

RUSSELL'S LOGICAL CONSTRUCTION OF THE EXTERNAL WORLD

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Bertrand Russell (1872-1970) was no skeptic. Like G.E. Moore (1873-1958), Russell agreed that we know about external, material objects like tables and trees. But Russell gave a very different explanation. In his highly influential 1918 Lowell Lectures, Our Knowledge of the External World, Russell “logically constructed” commonsense tables and trees from sense-data. In this chapter I expound Russell’s logical construction of material objects out of sense-data.¹

I. Sense-Data

I begin with Russell’s view of sense-data. Suppose you and I walk up to a table in the park. We believe it existed before we saw it and will continue to exist after we walk away. We see the same thing and any passerby would see it too.

Russell did not believe we immediately see the table. Think about your experiences as you approached and interacted with the table. From a distance it looked rather gray; you experienced a particular shade of color with a particular shape. As you got closer you experienced a different shade of color with a larger shape. Russell believed these differing visible patches of shape and color—these differing “sensible objects”—

are what we immediately sense in sense-perception.

When I speak of a “sensible object,” it must be understood that I do not mean such a thing as a table, which is both visible and tangible, can be seen by many people at once, and is more or less permanent. What I mean is just that patch of color which is momentarily seen when [you] look at the table, or just that particular hardness which is felt when [you] press on it, or just that particular sound which is heard when [you] rap on it.”²

Russell calls these “sensible-objects” sense-data. Sense-data are the particular patches of color, shapes, sounds and textures that we immediately sense, and may attend to, in sense perception. Russell also calls them appearances or aspects of material objects.³

Russell relied upon the argument from perceptual variation to distinguish sense-data from material objects. As we move towards and around the table, our sense appearances change; from one location we are directly aware of something small and gray and from another something large and brown. But the picnic table does not change as our appearances change. So what we are immediately aware of in sense perception is not the same as the table. Since the material object stays the same but what we immediately sense changes, we do not immediately sense material objects.⁴

Russell attributed a number of properties to sense-data. Firstly, sense-data have the properties they are sensed to have.⁵ Russell even believed “there are no such things as “illusions of sense.””⁶ Sensory acquaintance is a kind of direct, infallible relationship with objects of sense as they really are.⁷

Secondly, sense-data are in constant flux. Outer experience is like watching a

movie: we are viewing a series of distinct frames, each existing only for a brief moment before our eyes.⁸

Thirdly, Russell believed that sense-data are physical. “I believe...the immediate objects of [perception] are extra-mental, purely physical.”⁹ Sense-data are the objects of sensations, not sensations themselves.¹⁰ In sense-perception the mind is directly acquainted with external, non-mental, physical particulars.¹¹ Many take the argument from perceptual variation to show that sense-data are mental; Russell did not.

Fourthly, Russell held that sense-data are private. He argued as follows: First, a perceiver will perceive “an immensely complex three-dimensional world” of sensible objects at a time. (This is the subject’s complete, “perceived perspective.”)¹² Second, there will always be differences, however slight, in different subjects’ points of view, and so there will always be differences, however slight, in the subjects’ immediate objects of sense-perception. Third, the places of objects “can only be constituted by the things in or around them” (for position in space is purely relative). If we see different objects, we see different spaces. Thus the three-dimensional space of one subject’s sensible objects and the three-dimensional space of another’s has no place in common. As a result, there “is absolutely nothing which is seen by two minds simultaneously.”¹³ We all perceive different “private worlds.”

II. Logical Constructions

If we immediately perceive private, evanescent sense-data, then how do we know of public, continually existing material objects? In his 1912 Problems of Philosophy Russell argued that the common-sense hypothesis “that there really are objects independent of us,

whose actions cause our sensations” best explains features of our sense data: “every principle of simplicity urges us to adopt the natural view, that there really are objects other than ourselves and our sense-data which have an existence not dependent upon our perceiving them.”¹⁴

In 1914 Russell found this inference dubious and changed course: instead of inferring commonsense objects, Russell constructed them. Russell announced “the supreme maxim in scientific philosophizing... Wherever possible, logical constructions are to be substituted for inferred entities.”¹⁵ In the case at hand, Russell was worried that if we construe material objects independently of sense-data, they will turn out to be unknowable “things-in-themselves.” So to prevent that, we must “construct” material “things” of commonsense out of sense-data.

