

Russell's scientific realism

by Michael Bradie

Introduction

The entry on “realism” in Baldwin’s *Dictionary* notes that the term has two significant but distinct meanings in philosophy. In the older sense, it is a “logical-metaphysical” theory about the nature of universals and their relation to particulars. In the more modern sense, it is an “epistemological-metaphysical” theory which holds that “reality exists apart from its presentation to, or conception by, consciousness.” Russell was a realist in both these senses. In this paper, I focus, for the most part, on the development of Russell’s realism in the second sense from 1910 to 1915.

After abandoning idealism in 1901, Russell became, and professed to remain, a realist. But a consistent picture of what he took realism to entail is not easy to come by. Part of the problem is that Russell used the term “realism” in several different senses throughout the period of interest. In *Our Knowledge of the External World*, we can discern at least four distinct notions of “real”. In the following, I examine what Russell has to say about the concept of reality and its correlate “existence” especially with regard to the question of determining the respective ontological status of sense-data and physical objects. It is sometimes suggested that Russell abandoned realism, at least with respect to physical objects, during his constructivist phase. I think this is a mistake based on a failure to appreciate the multidimensionality of Russell’s view of “realism”. I do not, however, pretend that what I have to say here is the final word. It is, at best, a good beginning.

I shall proceed by examining, in order of publication, five key works by Russell during the period: “Knowledge by Acquaintance and Knowledge by Description”, *The Problems of Philosophy*, *Our Knowledge*, “The Relation of Sense-Data to Physics”, and “The Ultimate Constituents of Matter”. The primary object is to try to tease out Russell’s position vis-à-vis scientific realism, which I here take to be, minimally, the view that the theoretical entities of well-confirmed theories exist and are real.

1. "Knowledge by Acquaintance and Knowledge by Description" (1910)¹

Russell's main concern in "Knowledge by Acquaintance" is to elucidate the distinction between knowledge by acquaintance and knowledge by description. Two points are of special interest for understanding Russell's realism. One is the place of physical objects and, ultimately, theoretical entities in this framework. The other is Russell's treatment of "existence".

In "Knowledge by Acquaintance", Russell holds that we are acquainted with both particulars and universals. Among the particulars with which we are acquainted, Russell includes sense-data. Among the universals with which we are acquainted, Russell includes relations and concepts (p. 206).

Russell holds we are not acquainted with either physical objects or other minds. These we know, if at all, only by description. It follows that, from an epistemological point of view, sense-data and physical objects do not enjoy the same status. Moreover, sense-data are, in a certain sense, more basic than physical objects. Whether both can be said to exist in the same sense is not explicitly addressed in "Knowledge by Acquaintance".

Concerning existence, Russell says we are "aware" of particulars, and "among particulars I include all existents, and all complexes of which one or more constituents are existents, such as this-before-that, this-above-that, the-yellowness-of-this" (p. 206). Thus all existents are particulars. Hence, universals do not exist. The context suggests that sense-data are among the class of existent particulars. What about physical objects? "The author of *Waverley*" has a denotation. What it denotes is a common-sense physical object. Hence, common-sense physical objects are existent particulars. As far as I can see, there is no indication in "Knowledge by Acquaintance" that physical objects and sense-data do not exist in the same sense. What that sense is, is not so easy to determine, but one passage suggests that "X exists" means "X is actual" (p. 210).

2. The Problems of Philosophy (1912)²

In *The Problems of Philosophy*, we find, first, a fuller discussion of the nature of existence. Furthermore, there is some attempt to deal with the ontological status of universals. Universals are real, but they do not exist. They only subsist, but what exists and what subsists are both real. Second, Russell develops a causal theory of perception which he subsequently abandoned in his "constructivist" phase, only to return to it after abandoning the notion of sense-data. Third, Russell explicitly distinguishes between sensations and sense-data. However, once having made the distinction, he does not consistently adhere to it.

In the *Problems*, Russell is concerned with the nature of the external world and our knowledge of it. These problems have been posed for us by idealism which holds, (1) that the only objects we can be aware of are our own ideas, and (2) that whatever is real is either an idea or a mind. To combat this, Russell first distinguishes between sensations, which are our experiences of sense-data, and the sense-

data themselves. He then argues that when we doubt the physical existence of an object such as a table, "we are not doubting the existence of the sense-data which made us think there was a table" (p. 17). It is not clear whether Russell intends there to be an ontological difference between the way in which physical objects exist and the way sense-data exist. There is clearly an epistemological distinction in so far as we can doubt that physical objects exist but cannot doubt the existence of the sense-data which leads us to think that some physical object exists.

