Russellian Physicalism and its Dilemma

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**Abstract:** Russellian monism – an influential doctrine proposed by Russell (1927/1992) – is roughly the view that the natural sciences can only ever tell us about the causal, dispositional, and structural properties of physical entities and not about their categorical properties, and, moreover, that our qualia are constituted by categorical properties. Recently, Stoljar (2001a, 2001b), Strawson (2008), Montero (2010, 2015), Alter and Nagasawa (2012), and Chalmers (2015) have attempted to develop this doctrine into a version of physicalism. Russellian monism faces the so-called combination problem, according to which it is difficult to see how categorical properties could collectively constitute qualia. In this paper, I suggest that there is an insufficiently discussed aspect of the combination problem which I call the difference-maker problem. Taking the difference-maker problem into account, I argue that the combination problem – whether or not it can be solved – results in a dilemma for the project of developing Russellian physicalism. That is, Russellian monism is either physicalistically unacceptable or it is implausible; hence, Russellian monism and physicalism are incompatible.

**Keywords:** Russellian monism; Russellian physicalism; physicalism; emergentism; combination problem

**1 Introduction**

Russellian monism is an influential doctrine in the philosophy of mind. Its seminal formulation was provided by Russell (1927/1992, 1927), and it has attracted, and been developed by, many contemporary philosophers (see e.g. Chalmers 1996, 2010; Stoljar 2001a, 2001b; Strawson 2008; Montero 2010, 2015; Alter & Nagasawa 2012; Rosenberg 2015; Goff 2017). The doctrine consists of the following three components:

(1) **The scientific categorical ignorance thesis:** Categorical properties are not knowable by the natural sciences.[[1]](#footnote-1)

(2) **The categorical qualia thesis:** Our qualia are (solely or partially) grounded in categorical properties (in some manner that is not [solely] via the causal, dispositional, and structural properties that are, in turn, borne by those categorical properties).

(3) **The common bases thesis:** Entities studied by science and our qualia have the same kind(s) of categorical properties as their bases.

Russellian monism has numerous versions, including those that are understood (by their proponents) to be versions of such doctrines as panpsychism, panprotopsychism, neutral monism, and physicalism. The diversity of versions is due to the fact that different proponents have different views on the nature of the categorical properties concerned, and also on how to characterise the physical and the mental.

I have argued elsewhere that Russellian monism is epistemically self-defeating much like epiphenomenalism is (Chan forthcoming a), and also that we in fact have no need for non-physicalism or mysterianism – Russellian monism included – to explain qualia at all (Chan & Latham 2019). This paper is the third work of the trilogy and an investigation of the compatibility between Russellian monism and physicalism. Specifically, it offers an objection to the physicalist version of Russellian monism – call it **Russellian physicalism**. Examples of the doctrine include those offered by Stoljar (2001a, 2001b), Strawson (2008), Montero (2010, 2015), Alter and Nagasawa (2012), Chalmers (2015), and Maxwell (1978). In Section 2, I sketch a formulation of Russellian physicalism. In Section 3, I outline a dilemma for Russellian physicalism which is motivated by the famous combination problem. In Sections 4 and 5, I discuss in detail the two horns of the dilemma. Section 6 concludes the paper.

2 The formulation of Russellian physicalism

In this section I sketch a formulation of Russellian physicalism whose aim is to capture the spirits of Stoljar’s (2001a, 2001b, 2015) and Montero’s (2010, 2015) independent and lengthy discussions.[[2]](#footnote-2) To begin with, we must discuss the conception of physicalism. There are many distinct conceptions of physicalism, some of which are incompatible with one another. While all conceptions insist that everything in the actual world is physical, each has a different understanding of what the physical amounts to. We cannot discuss in detail every existing conception of the physical here, but for our purposes the conceptions can be classified into two major families according to their strategies: (1) the **merely-bottom-up conceptions** (henceforth, the **MBUCs**) and (2) the **top-down-and-bottom-up conceptions** (henceforth, the **TDBUCs**).[[3]](#footnote-3)

Most conceptions of the physical are members of the MBUCs, the strategy of which involves two steps. The **initial step** is to preliminarily identify what it takes for fundamental objects or properties to be counted as physical. For example, the disciplinary conception of the physical,[[4]](#footnote-4) formulated as an MBUC, preliminarily counts some objects or properties as physical with reference to whatever physical theories posit (see e.g. Lewis 1983; Braddon-Mitchell & Jackson 2007; Chan forthcoming b); the microphysical conception, formulated as an MBUC, preliminarily counts very small-sized microphysical entities as physical (see e.g. Pettit 1993). Of course, this means that some non-fundamental physical objects or properties will also be counted, if they are, say, microphysical or posited by physical theories, but the initial step can hardly count all presumably physical non-fundamental objects or properties as physical. For example, chairs, tables, and computers are not microphysical, nor are they posited by physical theories. Hence, these conceptions have their next step, the **bottom-upstep**, where we count every object or property that is exclusively constituted by the objects or properties counted physical in the initial step as physical.

While the MBUCs of both the physical and physicalism are popular, there is an issue as to whether they can really count all presumably physical fundamental properties as physical. Recall the scientific categorical ignorance thesis – a component of Russellian monism – according to which categorical properties are not knowable by the natural sciences. Not only do Russellian monists accept this thesis, often for reasons independent of the philosophy of mind (see e.g. Stoljar 2001a, pp. 258-259; Montero 2015, p. 217), but so do many respected physicalists such as Armstrong (1961), Jackson (1998), and Lewis (2009). In fact, this thesis is widely accepted in contemporary metaphysics, though it is accepted for different reasons. The problem, then, is that if we cannot know of categorical properties via the natural sciences, then we arguably cannot provide any meaningful characterisation of them which allows an advocate of an MBUC to count them as physical. At the very least, it seems very difficult for the advocate of the disciplinary conception to count categorical properties as physical. For the disciplinary conception appeals to what our physical theories posit, but if the scientific categorical ignorance thesis is true, it is in principle impossible for scientists to discover any categorical property (see Langton 1998, pp. 207-208; Stoljar 2001a, pp. 258-259; Montero 2010, pp. 72-73). Moreover, the advocate of the microphysical conception also has difficulties counting categorical properties as physical. For if we understand space as a mere measure of causal interactions like many physicists do, then it is unclear whether categorical properties are within space understood as such. It is also unclear whether the concepts of space and size – let alone that of small size – are applicable to categorical properties (Langton 1998, pp. 98-99).