Russell and Whitehead’s analysis of numbers in Principia Mathematica illustrates the idea. According to Russell and Whitehead, a number is a class of classes whose members bear a one-to-one relation to each other.¹⁶ Zero is the class of all empty classes; one is the class of all singletons; two is the class of all couples, etc. Numbers are then just “logical constructions” of equinumerous classes.¹⁷

When Russell turned to the external world, Russell and Whitehead’s success was his paradigm.¹⁸ (1914b: 115-6). Just as Russell and Whitehead eliminated numbers as metaphysically distinct objects by Occam’s razor, Russell will “construct” the material “thing” of commonsense out of classes of sensible objects and thereby eliminate “things-in-themselves.”¹⁹

III. The Logical Construction of “Things”

Begin with your own sense-data.²⁰ This is your perceived perspective, your private world. Add to it any sense-data reported by testimony. Is that enough sense-data to construct material objects? Surely not, for what we know about material objects goes well beyond what you and I sense. Russell needs more sense-data.

So Russell hypothesizes sensible objects that go beyond sense-data: sensibilia.²¹ Imagine sitting next to another person in a room looking at the tables and chairs. Next imagine the perspective of a third person if a third person sat between the two of you.²² Now imagine that no third person in fact sits between the two of you, but hold in place the “unperceived” perspective you just imagined. Russell hypothesizes the reality of this perspective, and says this third perspective consists of sensibilia, not sense-data. They are not sense-data for no one perceives them; sense-data are the relata of sense-perception. Sensibilia, on the other hand, are “objects which have the same metaphysical and physical status as sense-data without necessarily being data to any mind...a sensible becomes a sense-datum by entering into the relation of acquaintance.”²³ Sensibilia are unperceived sense-data, the constituents of unperceived perspectives. Russell then hypothesizes an infinity of such unperceived perspectives to accompany perceived perspectives. Russell no longer faces a shortage of sensible objects.

Russell then correlates sensible objects in one perspective with sensible objects in another. If you are looking at a table (so to speak) and I am too, then though you and I are sensing different sense-data in different three-dimensional worlds, our sense-data can be pretty darn similar for all that. And what’s true for tables is true for everything else we see. “Thus it is possible...to establish a correlation by similarity between a great many of the things of one perspective, and a great many of the things of another.”²⁴

Russell then constructs commonsense things out of classes of similar sensible

objects:²⁵

Given a [sensible] object in one perspective, form the [class] of all the [sensible] objects correlated with it in all the perspectives; that [class] can be identified with the momentary common-sense “thing.” Thus an aspect of a “thing” is a member of the [class] of aspects which is the “thing” at that moment.²⁶

“A physical thing consists...of the whole set of its aspects...in all the different worlds; thus...a thing is a...set of aspects.”²⁷ What’s “really real” are all the aspects; the “thing” is merely a logical construction.²⁸ A table is then not something over and above, or standing behind, all of its appearances; the table just is all of the appearances across perspectives. “The [table]...is a class of particulars, and what I see when I now look at the [table] is a member of this class.”²⁹ Russell thereby razors away “things-in-themselves.”

Russell can now explain how two people can “see” the same table.³⁰ When two people see two distinct but correlated aspects in their respective perspectives, they both see appearances of one thing.³¹ So when two people immediately see two correlated sense-data, they “see” the same “thing” by immediately seeing distinct aspects of the same “thing.”

IV. The Logical Construction of Space

If that’s how Russell constructs “things,” then how does he construct the public space, and so the public locations, of tables and trees? Russell’s idea is to construct a three-

dimensional, “all-embracing” public space out of the system of perspectives (both perceived and unperceived), each with their own “internal” three-dimensional structure.³² In the all-embracing space, the perspectives are the points. The points then have a three-dimensional location within the system. Every sense-datum then has a three-dimensional location within the private perspective of which it is a part, and the three-dimensional location of the perspective within the system of perspectives.

How does Russell spatially structure the system of perspectives? He places the perspectives near or far from one another based on their degrees of similarity and difference that turns on the similarity or difference of their constituent sensible objects. The more similar, the closer they are; the more different, the farther away.