Russell's Cartesian doubting leads him to a confrontation with solipsism, which he admits to be irrefutable. He says: "In one sense it must be admitted that we can never prove the existence of things other than ourselves and our experiences" (p. 22). Although Russell thinks that solipsism is consistent and capable of accounting for all of our experiences, he thinks there is a simpler hypothesis, namely, "the common-sense hypothesis that there really are objects independent of us, whose actions on us cause our sensations" (p. 23).

There are several interesting features in these passages. First, there is a clear commitment to a causal theory of perception. Second, there is evidence of Russell's tendency to conflate sensations and sense-data despite his carefully drawn distinction between them eleven pages earlier. On p. 17, Russell holds that when we doubt the physical existence of objects such as tables, we are not doubting the existence of the sense-data which suggest that there is a table. Here, however, Russell says that we can never prove the "existence of things other than ourselves and our experiences." These experiences are sensations and not sense-data. Are those objects which are "other than ourselves and our experiences" physical objects or sense-data? He goes on to say:

Since this belief [that there are objects corresponding to and causing our sense-data] does not lead to any difficulties, but on the contrary tends to simplify and schematize our account of our experiences ... we may ... admit ... that the external world does really exist, and is not wholly dependent for its existence upon our continuing to perceive it. (P. 24)

There are two points to consider. First, notice that Russell here talks about objects causing our sense-data, whereas on p. 23 they cause our sensations. Secondly, Russell does not bother to disentangle the sense in which objects "correspond" to sense-data from the sense in which they cause sense-data. This may be a reflection of the imminent move to abandon the causal theory of perception. However, other passages indicate clearly that, in the *Problems* at least, Russell is committed to the causal theory of perception. On p. 28, he says, "When it is said that light is waves, what is really meant is that waves are the physical cause of our sensations of light" (p. 28). Then he goes on to say, "physical objects cannot be quite like our sense-data, but may be regarded as causing our sensations" [!] (p. 30).

What emerges from this is that colours, sounds, and perceptual space are absent from the "scientific world of matter" (p. 29). But this point is ambiguous because of the unclarity of the sensation/sense-data distinction. Are we to understand that sensations of colour, etc., are absent from "the scientific world of matter" or that the sense-data are absent? Perhaps at this point, Russell intends that both are absent, but, if so, we must bear in mind that later, in "The Relation of Sense-Data to Physics", the sense-data are part of the physical world.

¹ "Knowledge by Acquaintance and Knowledge by Description", in *Mysticism and Logic* (Garden City, N.Y.: Doubleday, Anchor, 1957).

² *The Problems of Philosophy* (New York: Oxford U.P., 1959).

Concerning our knowledge of physical objects, Russell here posits an early version of the structuralist view he developed in great detail in *The Analysis of Matter*. Of the “intrinsic” nature of physical objects (and presumably theoretical entities), we can know nothing. At best our sensations or sense-data can inform us that some differences may exist in the physical objects we experience, but since we are unacquainted with these differences (we are acquainted only with their effects) we cannot really know them. For example, if we see two cubes, one of which appears blue to us and one of which appears red, we can infer, at best, that there is some structural difference in the two cubes. In particular, we have no justification for thinking that the physical cubes themselves are coloured. Such an assumption, Russell feels, would be gratuitous. From this rather mild claim, Russell jumps, without further ado, to the much stronger claim that “even if physical objects do have an independent existence, they *must* [my emphasis] differ very widely from sense-data” (p. 37). Given this, perhaps we are entitled to infer that physical objects exist in some different manner from sense-data.

Finally, Russell suggests that it is only things which are in time that can properly be said to exist. It is on this ground that he denies that universals exist. We cannot point to some time at which they exist, as we can, for example, point to our pains, our thoughts, and physical objects such as the blue cube. Universals, Russell holds, are timeless. They have being, but do not exist in time; they subsist. However, universals are real since both “the world of existence” and the “world of being” are real (p. 100). By the time we get to “The Relation of Sense-Data to Physics”, Russell equated “is real” with “exists”, so the status of universals must have changed accordingly.

3. Our Knowledge of the External World (1914)³

In *Our Knowledge*, Russell begins the move towards his constructivist phase and his flirtation with logical atomism. He still considers himself a realist and maintains a causal theory of perception, insisting that “the inferences from perceptions to physical facts always depends upon causal laws ...” (p. 99). In *Our Knowledge* we find, either explicitly or implicitly, four views on the nature of the real.

- R1. X is real iff X is an element of the basic inventory of the world.
- R2. X is real iff X is not illusory.
- R3. X is real iff X is the ground or cause of our connected sense-experiences.
- R4. X is real iff X is not ideal.