While it is possible to count, as Foster (1993) and Langton (1998) do, every person who accepts both the existence of categorical properties and the scientific categorical ignorance thesis as a non-physicalist, this is certainly a radical move. For we should be reluctant to put the metaphysical frameworks of all the leading physicalists and Russellian physicalists mentioned above in the anti-physicalist camp if the only reason is one that is very much distant from the standard concerns of physicalism: namely, debates such as whether there are disembodied minds or whether God exists. As Stoljar remarks, ‘there seems no reason not to count [unknowable categorical properties] as physical in some sense or other’ (Stoljar 2015); and, as Montero remarks, ‘[unknowable categorical properties] are not uniquely important to the mental and so a world with them should be perfectly acceptable to a physicalist’ (Montero 2015, p. 217). Such reluctance leads theorists such as Stoljar (2001a, 2001b) and Montero (2010, 2015) to favour a more moderate, revisionarymove, which, I believe, can be understood as follows: if our conception of physicalism is mistaken because of some reason distant from the classical discussions of the doctrine, we should simply say that the *conception* is mistaken, not that the *doctrine* is mistaken. Hence, the authors argue, we should accept some alternative conceptions of the physical and physicalism, specifically those I call the TDBUCs.

The strategy of the TDBUCs does not begin with identifying as physical some fundamental constituents of the world like fundamental objects or properties. Rather, in its **initial step**, some non-fundamental objects or properties are preliminarily identified as physical. The way in which this is done by the proponents of the TDBUCs varies. For example, some count, say, ‘exemplars of non-sentient objects’ (Jackson 1998, p. 7) or ‘paradigmatic physical objects’ (Stoljar 2015) like chairs and tables as physical; while others begin with ‘the world described by physics’ (Montero 2015, p. 217). Such variation, however, is of no significance for our purposes, since it is not our aim to assess the plausibility of any TDBUC here. The next, **top-down step** is to count whatever is required in the constitution or composition of the relevant non-fundamental things – e.g. molecules, atoms, electrons, up quarks, down quarks, and strings – as physical. For example, Jackson has in mind ‘the kinds of properties and relations needed to account for the exemplars of the non-sentient’ (Jackson 1998, p. 7); Stoljar has in mind ‘the sort of property required by a complete account of the intrinsic nature of paradigmatic physical objects and their constituents’ (Stoljar 2015); Montero has in mind ‘the substance of the world – if they are, to use Stephen Hawking’s words, what “breathes fire into the equations [of any possible grand unified theory of physics] and makes a universe for them to describe”’ (Montero 2015, p. 217). The final, **bottom-up step** is to count everything that is exclusively constituted by the relevant constituents as physical.

An advantage of the TDBUCs is that these conceptions of physicalism, unlike many MBUCs, count Lewis’s, Armstrong’s, and Jackson’s metaphysical frameworks as physicalistically acceptable and are thus plausibly less radical. For the unknowable categorical properties of tables, chairs, and atoms can, under these conceptions, be counted as physical via being constituents of these physical entities. Some proponents of Russellian physicalism like Stoljar (2001a, pp. 259-260) and Montero (2010, pp. 78) argue, however, that accepting a TDBUC means that we should also count at least some versions of Russellian monism as physicalistically respectable. The reason is as follows. These versions of Russellian monism are not different from, say, Lewis’s, Armstrong’s, and Jackson’s metaphysical frameworks with regard to their commitment to the existence of the unknowable categorical properties of electrons, up quarks, down quarks, gluons, strings, and so forth, all of which are counted as physical by a TDBUC. Furthermore, these versions of Russellian monism have an element in common with Lewis’s, Armstrong’s, and Jackson’s theories of mind: according to both kinds of views, the kind of categorical property described above and the causal, dispositional, and structural properties borne by these categorical properties exclusively constitute qualia. The only difference between the two kinds of views is that the Russellian physicalist believes that categorical properties play a crucial role in the constitution of qualia, whereas traditional physicalists believe that causal, dispositional, and structural properties play such a role and so that categorical properties merely act as the bases of these properties. Put simply, the kinds of qualia posited by both kinds of views can be counted as physical by a TDBUC, for they are all exclusively constituted by the constituents of electrons, up quarks, down quarks, gluons, strings, and so forth.

This is an interesting conclusion. Physicalism provides a unified, elegant, and scientifically attractive metaphysical picture of the world, and for many philosophers this is a more than sufficient reason for rejecting non-physicalist theories of qualia. However, if the above argument for the conclusion that at least some versions of Russellian monism is physicalistically respectable is correct, then a philosopher cannot reject Russellian monism for the same reason that they reject non-physicalist theories of qualia. Let us now see if the argument is correct.

3 The dilemma of physical combination

The **combination problem** is a famous worry about most versions of Russellian monism, including Russellian physicalism. The problem concerns how the categorical properties as described by Russellian monism can ‘combine’ into and constitute our qualia. The problem has been discussed by many philosophers.[[5]](#footnote-5) However, while most philosophers seek to determine whether or not there is, ultimately, a plausible solution to the problem which is available to the Russellian *monist*, I take no official stance on this issue. The point of this paper is to argue that the Russellian *physicalist* – namely, anyone who attempts to combine Russellian monism and physicalism – in principle cannot possibly offer such a solution.