Suppose... we start from one [perspective] which contains the [circular, not elliptic] appearance of a... penny. We can then form a series of perspectives containing a graduated series of circular aspects of various sizes: for this purpose we only have to move (as we say) towards the penny or away from it. The perspectives in which the penny looks circular will be said to lie on a straight line in perspective space, and their order on this line will be that of the sizes of the circular aspects.³³

And for any two similar perspectives, we can insert an intermediate perspective, thus making the all-embracing space continuous and three-dimensional.

Russell can specify the location of “things” within the space of physics. Take the line Russell just formed of circular aspects of the penny. Now take another straight line of aspects of the penny, “in which the penny is seen ends-on and looks like a straight line of a certain thickness...[T]hese two lines will meet in a certain place in perspective space,

i.e. in a certain perspective.” Russell singles out that perspective as the location of the penny in perspective space.³⁴ The “thing” is located in the perspective that is at the intersection of two (or more) straight lines of perspectives that contain series of aspects of the “thing.”³⁵

A perspective in which a “thing” looks large (where the aspect of the thing perceived is large) is then closer to the “thing” than a perspective in perspective in which the “thing” looks small, for the perspective in which the “thing” looks larger is in fact “nearer to the perspective which is the place where the thing is.” “[T]he perspectives in which the penny looks big will be said to be nearer to the penny than those in which it looks small.”³⁶

Which means where you are—where “here” is, spoken in your voice—is the location of your current perspective. “Here,” spoken in my voice, is the place in perspective space occupied by my current perspective.³⁷ If the penny is located in the perspective in perspective space right next to your private perspective, then, on Russell’s view, you are in fact right next to the penny.

Each aspect of a thing now has three locations.³⁸ First, there is the “internal” three-dimensional location of the aspect in the private perspective of the perceiver. Second, there is the public location of the thing of which the aspect is a part; that place is where the aspect is at. Third, there is the public location from which the aspect is perceived. That place is the location of the perceiver’s perspective.

Russell can now capture another commonsense point: we typically see material objects from a distance. The place from which I see a table (the place where I am) is distinct from the place where the table is at. If we see things by seeing aspects of things, and aspects of things have two locations in the system of perspectives, then the place

from which I see a thing (the place of my perspective) is usually distinct from the place at which the thing I see resides (the perspective that is the location of the thing).³⁹

To summarize, Russell has constructed inter-subjective, public objects (things) in an inter-subjective, public space out of a plurality of subjective, private objects in subjective, private spaces, where the entire construction of material objects and locations in space turns on relations of similarity and difference among the plenum of sensible objects. “[We thereby] construct the one all-embracing space of physics.”⁴⁰

V. Epistemology as Reconstruction

If you have gotten this far you are past the hard part. Now it is time to turn to epistemology.

Russell adopted a largely non-skeptical methodology: he took it for granted that we know most of what we think we know; there is no point in trying to stand outside of our knowledge and evaluate all of it at once. Instead Russell claimed epistemology explains how we know what we know: our existing system of knowledge comprises the “data” which is “the business of the philosopher to analyze.”

To “analyze” our system of knowledge, Russell distinguishes “hard data” from “soft data” by degrees of certainty. “Hard” data includes knowledge that resists “the solvent influence of critical reflection.” “Soft” data includes knowledge that that, “under the operation [of critical reflection], become to our minds more or less doubtful.”⁴¹ Hard data is rationally indubitable; soft data is not. Hard data need no justification; they are completely self-evident.⁴² Soft data, however, “though entitled to a certain level of respect,” are not “on a level with” hard data.

Sorting our knowledge in two is the first step in analysis. The second step is to see to what extent the soft data may be derived from the hard data; this is the reconstructive step. Russell's philosophical hope was that the hard data "may prove" the soft data "to be at least probable."

Sense-data fall within our hard data. "The immediate facts perceived by sight or touch or hearing do not need to be proved by argument, but are completely self-evident."⁴³ For Russell the "hardest of the hard data [include]...our own sense-data."⁴⁴ "The more we reflect on these, the more we realize exactly what they are, and exactly what a doubt concerning them really means, the more luminously certain do they become."⁴⁵ Russell also included "some facts of recent memory...introspective facts...spatial and temporal relations...and some facts of comparison...among our hard data."⁴⁶

Among our soft data, Russell includes our knowledge of material objects. Knowledge of other minds also belongs in our soft data. And since belief in what is "reported by the testimony of others, including what we learn from books, is involved in the doubt as to whether other people have minds at all," it too falls within our soft data.⁴⁷

Russell thus adopts a traditional, foundationalist ideal for our knowledge. Ideally, we start with our knowledge of sense-data and then reconstruct our knowledge of material objects, other minds, and the contents and veracity of testimony.