Before discussing these options, I remind you that in *Our Knowledge* Russell develops his perspectival view of physical objects. In this view, physical objects are construed as classes of “aspects” which appear to an observer from a particular place. In short, physical objects are complicated “logical constructions”. These objects are taken to include the theoretical entities of scientific theories as the following passage (added in 1928) attests:

Since 1925 ... under the influence of De Broglie, Heisenberg, and Schrödinger, physicists

have been led to dissolve the atom into systems of wave-motions, or radiations coming from the place where the atom was supposed to be. This change has brought physics much nearer to psychology, since the supposed permanent material units are now merely [sic] logical constructions. (P. 83)

Atoms and presumably other theoretical entities as well are to be construed as logical constructions. Are they, then, real? Yes or no, depending on which analysis of “real” one focuses on.

Let us turn to an examination of each of the alternative characterizations of “ X is real.”

R1: X is real iff X is an element of the basic inventory of the world.

This analysis is suggested by a passage in which Russell maintains, against the idealists, that relations must be taken as real. He says: “A complete description of the existing world would require not only a catalogue of the things, but also a mention of all their qualities and relations” (p. 47).

The question is, what belongs in the “catalogue of things”? Are we to include sense-data? Or common-sense objects? Or the theoretical objects of science? These latter two classes of “things” Russell takes to be classes of logical constructions. If they are to be included in the catalogue, then logical constructions, as elements of the existing world, are real. On this interpretation, Russell’s view that physical (and theoretical) objects are logical constructions is not incompatible with scientific realism.

There are, however, two considerations against this. First, to anticipate a bit, Russell, in “The Ultimate Constituents of Matter”, argues that the ultimate constituents of matter (and, hence, of the physical world) are sense-data, not the logical constructions which are the physical objects and theoretical entities. Thus, whether Russell can be a logical constructionist and a scientific realist at the same time depends on how strictly we interpret “basic” in “basic inventory”. If we take “basic” to mean ultimate, then it is hard to see how logical constructions can be taken as ultimate, and, hence, hard to see how Russell’s view that theoretical entities are logical constructions can be compatible with scientific realism. Second, there are passages in *Our Knowledge* itself which suggest that to be a logical construction is not to be real. However, the sense in which logical constructions are not real is not necessarily opposed to their being real in the R1 sense. And, it must be noted, Russell does not here speak of a catalogue of basic constituents, but of a catalogue of things. It is perfectly conceivable that things (logical constructions) are real-1, but not real in some other sense.

R2: X is real iff X is not illusory.

Russell notes that it is common to contrast “real” with “illusory”. The criterion of reality here is connectedness. A sense-datum is, or represents, something real in sense 2 if and only if it is connected, in a regular manner, with other sense-data. Russell downplays this sense of “real”. Elements which are illusory, i.e., not real-2, as well as elements which are real-2, both may be real in sense R1. A complete

³ *Our Knowledge of the External World*, 2nd ed. (New York: Mentor, 1960).

description of the world would include hallucinatory and illusory sense-data, hence, they are real-1 although not real-2. Thus, the R2/not-R2 distinction obscures the sense in which illusory sense-data are real.

It is clear that logical constructions are not illusions, so if “*X* is a logical fiction” is construed as “*X* is illusory”, then logical constructions are not logical fictions. On the other hand, since logical constructions are constructions out of sense-data, they are not on a par with them. If sense-data are basically what is real-1, then logical constructions are not real-1. However, logical constructions do satisfy something similar to the connectedness criterion of real-2 sense-data. They are “connected” in a regular fashion by the laws of physics. Thus, there is a sense in which logical constructions are real, which is closer to real-2 than to real-1.

R3: *X* is real iff *X* is the ground or cause of our connected sense-experiences.

This sense of being real is, at best, implicit in *Our Knowledge*. I am willing to admit that it may not be there at all. Certainly construing physical objects as the causes or grounds of our sense-experiences seems to be incompatible with one of the basic theses of *Our Knowledge*, namely, that physical objects are constructions out of our sense-experiences. For example, Russell asserts: “the discrepancy between the world of physics and the world of sense, ... will be found to be more apparent than real, and it will be shown that whatever there is reason to believe in physics can probably be interpreted in terms of sense” (p. 55).