In what follows, I identity two possible general strategies for offering a solution to the combination problem, and argue that neither is available to the Russellian physicalist. The two strategies arise from the question of whether emergence is involved in the process of combination. If the answer is ‘no’, then any theory of mind we develop is rendered implausible. If the answer is ‘yes’, then any theory of mind we develop is physicalistically unacceptable – even according to a TDBUC of physicalism. If this is correct, this constitutes a dilemma for Russellian physicalism, for it follows that Russellian monism is either implausible or physicalistically unacceptable. Hence, Russellian monism and physicalism are incompatible. I call this dilemma the **dilemma of physical combination**.

**4 Combination without emergence**

Let us begin with combination without emergence. Let us begin with combination without emergence. The rough idea is this: the combined property or entity is nothing over and above the collection of the relevant lower-level properties or entities and their arrangements and relations. Different theories of such a combination are possible, which include the identity theory, the reductionist theory, the realization theory, the multiple realisability theory, and so forth. The key point is that the combination involves no emergence (the latter will be discussed in Section 5).

I believe that all proposals of combination without emergence are rendered implausible by an insufficiently discussed aspect of the combination problem. The problem is as follows. We ourselves possess very different kinds of qualia when we are in different physical states, such as reading this paper, having a meal, and so on. For example, I do not possess any purple quale at the time of writing this sentence, but I did so one day before.[[6]](#footnote-6) In addition, some altered states of consciousness – mental states during meditation and drug-induced states – are reported to be associated with peculiar kinds of qualia – namely, the kinds of qualia that are never available to us in our normal states. It is for this reason that even the panpsychist – who believes that a rock possesses qualia – would, and should, believe that the rock does not possess *our* qualia (see e.g. Chalmers 1996, p. 299), let alone the Russellian physicalist – who is not necessarily a panpsychist and is thus not obligated to believe that the rock possesses qualia (see e.g. Stoljar 2001a, pp. 271-273; Montero 2010, pp. 76-77). If we can all accept that not everything possesses the same qualia, what I call **the difference-maker problem** follows: if different entities can possess different qualia, there must be *some corresponding differences in their underlying material composition* which ground such differences; but what is it? For instance, how is our way of being composed differently from rocks, tables, apples, and so forth, enable us, but not them, to possess our qualia? Oddly enough, in the recent debate on the combination problem, even though there is no lack of speculation regarding how categorical properties can combine into larger, higher-level entities like qualia, the difference-maker problem remains insufficiently addressed.[[7]](#footnote-7)

To respond to the difference-maker problem, the advocate of combination without emergence needs an account of a difference-maker that is both philosophically and scientifically plausible. I will discuss three possible difference-makers in turn, and will show that they do not provide a comfort to the Russellian physicalist. The difference-makers are: (1) differences in categorical properties, (2) differences in behaviours of individual categorical properties, and (3) differences in collective organisations of multiple categorical properties.

*4.1 Differences in categorical properties*

The first account claims that the categorical properties possessed by things with and without particular qualia are different. This can be quickly rejected because it is straightforwardly inconsistent with the common bases thesis (see Section 1), which is the component of Russellian monism according to which entities studied by science and our qualia have the same kind(s) of categorical property as their bases. Furthermore, the account is inconsistent with what the natural sciences tell us. For if it is the case that the categorical properties of physical entities constitute qualia, then the relevant categorical properties are supposedly those of fundamental physical entities such as electrons, up quarks, down quarks, gluons, and strings. Things with and without particular qualia are not different in this respect: they all share these constituents.

*4.2 Differences in behaviours of individual categorical properties*

The Russellian physicalist may instead take some causal, dispositional, or structural properties into account, for it is possible to argue that some categorical properties, in combination with some causal, dispositional, or structural properties, constitute qualia, and that the differences between the relevant causal, dispositional, or structural properties serve as the difference-maker we are seeking. To begin with, one might question whether *individual* categorical properties of things with and without particular qualia display different behaviours and dispositions, and whether the differences in such causal behaviours and dispositions can serve as the relevant difference-maker. For instance, do the categorical properties of the electrons, up quarks, down quarks, gluons, strings, and the like in our brain behave differently, and is this what grounds the uniqueness of human qualia?

But the answer from our best sciences is, again, obviously ‘No!’. Fundamental physical entities in the human brain are not found to display any unique behaviour or physical state – namely, their motions, charges, spins, and the like are not found to be unique. Our neuroscience has taught us that our neurological functions – including our phenomenal consciousness – arise from a very high-level biological structure, which is, in turn, a very large-scale physical structure. The way these large structures operate is grounded in the very large-scale organisation of individual fundamental entities. With respect to goings-on at the most fundamental level, such as the behaviours and physical states of quarks, it is difficult to see how a brain is different from a rock, for from the perspective of microphysics they are both a bunch of random particles and nothing more. As Smart remarks, neurons are ‘ordinary matter’ in the sense that the studies relevant to understanding them are the studies of cytological structure, chemistry, and electricity; the study of any lower-level is thus irrelevant (Smart 1978, pp. 399-340; see also Stenger 1995; Hohwy 2005; Edelman & Tononi 2001).