VI. Two Working Hypotheses

Pulling this off won't be easy. "[T]he world from which our reconstruction is to begin is very fragmentary. The best we can say for it is that it is slightly more extensive than the

world at which Descartes arrive by a similar process.”⁴⁸ Can Russell’s hypothetical construction show how we know about external objects from knowledge of sense-data? To put the issue in Russell’s words, now that we have “constructed a largely hypothetical picture of the world, which contains places and experienced facts...[do] we have any good reason to suppose that it is real?”⁴⁹ Many epistemologists would love to see Russell pull the rabbit out of the hat. Russell clearly would love to do it too.⁵⁰

To do it, Russell would need to infer “the sense-data of other people, in favor of which there is the evidence of testimony, resting ultimately upon the analogical argument...and the ‘sensibilia’ which would appear from places where there happen to be no minds.”⁵¹

Unfortunately, Russell does not think much of the analogical argument. “[T]he hypothesis that other people have minds...[is not]...susceptible of any very strong support from the analogical argument.”^{52,53} Russell, however, does not abandon belief in other minds. Instead he retains it as a working hypothesis. For the hypothesis of other minds

...systematizes a vast body of facts and never leads to any consequences which there is reason to think false. There is therefore nothing to be said against its truth, and good reason to use it as a working hypothesis. When once it is admitted, it enables us to extend our knowledge of the sensible world by testimony, and thus leads to the system of private worlds we assumed in our hypothetical construction.⁵⁴

If we hypothesize other minds, we can use their testimony to construct material objects and the space of physics.

What about sensibilia? In OKEW he does not return to this question. Perhaps we know about these from experience, by knowing about what things would look like were I in a different position. But in RSDP he says the inference “raises much more serious questions” than the inference to other minds. Instead he says “I should regard these supposed appearances only in the light of a hypothetical scaffolding, to be used while the edifice of physics is being raised... These ‘sensibilia’ ... are therefore to be taken rather as an illustrative hypothesis...”⁵⁵

And so we are left with two “working hypotheses” on which the entire logical construction of the external world rests. Dashed is the hope of justifying our knowledge of the external world from our sense-data. Should we condemn Russell’s logical construction as a complete failure?

VII. Four Achievements

Russell’s logical reconstruction of the external worlds has often been read solely as an attempt to reconstruct our knowledge from more certain foundations. Russell certainly hoped that such a reconstruction might succeed. Part of the influence of OKEW was to inspire others to do just that. But Russell was clearly aware of the limitations of his own efforts.

Reconstructing our knowledge was not his sole motivation. He had at least four others. One was to explain how sense-data depend upon physiology; if the objects of sensation depend upon the state of our brains, then sense-data depend, in some sense, on physiology. Another was to reconcile physics and psychology; verification depends upon sense-data, but the world of physics radically departs from the appearances of the senses.

The third was to reveal the structure of our knowledge and relations of dependence of one kind of knowledge on another, a point he emphasizes in the last lecture of OKEW. A fourth is to solve puzzles that arise from his direct realist view of sense-data as physical.

Let me say a few words about this last motivation. Russell's Cambridge teacher G.F. Stout (1860-1944) also accepted the argument from perceptual variation. But he did not think the immediate object of perception could be physical. For one person may "see" a round sense-datum in one location, and another an elliptical sense-datum in that very same location, but it would be an impossible contradiction to suppose that an elliptical thing and a circular thing might exist in the same place at the same time.⁵⁶

Russell partly developed his hypothetical construction to avoid this problem for his direct realism:⁵⁷

What we call the different appearances of the same thing to different observers are each in a space private to the observer concerned. No place in the private world of one observer is identical with a place in the private world of another observer. There is therefore no question of combining the different appearances in the one place; and the fact that they cannot all exist in one place affords accordingly no ground whatever for questioning their physical reality.⁵⁸