This passage could be interpreted innocuously as merely reaffirming Russell's view that the only evidence for the truth of our physical theories is our sense experience. However, it is more likely that he intends the stronger thesis that the world of physics is a logical construction out of the world of sense. If “in terms of sense” is interpreted as “in terms of sense-experience”, then we are left with a view which is consistent with Russell's hope for a solipsistic physics. The passage added in 1928 which I cited earlier supports this interpretation. However, if “in terms of sense” is taken to mean “in terms of sense-data”, and sense-data are held to exist independently of sensing subjects, then taking physical objects to be logical constructions out of sense-data is quite compatible with holding that physical objects are real-3 things, albeit logical constructions. In other words, it seems plausible to construe physical objects as the grounds or even possibly the causes of our regularly connected sense-experiences. In addition, we find the following:

Given an object in one perspective, form the system of all the objects correlated with it in all the perspectives; that system may be identified with the momentary common-sense “thing” ... All the aspects of a thing are real, whereas the thing is a *mere logical construction*. (P. 73; my emphasis)

On the face of it, this passage bears but one interpretation. Logical constructions are contrasted with what is real. Ergo, logical constructions are not real. Given that the objects of scientific theories as well as common-sense things are “mere” logical constructions, the objects of scientific theories as well as common-sense things are not real. Surely, this could only be construed as a rejection of scientific realism. But, given that there are several senses of “real” operative in *Our Knowledge*, we

need to be cautious. In what sense of “real” is Russell denying that logical constructions are real? I claim that the sense he has in mind here is real-1. If we take what is real-1 to be those things which are ultimately real, then Russell's “catalogue of things” will not include logical constructions. Thus, in his constructivist stage, Russell is not a scientific real(-1)ist. However, there is another sense in which Russell suggests, at least, that logical constructions are real. He asks: “The world we have constructed can, with a certain amount of trouble, be used to interpret the crude facts of sense, the facts of physics, and the facts of physiology. It is therefore a world which may be actual ... have we any reason to suppose that it is real?” (p. 77).

The argument of the next few pages is devoted to showing that we have no reason not to think that the world of things (logical constructions) is real. Thus, logical constructions are (probably) real and not “mere” logical constructions. Now either this passage and the earlier one from p. 73 are blatantly contradictory or, as I think, Russell is here operating with another sense of being real. This sense, I suggest, is that of being real-3. As with real-2, the criterion for being real-3 is connectedness. The connectedness here is that provided by the laws of physics. Thus, Russell goes on to say that “things (logical constructions) are those series of aspects which obey the laws of physics. That such series exist is an empirical fact, which constitutes the verifiability of physics” (p. 88). Thus, logical constructions exist and are real-3, although not necessarily real-1, since it is clear that Russell here takes the “aspects” of a thing (the sense-data or sensibilia) to be more basic and fundamental. So Russell is a scientific real(-3)ist.

Unfortunately, in the passages immediately following the one I just cited, Russell introduces yet another sense of being real, and suggests that logical constructions are not real in this new sense. This leads us to consider real-4.

R4: *X* is real iff *X* is not ideal.

In his definition of a thing as that series of aspects which obey the laws of physics, Russell recognizes the need to include in this series unobserved as well as observed aspects. Consider the coffee cup on my desk. As I observe it, I am aware of only some aspects of the cup. The laws of physics require that physical objects present aspects of which I am not aware, e.g., those aspects I would see if I could view upwards from beneath the table. Russell calls these unobserved aspects, “ideal appearances”. Among other things, he says:

Ideal appearances, dates and things [all defined on p. 89], since they are calculated, must be functions of actual appearances, states, and things; in fact, ultimately, they must be functions of actual appearances. Thus, it is unnecessary, for the enunciation of the laws of physics, to assign any reality to ideal elements; it is enough to accept them as logical constructions, provided we have means of knowing how to determine when they become actual. (P. 89)

Russell defines an ideal thing as one “whose states at all times are ideal”. By contrast, it would appear, a real-4 thing is one at least some of whose states are not-ideal, i.e., are actual. Are theoretical entities real-4? Insofar as they are logical con-

structions, the above might lead us to think not. However, if, for example, scattering patterns, spectral data and the like reveal aspects or states of atoms, then atoms are real-4 despite being logical constructions. But, the concept of being real-4 poses some curious problems. Consider the atom of hydrogen whose spectral lines I am now considering. That atom is real. Now consider some atom of hydrogen residing in the far reaches of the galaxy. Physical theory assures me that there are such atoms, but if we assume that none of its states are ever observed by us (and surely there must be such atoms), then it is not real-4.