In response, one may reasonably ask: what can be said of the quantum theories of consciousness? While these theories receive little attention from mainstream neuroscientists, they have indeed attracted some serious followers (see e.g. Penrose 1989; Seager 1995; Fisher 2015). My very brief response is this. As the physicist Stenger (1995) points out, it is one thing to say that some quantum effects are utilised in the operation of our brain, and another to say that there is some *sui generis* quantum phenomenon in our brain. When we read them carefully, we can see that the seminal quantum theories of consciousness in the scientific literature, such as the physicist Penrose’s (1989) theory of orchestrated objective reduction and the physicist Fisher’s (2015) theory of quantum entangled phosphates, are largely of the former kind, and thus a scientifically plausible theory of the latter kind is still lacking. In sum, we can conclude that the causal behaviours and dispositions of individual categorical properties cannot be the difference-makers we are seeking.

*4.3 Differences in collective organisations of multiple categorical properties.*

We are left with one possible response to the difference-maker problem: some large collection of categorical properties and the way they are organised in a high-level, large-scale structure constitutes our qualia, and the differences in collective organisations of these categorical properties ground the variety of qualia. Call this the **organisation response**. As mentioned above, our natural sciences indeed inform us that our composition involves a unique kind of neurological structure. Furthermore, our neurological functioning, which involves the operations of different parts and task networks of the brain, indeed exhibits a sufficient variety that could at least quantitativelymatch the variety of the known human qualia. With this in mind, the organisation response is not obviously inconsistent with the natural sciences like the other responses are, and is deserving of a more in-depth assessment. Nevertheless, hereI will propose an argument showing that this response fails as well, for the reason that it is explanatorily inadequate under the Russellian framework. More specifically, the argument shows that the response inevitably fails to do justice to the intuitions that initially motivate Russellian physicalism, and without these intuitions, Russellian physicalism fails to be a plausible theory.

To begin with, Russellian physicalists go beyond classical physicalism – which appeals only to causal, dispositional, and structural properties in its explanations of qualia – in order to account for our intuitive, phenomenological understanding of qualia, many of which are spelled out by the standard qualia arguments (e.g. Jackson 1982; Levine 1983; Chalmers 1996). While one might hold instead a deflationist or revisionist concept of qualia which rejects such intuitions, and so under such a conception Russellian physicalism would be a very implausible theory choice. For without the relevant intuitions that resist classical physicalist explanations of qualia, the qualia problem would be nothing but a scientific, empirical question. In other words, qualia would be nothing but some cognitive phenomenon that is susceptible to ordinary scientific exploration. Surely, even in this case, the nature of qualia has not been fully explained by science, but nor have typhoons, planets, bacteria, our organs, and so on. Obviously enough, we should just patiently expect that advances in the natural science will eventually uncover the hidden features of all these things, rather than accepting some mysterianism or non-standard physicalism about them (for further discussion, see Churchland 1996; Edelman & Tononi 2001; Hohwy & Frith 2004; Chan & Latham 2019).

The problem, then, is whether the relevant intuitions are compatible with the organisation response. It would be difficult to spell out these intuitions and the relevant qualia arguments here one-by-one. Fortunately though, Chalmers (2010) and Levine (1983, 2001) have discovered, I think rightly, the single intuition that grounds most (if not all) of the others: what may be called a **Leibnizian gap intuition**.[[8]](#footnote-8) The intuition relates to what Chalmers (1996, p. 118) calls ‘structures and dynamics’ such as the spatiotemporal arrangements and causal networks of physical particles or neurons. According to this intuition, qualia have some non-structural and non-dynamic aspects, namely the way each of them feels or the ‘what-is-it-likeness’ of each of them. The problem for classical physicalism is this: there is a very strong intuitive pull that structures and dynamics can only ground structures and dynamics. If this is correct, then neurological structures and dynamics cannot ground qualia.[[9]](#footnote-9)

The Leibnizian gap intuition plays a central role in Chalmers’s and Levine’s philosophy. For in their view most of the other major qualia arguments – e.g. the zombie argument, the inverted spectrum argument, and the knowledge argument – start by establishing this intuition (see Chalmers 2010; Levine 2001).[[10]](#footnote-10) For example, it is the non-structural and non-dynamic aspect of a red quale that Mary cannot grasp in her black and white room, and it is the impossibility of deducing knowledge of the non-structural and non-dynamic from scientific knowledge – namely, knowledge of structures and dynamics – that grounds the conceivability of zombies and the inverted spectrum. Plausibly, the Leibnizian gap implies that such conceivabilities cannot possibly be defeated by better knowledge of the physical. The Leibnizian gap is also an important reason why some find Russellian monism to be more attractive than its classical physicalist and dualist alternatives. We are assuming that qualia have some non-structural and non-dynamic aspects, and that categorical properties are also non-structural and non-dynamic. Hence, it is natural to think that the latter play a part in constituting the former (see e.g. Russell 1927; Goff 2017).

So far, so good; but let us get back to our discussion of the organisation response. According to the response, the variation between different kinds of qualia – say, a purple quale, a sweet quale, and the rock’s qualia (or its lack of them) – is due to organisational variation, which is presumably a structural and dynamic variation. But what follows immediately is a problem which needs further clarification. According to our everyday phenomenal experiences, when we experience the phenomenality of a quale, the distinctive features of each kind of quale (at least partially) consist of the unique way the quale feels, namely the distinctive ‘what-is-it-likeness’ of it. Furthermore, that unique, distinctive ‘what-is-it-likeness’ is experienced as a non-structural and non-dynamic feature.[[11]](#footnote-11) With this in mind, under the organisation response, we have a variety of neurological structures and dynamics on the one hand, and a variety of distinctive ‘what-is-it-likeness’ on the other hand, with the former serving as the difference-maker of the latter. While the former might indeed correlate to the latter in some scientifically interesting way, how could the former *ontologically ground* the latter? Here again, it at least appears, prima facie, that we are facing a certain explanatory mismatch which traces back to the Leibnizian gap. A more fine-grained picture is needed.