When concluding Lecture III of OKEW, Russell takes his hypothetical construction to have the advantage of dispensing with such arguments, and so rebutting arguments against our knowledge of the external world:

Difficulties...[that arise] from the differences in the appearance which one physical

object presents to two people at the same time...have made people doubtful how far objective reality could be known by sense at all, and have made them suppose that there were positive arguments against the view that it can be so known. Our hypothetical construction meets these arguments.⁵⁹

Russell acknowledges that the results of his reconstructive efforts are somewhat meagre. But he finds his four other results worth the price of admission. For his hypothetical construction

...shows that the account of the world given by common sense and physical science can be interpreted in a way which is logically unobjectionable, and finds a place for all the data, both hard and soft. It is this hypothetical construction, with its reconciliation of psychology and physics, which is the chief outcome of our discussion.⁶⁰

¹ Works by Russell:

ML Mysticism and Logic and Other Essays (London: Allen & Unwin, 1918).

MPD My Philosophical Development (London: Allen & Unwin, 1959).

OKEW Our Knowledge of the External World as a Field for Scientific Method in Philosophy
(Chicago and London: Open Court, 1914).

PP Problems of Philosophy (London: Williams and Norgate, 1912).

RSDP “The Relation of Sense-Data to Physics” Scientia 16 (1914), reprinted in ML.

UCM “The Ultimate Constituents of Matter” The Monist 25 (1915): 399-417, reprinted in
ML.

Russell also works out the constructive project of OKEW in RSDP and UCM.

I have benefitted from reading Charles Fritz, Bertrand Russell’s Construction of the External World (London: Routledge, Kegan & Paul, 1952); Gary Hatfield, ‘Psychology, Epistemology, and the Problem of the External World: Russell and Before’ in Erich Reck, ed., The Historical Turn in Analytic Philosophy (Palgrave MacMillan Press, 2013): 171-200; Peter Hylton, Russell, Idealism, and the Emergence of Analytic Philosophy (Oxford: Clarendon Press, 1992); Chris Pincock, “Rejoinder to Soames” Russell 26 (2006): 77-86; and Scott Soames, The Analytic Tradition in Philosophy, volume 1: The Founding Giants (Princeton University Press, 2014).

² OKEW, 83.

³ On the origins of the phrase ‘sense-data’, see Hatfield 2014: 951-2. The first time G.E. Moore used the phrase was in his 1905 paper “The Nature and Reality of the Objects of Perception.”

⁴ PP, ch. 2; OKEW, 76; MPD, 103. The argument appears prominently in Hume, Enquiry Concerning Human Understanding, 1758, sec. XII. For criticisms of the argument and related arguments, see J.L. Austin, Sense and Sensibilia (Oxford: Clarendon Press, 1962); Frank Jackson, Perception (Cambridge University Press, 1977); and Michael Huemer, Skepticism and the Veil of Perception (Rowman & Littlefield, 2001).

⁵ Witness C.D. Broad: “All of the objects...that are directly perceived by anyone from anywhere under any conditions must certainly exist and have the qualities that we perceive them to have at least as long as we perceive them.” ‘Phenomenalism’ Proceedings of the Aristotelian Society, vol. 15 (1914-15): 232.

⁶ OKEW, 85.

⁷ To take a familiar example, if you press one finger against your eyeball you will “see double.” For Russell, this means you will sense two distinct visual sense-data where before you sensed one, and those two distinct visual sense data have exactly the properties they appear to have; they are just as real as the data you sense when you are not pressing your eyeball. Your experience is not illusory, as there really are two sense-data with just those properties. Even dreaming involves veridical sense-perception. “Objects of sense, even when they occur in dreams, are the most indubitably real objects known to us” OKEW, 85-6. The error we make in dreaming is not that we perceive or sense things that are not there, but that we make false predictions about other sense-data we are likely to perceive. Dreams, unlike waking experience, are irregular and unpredictable from experience. Echoes of Berkeley.

⁸ UCM, 96-7. Relatedly, Russell also rejected the view that the immediate objects of sense, though “external” to our minds, continue to exist when we shut our eyes or even turn our eyes in another direction (UCM, 96). This belief is “a piece of audacious metaphysical theorizing; objects are not continually present to sensation, and it may be doubted whether they are there when they are not seen or felt” (OKEW, 107). Echoes of Hume.