I want now to look at some of Russell's remarks on causality in *Our Knowledge* in hopes they will be able to shed some light on the respective claims to reality of sense data and logical constructions. On p. 164, Russell says:

[A] ... causal law ... [is] ... any general proposition in virtue of which it is possible to infer the existence of one thing or event from the existence of another or of a number ... what is inferred is a "thing", a particular, an object having the *same kind of reality* [my emphasis] that belongs to the objects of sense, not an abstract object such as virtue or the square root of two. (P. 164)

In a footnote on p. 165, Russell remarks that the sense of "thing" intended here is not the sense in which a thing is a logical construction or a class of aspects. Here, "thing" is to be understood to include "aspects". "Each aspect", he says, "will count separately in stating causal laws" (p. 165). On p. 167, he goes on to say that the "things" for which a causal law holds cannot exist for only an instant. Thus, we should not construe aspects as existing for only an instant. But, being momentary is precisely what characterizes our separate sense experiences. Hence, we should not identify the aspects of an object, or its appearances from a place, with our sensory experiences of such aspects, but rather with some non-subjective sense-data. In this way, the world of physics, which is a logical construction out of the data of sense, exists independently of the knowing subject. That is, Russell's position can be construed as a form of scientific realism. This much seems straightforward. The reality status of logical constructions, however, is none too clear.

First, Russell distinguishes between the "kind of reality" that sense objects possess and the kind that abstract objects possess. Now virtue and the square root of two would seem to be logical constructions; certainly, the square root of two is. This suggests that some logical constructions have a kind of reality different from that of objects of sense. The question is, do theoretical entities have a kind of reality distinct from that of the objects of sense? Before we consider this question, we should note that, apparently, some logical constructions have the same kind of reality as objects of sense. These are Russell's "ideal appearances". They are not real-4, as are the actual objects of sense, but, potentially, they are objects of sense, even though it may be the case that no one ever senses them. I suggest that ideal appearances and, hence, some logical constructions, are real-1. But, theoretical entities, it seems, are not real-1, although some, or all, of their aspects might be. I think this is an important point, because it means that to fix something as a logical construction is not to fix its ontological status.

What follows from this, I think, is that, for Russell, common-sense things, physical objects, and theoretical entities do not share the same kind of reality as objects

of sense. They do, however, seem to be at least real-3. But, even this conclusion presents some difficulties. Recall that Russell had said (on p. 88) that things are those series of aspects which obey the laws of physics. What could these laws be but causal laws? Yet, on p. 164, Russell claims that it is not those things which obey causal laws, but their aspects. This seems extremely puzzling. It is even more so when we reflect on the example of a causal law which Russell gives: "All thunder is preceded by lightning." It seems clear that both "thunder" and "lightning" are not aspects but rather logical constructions composed of visual and audible aspects. Russell could hardly claim that the thunder is the thunderous aspect I perceive, for then you and I could not hear the same clap of thunder. One answer to this perplexity, which, however, makes the example a bad one, is that we are to suppose that "All thunder is preceded by lightning" is to be broken down into "real" causal laws which correlate aspects. Be this as it may, Russell's position on whether logical constructions should be admitted as constituents of the laws of physics is not straightforward. It is difficult, if not impossible, to get a coherent and consistent doctrine on the reality status of theoretical entities from *Our Knowledge*.

4. "The Relation of Sense-Data to Physics" (1914)⁴

The situation does not much improve when we turn to "The Relation of Sense-Data to Physics." There, Russell

- (1) rejects the causal theory of perception;
- (2) sketches a program for defining physical (and theoretical) objects as functions of sense-data;
- (3) attempts to clarify the epistemological and ontological status of sense-data;
- (4) plants seeds for his subsequent shift to neutral monism.

Let us consider these point by point.

(1) The central problem of the paper is to explicate the sense in which physics is an empirical science whose results can be verified by observation. The problem, as Russell states it, is typically Cartesian. It seems to be a fact that what we observe are the immediate data of sense. These data have a certain qualitative richness and variety. However, the objects which our physical theories are about, e.g., atoms, fields, and the like, lack these qualitative properties. On the surface, the world of sense and the world of physics seem disparate and in conflict. How can we take our sense-data (with their qualitative richness) to "verify" or in any way confirm the truths of physical theories which are about "objects" which share none of these properties? How is the correlation to be effected? Russell sees only two possible solutions. One is to invoke a causal theory of perception, which would hold, in effect, that our sense-data are caused by physical objects such as atoms and fields. The problem with this solution is that we are forever denied the possibility of experiencing the causes of our sense-data. Since all we experience are the data, we only observe what we infer to be the effects of a causal chain from physical objects to

⁴ "The Relation of Sense-Data to Physics", in *Mysticism and Logic*. Reprinted in *The Collected Papers of Bertrand Russell*, Vol. 8: *The Philosophy of Logical Atomism and Other Essays, 1914-19*, ed. J.G. Slater (London and Boston: Unwin Hyman, 1986).

data. Since we can never verify (by “direct” observation) the ultimate causes (e.g., the atoms) neither the causes nor the chain is capable of being exhibited experientially. Thus, on Russell’s view here, a causal rule would require us to postulate some *a priori* rule which would allow us to infer causes from effects. But to do this would mean that physics would no longer rest purely on observation and experiment alone. Physics would not be a “pure” empirical science.