The natural solution of the Russellian physicalist is, presumably, that the variation in distinctive ‘what-is-it-likeness’ is actually generated by the variation between the combinations of categorical properties *within* different neurological structures or dynamical systems, not merely by the variation between those structures or systems themselves. This is especially so given that there is recent excellent work on phenomenal bonding (see e.g. Roelofs 2014; Goff 2017). Nonetheless, the ‘combinations in systems’ phrase, though commonly employed in the recent Russellian monism literature, is a vague one which requires a more careful articulation. One important question in need of resolving is the following: is the suggested combination one in which the categorical properties *fuse* into ontologically novel ones, or are the properties merely *arranged* in certain ways in which particular collective arrangements of categorical properties count as new, distinct categorical properties? Positing the former possibility unavoidably collapses into emergentism of some kind, for the formation of ontologically novel properties via fusion is by definition a kind of emergence. This is thus automatically a rejection of combination without emergence and will be discussed further in the next section. Here I focus on the latter possibility.

Suppose that we have three fundamental categorical properties *x*, *y*, and *z*. According to the version of the organisation response in question, arrangements like [*x*, *y*, *z*], [*y*, *x*, *z*], [*z*, *z*] can be considered as categorical properties different from *x*, *y*, and *z*. Moreover, these complex categorical properties can combine into some further complex categorical properties like [[*x*, *y*, *z*], [*y*, *x*, *z*], … , [*z*, *z*]] and [[*z*, *z*], [*z*, *z*], … , [*x*, *y*, *z*]]. There is thereby a huge variety of categorical properties, some of which turn out to be qualia, human or not human – whereas some others may fail to be qualia for some yet to be discovered reason.

Unfortunately, though, the explanatory mismatch in question remains as acute as before. Consider two famous quotes about our phenomenology from Chalmers and Hume:

[T]here are patterns of similarities and differences between conscious states. But this structure is a *distinctively phenomenal* structure, quite different in kind from the spatiotemporal and formal structure present in physics. The structure of a complex phenomenal state is *not spatiotemporal structure* (although it may involve the representation of spatiotemporal structure), and *the similarities and differences between phenomenal states are not formal similarities and differences*, but differences between specific phenomenal characters. (Chalmers 2010, p. 122; italics added)

Blue and green are different simple ideas, but are more resembling than blue and scarlet; tho *their* *perfect simplicity excludes all possibility of separation or distinction*. ‘Tis the same case with particular sounds, and tastes and smells. These admit of infinite resemblances upon the general appearance and comparison, without having any common circumstance the same. […] These resemble each other in their simplicity. And yet *from their very nature, which excludes all composition, this circumstance, In which they resemble, Is not distinguishable nor separable from the rest*. (Hume 1739/1978, p. 637; italics added)

According to our phenomenological point of view as highlighted by Chalmers and Hume, the variation between, say, red and white qualia – in comparison with that between red and purple qualia, let alone that between red and tactile qualia – is a primitive and irreducible one; it is not about variations in structures or arrangements. Put differently, we experience each basic quale as distinctively qualitative in some irreducible sense, rather than as different arrangements of the very same materials. For instance, a red quale is not a rearrangement or recombination of a white quale, nor vice versa; they are *irreducibly distinct qualities* to begin with. The problem with the organisation response is as follows. As discussed in Section 4.1, our best natural sciences imply that all known qualia share the same set of fundamental categorical properties. The organisation response multiplies the variety of categorical properties *in quantity* merely by allowing differently arranged collections of categorical properties to be counted as new, distinct properties, but then the resulted categorical properties exhibit only structural variation, not the essentially *qualitative* variation required by our phenomenology.

What has been said here is compatible with our introspective inaccessibly to the underlying material composition of our own mental properties. Specifically, the idea is that many mental properties may appear ontologically fundamental to us, when in fact we simply have no access to their constituents. One might thereby argue that the variation between basic qualia is not really primitive and irreducible to variations in constitution. Nonetheless, once we recognise that the variation between basic qualia is essentially qualitative in nature, then whatever qualities that constitute one of them cannot exhaust the constitution of another. For what is required are some qualitatively different materials, not mere rearrangement, regardless of whether the rearrangements count as different categorical properties or not.

One might think of the analogy of colour mixing, and thereby argue that some qualia are more basic and that the other qualia are composed of the basic qualia (Roelofs 2014). For example, purple qualia might be composed of red and blue qualia, and different purple qualia might be composed of different proportions of red and blue qualia. Hence, one might argue, contra Chalmers and Hume, that the variation between qualia involves rearrangements and is, in addition, not entirely non-structural – if such mixing could count as structural. This view is of course controversial; and for our present context, more work needs to be done to show that it can avoid emergentism. In any case, more importantly, it provides no support to the much more radical view required for fixing the explanatory mismatch, namely that *all* *basic* colour qualia are rearrangements of each other. What is more, it remains unintelligible how qualia of different modes of sensory perception, such as a colour quale and a tactile quale, could ever be rearrangements of each other. For we not only experience them as distinct qualities, but also as qualities of distinct kinds.

I will now discuss two further possible responses in turn. While both are attractive, I will show that they cannot proceed without abandoning the key motivations for Russellian physicalism. If we abandon these motivations, however, Russellian physicalism becomes groundless and thus implausible. The first possible response is illusionism of some kind. Specifically, one may take our intuitive, everyday phenomenal experiences as illusionary and thereby disqualify the variation between qualia as being essentially qualitative; the explanatory mismatch concerned is thus effectively eliminated. Despite the fact that illusionism has recently gained a popularity among classical physicalists, this strategy is problematic for the Russellian physicalist. Recall that it is the Russellian physicalist’s non-negotiable commitment to a strong realism about our everyday phenomenal experiences that initially drove her to account for them in terms of Russellian monism. If illusionism were accepted and the credibility of such intuitive phenomenal experiences were denied, the Russellian physicalist would lose her motivation to consider the qualia problem as not falling within the scope of ordinary natural sciences and thus the motivation to go beyond classical physicalism. As mentioned above, we should just patiently expect advances in the natural sciences to do the job of accounting for qualia; Russellian physicalism is thus an implausible theory choice.

