The problem is that though it seems clear that certain physical states somehow give rise to certain conscious states, we have no explanation of how or why this happens. And it is a persisting problem because physical science gives functional explanations and these kinds of explanations seem to be inadequate for addressing the problem of consciousness. To put it in the terms of this chapter, according to physicalism our lack of an explanation reflects nothing more than our incomplete understanding of how certain conscious states depend on certain physical states and so consciousness is an epistemological (or a mysterian) brute fact. On the other hand, according to emergentism as I have understood it here, among the actual world's fundamental facts or laws, there are facts or laws concerning the correlation of brain states to conscious states and there may be nothing more to understand than that there is no explanation in the reductive terms that physicalism requires. If this is the case, then there is an explanatory gap *because* there is a metaphysical gap, and consciousness will be a non-physical ontological brute fact.

[10] For an elaboration on this point see Vintiadis (2013).

We can now see how emergentism provides a plausible potential way of bridging the explanatory gap: if we accept the nomological connection of physical states to conscious states as an ontologically brute fact, though we will not have the explanation the physicalist requires and the explanatory gap will persist, it will not be a problem anymore. For though there will be a gap where we may have liked an explanation to be, there is nothing missing. We know all the relevant facts there are to know and there is no more a mystery to be solved; the explanatory gap doesn't matter.[11]

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