Given the undesirability of appealing to a causal theory of perception, Russell saw only one alternative, namely, an attempt to show, in principle, how everything that needed to be said about physical objects could be said about appropriate classes of sense-data instead. To accomplish this, Russell held that we must reverse the functional relations which physics gives as holding between physical objects and sense-data, and find functions which exhibit physical objects as functions of sense-data. The rest of “The Relation of Sense-Data to Physics” is devoted to sketching out such a program.

(2) Luckily, the programme spelled out in the paper for defining physical objects as functions of sense-data, is to a large extent, irrelevant for our present considerations. I say “luckily” because the programme is, at best, a sketch and extremely complex. The gist of the programme is as follows. Let us assume (for the moment) that the world is such as our physical theories suggest. Among other things, this means that the physical world is a world devoid of secondary qualities. Then, starting from what our physical theories tell us about this world, we must exhibit sense-data as functions of the objects and processes of that world. Consider the case of seeing a red object. According to our theories, the object itself is composed of colourless atoms which, when they vibrate at a certain frequency produce an electromagnetic wave. This wave then interacts with an appropriate sensory organ and we “see” red. Thus, our experience of red (our sensation of red) and the red sense-datum which we see can be shown, in principle, to be functions of appropriate physical objects. The problem with such an analysis, from Russell’s point of view, is that such a physical theory is “unverifiable”, in the strict sense that its objects are incapable of being immediately experienced. So, in order to insure that physics is verifiable, we must start from our sense-data and construct the physical objects in terms of them. Instead of having

$$\text{red} = f(\text{waves, atoms, etc.})$$

we must find appropriate *g*’s and *h*’s such that

$$\text{waves} = g(\text{red, etc.})$$

and

$$\text{atoms} = h(\text{red, etc.}).$$

What is of interest to us is Russell’s conclusion that expressing physical objects as functions of actual sense-data would not suffice. In order to account for such things as the continued existence of my desk when no one is in my room, Russell felt it necessary to introduce the notion of a sensible, which, unlike a sense-datum, could exist unsensed. Sense-data turn out to be sensed sensibilia.

Having been driven to introduce sensibilia to preserve continuity, Russell was still somewhat hesitant about them. He was still concerned to establish physics on

a purely experiential (i.e., observational) basis. The necessity of introducing unsensed sensibilia was an embarrassment to this programme. He calls them “hypothetical scaffolding” which are to be eliminated in the “final analysis” (p. 152f.). Just how this elimination was to be carried out is only hinted at in the end when Russell suggests that it could “probably [be done] by invoking the history of a ‘thing’ to eke out the inferences derivable from its momentary appearance” (p. 173). The improvement is presumably in accord with Russell’s “supreme maxim” since the history of a thing is a logical construction, whereas sensibilia are inferred entities. However, since the history of a thing requires sensibilia, it is not clear that this would have resulted in a great improvement. Of course, eventually the programme was abandoned, first, by Russell and then by others, but in the meantime something had to be said about the status of these entities.

(3) According to Russell, sense-data are physical. They are, he says, “part of the actual subject matter of physics” (p. 144). Although sense-data are physical, they are not physical things. Physical things are constructions out of sense-data and unsensed sensibilia. Now Russell argues (or claims) that although sense-data are physical, they probably do not persist unchanged after ceasing to be data. But, what changes? Russell holds that the only difference between a sensed sensible (a sense-datum) and an unsensed sensible is that the former is a term in an awareness relation with a mind. Hence, when a sense-datum ceases to be a datum, it is no longer a term in such a relation. But this is merely a change in its epistemological status. Surely, it would be inconsistent with Russell’s atomism and his rejection of internal relations to hold that the ontological status of a sense-datum changes merely because it is no longer a term in some epistemological relation. Thus, we are driven to the conclusion that sense-data and unsensed sensibilia are ontologically on a par. In fact, Russell says, “I shall give the name sensibilia to those objects which have the same metaphysical and physical status as sense-data ...” (p. 143).