The second possible response is that structures and dynamics, other than providing the basis for the arrangements of qualities, could in themselves contribute to the generation of qualities and thereby to the generation of qualitative variation. But this response betrays the underlying principle of the Leibnizian gap according to which structures and dynamics can *only* ground structures and dynamics. If the principle were rejected, then the basis of Russellian monism would be significantly weakened, for there is then no reason why we should assume that neurological structures and dynamics cannot *fully* ground the ‘what-is-it-likeness’ of qualia, even if the latter is non-structural and non-dynamic. This thus leaves no explanatory role(s) for categorical properties, nor for Russellian monism.

We have now seen the failure to respond to the difference-maker problem by the different proposals of combination without emergence. In particular, I have shown that the organisation response is the only response that is not inconsistent with the natural sciences, but that committing oneself to the organisation response will either be rendered implausible by the Leibnizian gap, or lead to some self-defeating consequences. This renders combination without emergence implausible.

**5 Combination by emergence**

Let us move to the second horn of the dilemma of physical combination, namely combination by emergence. The idea is this: whenever there is an appropriate physical structure, a ‘novel’ property or entity that is not merely a sum of lower-level properties or entities (and their relations) will be brought into existence. Emergentism is thus compatible with Russellian monism in the sense that the lower-level properties or entities required to act as the emergence bases may include the categorical properties of fundamental physical entities.

Appealing to emergence is an easy solution to the difference-maker problem, for it holds that qualia are emergent properties or entities, and thus the difference-maker we are looking for is the variation in emergence that happens when, say, our categorical properties are organised in different suitable ways. In light of this, the problem that bedevils combination without emergence, namely that the base properties of qualia lack any variation that can adequately ground qualitative variation, naturally dissolves. For it is the emergence but not the base properties that does the job. Taking this into account, even though it is unclear whether or not combination by emergence can ultimately solve the combination problem – after all, all versions of ontological emergentism are controversial – it is at least not as hopeless as combination without emergence. Indeed, a number of philosophers take it to be a promising solution (see e.g. Van Cleve 1990; Rosenberg 2015; Goff 2017).

However, recall that we are not concerned with whether the combination problem can be solved by the Russellian monist, but with whether combination by emergence is physicalistically acceptable. Unfortunately, the answer is ‘No!’. In what follows, I will first present an argument showing that the standard account of ontological emergence is physicalistically unacceptable. Then I will show that the more recent discussion of ontological emergence is not helpful in granting it physicalistic acceptability.

As Van Cleve (1990), Braddon-Mitchell (2007), and Broad (1925) argue, emergence cannot take place merely by the aggregate of the nature and behaviours of the emergence bases and the laws of nature that govern them. This is because we can conceive of some possible worlds in which the aggregate of the emergence bases exists but the emergence does not take place. Therefore, there must be something additional that can ground the emergence. For our purposes here, we can follow Van Cleve, Braddon-Mitchell, and Broad and assume that the additional things are some special laws of nature (or their lawmakers) that are, despite being high-level, also ontologically fundamental and irreducible in nature: e.g. fundamental chemical laws, fundamental biological laws, or fundamental mental laws.

Returning to the issue of Russellian physicalism and combination by emergence, the existence of any fundamental high-level law that concerns qualia – which would be some fundamental mental law: e.g. a law of phenomenal bonding – is incompatible with both the MBUCs and the TDBUCs of physicalism, the latter of which are espoused by some Russellian physicalists. Let me explain. First of all, as far as I am concerned, none of the existing conceptions of physicalism – including the MBUCs and the TDBUCs – preliminarily identifies fundamental mental laws as physical in its initial step, and hence the question is whether fundamental mental laws could be counted as physical in the subsequent steps of some of these conceptions. In the case of the MBUCs, the only subsequent step is the bottom-up step. Since fundamental mental laws are ontologically fundamental, it is abundantly clear that they cannot be constituted by the physical properties or entities identified in the initial step. On the other hand, even though the TDBUCs have an additional top-down step, emergentism about qualia fares no better under this family of conceptions. For when we consider the physical properties or entities identified by the initial step of these conceptions – e.g. chairs, tables, and atoms – it is clear that fundamental mental laws play no role in the constitution or composition of these things. And finally, the bottom-up step of the TDBUCs, like that of MBUCs, of course cannot count fundamental mental laws as physical, and for the same reason.[[12]](#footnote-12)

There is a special version of emergence that is worthy of an in-depth discussion. Seager (2010, 2017) recently proposed the idea of ‘infusion’, which is a weaker version of emergence that he uses to replace the stronger, mainstream version of emergence which requires fundamental high-level laws. In his view, there are entities in contemporary natural sciences that ‘“absorb” or supersede’ their constituents (Seager 2010, p. 179). While they are ‘novel’ entities which are not mere sums of their constituents, fundamental high-level laws are not required in their formation. For the way in which they are formed, and thus their nature, follows from – and is often predictable from – the nature of the relevant constituents. Seager provides the example of a black hole:

A black hole forms something like a fundamental particle. The physical entities that form a black hole can be said to fuse into a new entity which cannot be understood as a relational structure of its precursor entities. They have gone out of existence. The new system retains certain physical properties even as it throws away the particular characteristics of the precursor entities. (Seager 2017, p. 239)

While Seager is a panpsychist, and thus probably not a Russellian physicalist, he speculates that qualia might also be due to infusion. The problem for us, then, is this: since the idea of infusion can avoid positing fundamental high-level laws, can it rescue combination by emergence from my above line of criticism?