There is a problem here, however. On the one hand, we are to take sense-data as constituents of the actual world (p. 147). But, although they are constituents of the actual world, it makes no sense to say they either exist or don’t exist (or are real or not). This follows from Russell’s analysis of the concept of existence, whereby only those things which can be described by propositional functions can be meaningfully said to exist or not. Unsensed sensibilia, which we know by description, and, hence, which are described by propositional functions, can be said to exist. But, in “The Relation of Sense-Data to Physics”, Russell equates “is real” with “exists”. Thus, sensibilia can be said to be real whereas sense-data cannot. Yet, they are supposed to have the same ontological status. I find this puzzling.

(4) Finally, we may briefly note Russell’s remark to the effect that although he disagrees with the “new realist” view that “the difference between the mental and the physical is merely one of arrangement”, he does feel that nothing in the paper is incompatible with this doctrine. This is in line with Russell’s subsequent conversion to neutral monism. What prevents him from accepting it fully at this stage is his view that awareness is a relation between a mind and a sensible. If this were dropped, then “minds” or “persons” could be constituted in terms of the perspectives they “inhabit”, i.e., in terms of a series of sensibilia, much in the same way that objects are constituted by a class of sensibilia. The only difference between a mind and a body would be in the arrangement of these series. Russell moves closer to this view, which he eventually adopted in 1918, in our final text.

5. "The Ultimate Constituents of Matter" (1915)⁵

Here Russell develops more fully the implications of the view outlined in "The Relations of Sense-Data", without, however, coming any closer to providing the functions which would exhibit physical objects as functions of sense-data, functions which he seemed to believe would be forthcoming by "dint of a little logical ingenuity" (p. 151). In this respect, nothing new is found in "The Ultimate Constituents". However, we get some indication of what kind of realist Russell took himself to be. In addition, there is an analogy which is designed to help us understand the relationship between sensibilia and physical things. Finally, there is further evidence of Russell's drift towards neutral monism.

In "The Ultimate Constituents", Russell explicitly aligns himself with the realism of Alexander and Nunn (p. 120). Nunn's article, published in 1910, argues against Locke that secondary qualities and primary qualities are on a par; against Berkeley that they exist independently of being perceived; and against Stout's view that they are psychical yet are correlated with extra-mental existents. Nunn's positive position is put forward as:

(1) that both primary and secondary qualities of material bodies "are really in them, whether anyone's senses perceive them or no"; (2) that they exist as they are perceived; by which I mean that although (in Mr. Bradley's phrase) "the qualities impart themselves never except under conditions", yet these conditions do not affect the character of the qualities perceived; and (3) that sensations as mental entities exercising a "representative function" need not, therefore, be postulated.⁶

Later Nunn remarks that the "tendency to replace original sense-data by mental construction (or 'hypothesis') which forms a readier guide to practical or theoretical activity is in another form the characteristic of physical science" (p. 215). This suggests that for Nunn, physical objects and the theoretical objects of science might be only "mental constructions". Their reality status is not clear from the article.

Alexander identifies Nunn's position as a variant of his own.⁷ The occasion of his article was a criticism by Bosanquet to the effect that Alexander's realism destroys "the reality of the mind". Alexander rejects this imputation and responds that, in his view, "[m]inds and physical things are two great classes of existences ..." (p. 283). He then goes on to say that, at first glance, "The object [which the mind knows] is what it declares itself to be, square, table, colour, or the like—also, to anticipate a later observation, with feelers which it throws out towards a wider whole of which it forms a part" (*ibid.*). Not all these objects which "claim to be real" can establish their credentials, however. Those objects turn out to be real which "cohere with the forceful and compelling parts of our experienced world" (p. 286).

For understanding Russell's position, these papers are not much help. Alexander puts together qualities (sense-data) and physical objects but does not clearly distinguish between the senses in which they are or are not Real-1, Real-2 or Real-3.

Nunn is clearly a Real-(1)ist with respect to qualities (sense-data) but his position on the status of physical objects is less clear.

What, then are the ultimate constituents of matter? They are none other than the sensibilia of "The Relations of Sense-Data", both sensed and unsensed. These ultimate constituents Russell here calls "particulars". He says:

The particulars are to be conceived, not on the analogy of bricks in a building, but rather on the analogy of notes in a symphony. The ultimate constituents of a symphony (apart from relations) are the notes, each of which lasts only for a short time. We may collect together all the notes played by one instrument. These may be regarded as the analogues of the successive particulars which common sense would regard as successive states of one "thing." But the "thing" ought to be regarded as no more "real" or "substantial" than, for example, the role of the trombone. ("Ultimate Constituents", p. 125)

We have, then, that the world is to be conceived as a collection of "things" related to one another much in the same way that a symphony can be regarded as a collection of "parts played by different instruments" which are related to one another. The ultimate constituents of the symphony are the notes, just as the ultimate constituents of the world are the particulars. But here we hit a snag. The ultimate particulars of the world are to be taken as "fleeting". Russell here must be thinking of sense-data, i.e., sensed sensibilia. But, what is fleeting about these particulars is something which is tied up with their being objects of awareness, not with their being ultimate constituents. Thus, Russell's next remark is all the more puzzling. He adds, "As soon as 'things' are conceived in this manner [analogously to the role of a trombone] it will be found that the difficulties in the way of regarding immediate objects of sense as physical have largely disappeared" (p. 125). The reference here is to the objection that sense-data cannot be physical, because what is physical persists, whereas sense-data are "fleeting". This objection Russell thinks he has answered with his symphonic analogy. But what makes sense-data "fleeting" seems far removed from what makes them physical. In so far as the symphonic analogy illustrates the fleeting character of sense-data, it seems to undercut the sense in which they are the ontological ultimate constituents of the world. What has gone astray here? I suggest that Russell is here taking "ultimate constituents" in two senses and not clearly distinguishing them. We may talk either of ultimate epistemological constituents or ultimate ontological constituents. The ultimate epistemological constituents of our knowledge of the external world are, for Russell, sense-data. The ultimate ontological constituents of the world are, for Russell, sensibilia. But sense-data are merely sensed sensibilia. Thus, our sense-data are ultimate constituents in two senses. What the symphonic analogy shows, then, is that the fleetingness of our sense-data is no argument that they are not physical, but it does not show, as Russell seems to have thought, that what is physical (i.e., ontologically ultimate) may be fleeting (*cf.* p. 123).

With respect to the shift towards neutral monism, Russell now urges that "perspectives" and "things" are merely two alternative methods of organizing particulars. As Russell puts it:

if I am (as is said) seeing the sun, what I see belongs to two assemblages: (1) the assemblage

⁵ "The Ultimate Constituents of Matter", in *Mysticism and Logic and Collected Papers* 8.

⁶ T.P. Nunn, "Are Secondary Qualities Independent of Perception?", *Proceedings of the Aristotelian Society*, 10 (1910): 191–218.

⁷ S. Alexander, "The Basis of Realism", *Proceedings of the British Academy*, 6 (1913–14): 279–314.

of all my present objects of sense, which is what I call a "perspective"; (2) the assemblage of all the different particulars which would be called aspects of the sun of eight minutes ago—this assemblage is what I define as being the sun of eight minutes ago. (P. 134)

Russell then goes on to define a "biography (of a particular)" as "the sum total of all the particulars that are (directly) either simultaneous with or before or after a given particular." Since some perspectives are never perceived by anyone, e.g., from the centre of the earth, a biography need not be lived by anyone. If we understand Russell to be holding the view that the ego is a particular, then that particular can be the "given particular" in the formula above and a Russellian biography more or less corresponds to what we would ordinarily call a biography. Given that all this makes sense, Russell notes that the difference between a physicist and a psychologist can be characterized in terms of the former's predilection for classifying particulars as "things" and the latter's predilection for classifying particulars as "biographies". But, Russell's perspectival view differs from neutral monism in at least three important respects.

- (1) The mind or ego is still conceived of as an ultimate particular.
- (2) Russell's theory of perception is still relational: the mind (a particular) stands in a peculiar relation (awareness) to a sensibilia (another particular).
- (3) Finally, there is a curious passage (on p. 128) in which Russell argues that sense-data cannot be mental because they fail to possess a "recognizable intrinsic characteristic such as belongs to thoughts and desires". In other words, the difference between the mental and the physical is not merely a matter of arrangement nor of some relation, but mental elements are supposed to possess some peculiar quality. Russell admits himself hard pressed to specify what that quality might be, but that does not deter him from being assured that whatever it is, sense-data do not possess it. Be that as it may, that the mental possesses a special quality is incompatible with Russell's later neutral monism.

Conclusion

Having completed what I fear has been somewhat of a Cook's Tour of some of Russell's early writings on realism, what can we conclude? I hope to have established two points. First, in *Our Knowledge* explicitly and in other places implicitly, Russell construes "is real" in more than one sense. Second, in at least some of these senses, physical objects and theoretical entities, even though logical constructions, are real. Thus, in some sense, at least, Russell was and remained a scientific realist. But other questions remain unresolved, in particular, the difference, if any, between the ontological status of sense-data and the ontological status of physical objects and theoretical entities.

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