There is no doubt that Seager’s interpretation of the physics of the black hole is controversial and contestable, but even taking for granted that it is correct, I do not think that infusion is of any use to the Russellian physicalist. The problem is that from the perspective of the natural sciences the particles and neurons in our brain simply do not infuse! As noted in Section 4.2, the natural sciences have informed us that our brains, in terms of their structural and dispositional nature, are just the mere sums of their constituents; such constituents do not behave differently from their counterparts outside of our brains. Hence, in terms of structural and dispositional properties, the black hole analogy simply does not apply. Were there infused qualia, they must be the results of some kind of infusion outside of the scope of the natural sciences. Following our discussion, such a kind of epiphenomenal infusion would presumably be some mere infusion of categorical properties (for a similar view, see Goff 2017).

Let us grant the following assumptions: maybe the relevant categorical properties are connected together in some mysterious epiphenomenal way and jointly transmute and infuse into qualia, while their spatiotemporal structures and causal behavioural patterns remain unchanged. But for such mysterious qualitative transmutations and infusions to happen, the categorical properties of fundamental physical entities must have some mysterious potencies to jointly infuse into qualia when arranged brainwise; and such potencies are presumably very different from and independent of the ordinary, scientifically accessible kind of disposition which is by and large causal-behavioural. Even if Seager is right that such mysterious qualia-related potencies are intrinsic to the nature of the relevant categorical properties rather than being grounded in fundamental high-level laws, they fare no differently from fundamental high-level laws, for they cannot count as physical via the top-down and bottom-up steps of both the MBUCs and the TDBUCs. Thus, my reasons against counting fundamental high-level laws as physical apply equally to these potencies: they play no role in the constitution or composition of anything preliminarily identified as physical, nor are they constituted by other physical things.

In response, one may argue that the qualia-related potencies may be counted as physical via being part of the nature of something preliminarily counted as physical. For example, one may say that quarks with qualia-related potencies play a role in the constitution or composition of some physical entities and can thus be counted as physical, and that qualia-related potencies, being part of the nature of such quarks, can thereby be counted as physical – for a physical entity cannot really have a non-physical nature. However, this response is problematic, for instead of appealing to the virtues of the top-down step of the TDBUCs, it appeals to a loophole which must be closed. For in this case, the qualia-related potencies, unlike categorical properties, are a fairly random addition to quarks; and if this sort of addition is really allowed, then the resulting conception of the physical seems excessively liberal. For example, if panpsychism, pantheism, or Berkeleyan idealism turn out to be true, then we should allow quarks with a mental or divine nature, as described by the relevant theories, to be counted as physical; and if some magical or New Age theories turn out to be true, then we should allow quarks with dispositions or potencies to respond to a sorcerer’s or a psychic’s spells to be counted as physical. For most physicalists and non-physicalists, allowing any of these eccentric additions means that physicalism would turn out to be true in many circumstances where it is supposed to be false.

This worry is in fact recognised by some important proponents (see e.g. Jackson 1998, p. 7; Stoljar 2001a, p. 257n10) and critics (see e.g. Langton & Robichaud 2010, p. 175; Braddon-Mitchell & Jackson 2007) of the TDBUCs. Stoljar, for example, makes it clear that one might have to add constraints to the conception in order to overcome this weakness – though he leaves open what the correct constraint is (Stoljar 2001, p. 257n10). Hence, we should understand the core idea of the TDBUCs as one that is only supposed to capture part of, not all of, the nature of physicalism; not all random additions to the nature of preliminarily accepted physical entities should be allowed. But what should be that additional constraint? This is a difficult question for the project of developing a TDBUC, and it is not clear if a satisfactory solution is available. It is of course not my purpose here to defend or develop this project; the burden of solving the problem should be left to the proponents of the TDBUCs. However, I have shown that the idea that quarks with qualia-related potencies can be counted as physical appeals to the loophole of the TDBUCs which leads to the problem of excessive liberty. If the loophole were to be closed, the resulting versions of the TDBUCs should exclude quarks with qualia-related potencies, together with quarks with other random, eccentric additions.

Finally, it is important to note that my criticisms of combination by emergence do not assume a widespread mistaken belief according to which emergentism is essentially incompatible with physicalism. Hence, my criticisms cannot be challenged by appealing to the compatibility between physicalism and emergentism, or by pointing out the existence of some emergent physical phenomena.[[13]](#footnote-13) The idea is as follows. In the case of both the MBUCs and the TDBUCs, while the kind of exclusive constitution required by their bottom-up step does not include emergence, the default physical properties or entities preliminarily identified by both kinds of conceptions may already consist of some emergent properties or entities (Pettit 1993, p. 215). For example, many conceptions of physicalism would, in their initial steps, preliminarily count quantum phenomena as physical, but some empirical scientific discoveries support the view that some quantum phenomena like quantum entanglement are emergent phenomena (Ney 2008; Rosenberg 2015; Chan 2018). Hence, the relevant emergent properties and entities should count as physical; physical emergence is possible. Emergent properties and entities cannot count as physical only when they are not preliminarily identified as physical or only when they are not identified as physical in the top-down step of the TDBUCs. For as we have already seen, emergent qualia are an example in which this takes place.

In sum, combination by emergence appears to be an attractive solution to the combination problem and the difference-maker problem. However, we have assessed various possible versions of this solution and discovered that it is, unavoidably, physicalistically unacceptable and therefore incompatible with Russellian physicalism.

6 Final thoughts

The dilemma of physical combination for the Russellian physicalist should now be clear. She may explain combination with or without emergence. Combination without emergence is implausible because it is unable to solve the difference-maker problem – this is an insufficiently discussed aspect of the combination problem. Hence, the Russellian physicalist must make use of emergence if she intends her view to be plausible. However, emergentism about qualia cannot be physicalistically respectable, according to both an MBUC and a TDBUC of physicalism. Hence, Russellian monism is either physicalistically unacceptable or it is implausible.

Throughout this paper I have been focusing on the MBUCs and the TDBUCs of physicalism, but my argument generalises to all other reasonable formulations of physicalism. On the one hand, combination without emergence is implausible and this has nothing to do with particular formulations of physicalism. On the other hand, physicalism is ultimately a kind of uniformity thesis. No matter how we characterise it, all physicalists would, and should, agree that things inside and outside the domain of the mind share the same kind(s) of basis and are governed by the same fundamental laws of nature.[[14]](#footnote-14) However, the existence of emergent qualia inevitably gets us beyond the inter-domain uniformity described above.

Some supporters of Russellian physicalism such as Stoljar (2001a, p. 275), Alter and Nagasawa (2012, pp. 90-92), and Montero (2015, pp. 221-222) merely aim at putting forward Russellian physicalism as a useful abstract framework, and they believe that they are, at this stage, not obligated to offer precise, technical details of how qualia are structured and constituted – for example, they believe that they are not obligated to offer precisely how the combination problem is to be solved. Perhaps they are right. After all, no one knows such details perfectly; the inability to fill in such a lacuna is a problem for everyone, classical physicalists, dualists, and panpsychists alike. However, if my argument in this paper is correct, in the process of filling in the lacuna, the Russellian monist will inevitably commit herself to non-physicalism. This is a problem specific to the Russellian physicalist, not everyone’s problem. And it is not simply a problem that can be fixed by future yet-to-be-discovered technical details. If I am right then any set of such details must *in principle* be incomplete or problematic for the Russellian physicalist.

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1. Some philosophers use the term ‘intrinsic properties’ here instead. But this terminological difference does not affect the substance of Russellian monism nor the argument I will put forward. [↑](#footnote-ref-1)
2. See also Chalmers (2015) and Maxwell (1978) for brief discussions. [↑](#footnote-ref-2)
3. Note that I am saying that *existing* conceptions of physicalism and the physical can be divided into the two families according to their strategies, not that any idea that shares one of the two strategies automatically counts as a conception of physicalism. A related distinction is found in Stoljar 2001a, 2001b, in which he distinguishes between a ‘theory-based conception’ and an ‘object-based conception’. The two families of conceptions I identify are, however, much more inclusive than the two conceptions Stoljar identifies. [↑](#footnote-ref-3)
4. This is a variant of Copp’s (2012, p. 28) term, ‘the disciplinary characterisation’. [↑](#footnote-ref-4)
5. For a seminal formulation of the problem, see James (1890/1918). For recent formulations, see Hohwy (2005); Goff (2006); Chalmers (2017). [↑](#footnote-ref-5)
6. Of course, a quale cannot literally be purple. By a purple quale, I mean a quale of sensing purple. [↑](#footnote-ref-6)
7. For a different but related problem, see Chalmers (2017). Chalmers classifies several versions of the combination problem, one of which is the palette problem, namely the problem of how our wide variety of qualia can be generated using relatively few constituents. While the difference-maker problem is related to the palette problem and may even be considered a version of it, the two problems are not identical. The palette problem, just like the combination problem, is wide-ranging and does not particularly concern differences in underlying material composition, even though a comprehensive solution to the palette problem should consist of a solution to the difference-maker problem. For example, Roelofs (2014) discusses the palette problem of, say, how a blue quale and a red quale can be ‘mixed’ into a purple quale. This kind of palette problem is not directly relevant to our discussion here. [↑](#footnote-ref-7)
8. See Leibniz 1714/1989, sect. 17. For similar or related views, see also Alter 2009, 2016; cf. Block 1995; Tse 2019. [↑](#footnote-ref-8)
9. There are at least two ways to understand the idea of the Leibnizian gap. Levine's (1983, 2001) concerns an epistemic, explanatory gap between qualia and the physical, whereas Chalmers's (1996, 2010) concerns a metaphysical, constitutional gap between the two. According to the idea of the epistemic, explanatory gap, we cannot possibly know how structures and dynamics can constitute qualia; according to the idea of the metaphysical, constitutional gap, structures and dynamics cannot possibly constitute qualia. These ideas are closely related and may support each other – for example, Chalmers uses the former to support the latter – but they are nonetheless different. In what follows, I will focus on the idea of a metaphysical, constitutional gap, since this is the gap that really counts against classical physicalism. [↑](#footnote-ref-9)
10. See also Alter 2009, 2016. [↑](#footnote-ref-10)
11. It is debatable whether there are some common, universally shared phenomenal features, such as some phenomenal subjectivity or ‘for-me-ness’, among the variety of ‘what-is-it-likeness’ (see, e.g. Block 1995; Kriegel 2007; but see Liang 2015; Chadha 2018). However, my argument still proceeds as long as there are some distinctive phenomenal features to be found in each kind of quale. [↑](#footnote-ref-11)
12. Alter and Nagasawa (2012) offer a similar argument for the conclusion that Russellian emergentism is not theoretically virtuous. However, their argument should not be taken to be identical to mine: it is one thing to say that Russellian emergentism is physicalistically unacceptable and another to say that it is not theoretically virtuous. [↑](#footnote-ref-12)
13. Seager (2010, 2017) and Rosenberg (2015) attempt to show that the emergence of qualia is much less idiosyncratic than many believe by appealing to the (alleged) existence of some emergent physical phenomena. [↑](#footnote-ref-13)
14. For a related discussion, see Braddon-Mitchell & Jackson (2007). [↑](#footnote-ref-14)