⁹ OKEW, 71; RSDP, 111-113; UCM, 96-98.

¹⁰ The distinction between the act and the object of sensation was advanced by Samuel Alexander (1859-1938), and was fundamental to G.E. Moore's paper 'The Refutation of Idealism' Mind, vol. 12 (1903). In Russell's later "neutral monism" phase he abandons the distinction, preferring to construct even mental acts out of sense-data (what he later calls percepts).

¹¹ For discussion of Russell on acquaintance, see Roderick Chisholm, 'On the Nature of Acquaintance: A Discussion of Russell's Theory of Knowledge' in George Nakhnikian, Bertrand Russell's Philosophy (London: Duckworth): 47-56; and David Pears, 'The Function of Acquaintance in Russell's Philosophy' Synthese (1981): 149-166.

¹² Russell is of course aware of the other senses. And so our private worlds are even more complex: "there are several spaces for each person according to the different senses which can be called spatial" (OKEW, 109). Russell emphasizes the space and the role experience plays in correlating locations in visual space with locations in tactile space.

¹³ OKEW, 94-95; RSDP, 117; UCM, 103.

¹⁴ PP, 22-24.

¹⁵ RSDP, 115.

¹⁶ MPD, 70-1.

¹⁷ Russell acknowledges Frege's 1884 priority (MPD, 70). Russell's prime motive was ontological, to "get rid of numbers as metaphysical entities" (MPD, 71).

¹⁸ RSDP, 115-6.

¹⁹ OKEW, 72. Russell also often puts his "analysis" of material objects in terms of sense-data as a "reduction" or an "interpretation" of statements about material objects to classes of sense-data, where material objects are "functions" of sense-data (OKEW, 85, 86; 1915: 97).

The goal is to "reduce" commonsense "facts" to a "form in which nothing is assumed beyond

sensible facts...to what is actually given in sense” (OKEW, 85-6).

Russell had a related semantic motive:

...in so far...common sense is verifiable, it must be capable of interpretation in terms of actual sense-data alone. The reason for this is simple. Verification consists always in the occurrence of an expected sense-datum...Now if an expected sense-datum constitutes a verification, what was asserted must have been about sense-data; or, at any rate, if part of what was asserted was not about sense-data, then only the other part has been verified.

(OKEW, 88-9, emphasis added)

Here Russell seems to endorse the verifiability theory of meaning. Soames makes a big deal out of this in his reading. And it seems to follow from Russell’s doctrine that understanding requires acquaintance. However, Russell himself doesn’t make much of this in OKEW or even in RSDP or UCM. Russell seems more driven by ontological considerations. Soames also thinks this supports reading Russell as a phenomenalist, with counterfactual analyses of material object statements. See Pincock, op. cit., for some discussion. I remain agnostic.

For recent scholarly discussion of Russell’s on logical construction, see Bernard Linsky, ‘Russell’s Theory of Descriptions and the Idea of Logical Construction’ in Michael Beaney, The Oxford Handbook of the History of Analytic Philosophy (Oxford University Press, 2014): 407-429.

²⁰ Following Russell, for the sake of simplicity I shall restrict the discussion in what follows to visual sense-data: colors, shapes, sizes and distances.

²¹ OKEW, 89.

²² OKEW, 95.

²³ RSDP, 110.

²⁴ OKEW, 95-6, emphasis added. How do we know that sensible objects across perspectives are similar? We cannot sense sensible objects outside of our own private perspectives, and so we cannot know this by sense perception. But, Russell thinks, we can know it by testimony.

²⁵ I table two important issues that Russell treats at some length. The first involves unusual viewing circumstances, such as wearing blue tinted glasses, or physiological abnormalities, like being sick (OKEW, 85-88). The second involves sense-data of bodily motion: when I verify a table by walking up to it, my visual sense-data not only change, but my tactile sense-data and my sensations of my bodily movement. So to say “that is a table” is not only to talk about visual sense-data, but correlated sense-data of muscular and bodily movement (OKEW, 84-5).

²⁶ OKEW, 96.

²⁷ OKEW, 117.

²⁸ This is how Russell constructs material objects in Lecture III of OKEW. But in Lecture IV he notes that resemblance is clearly not sufficient for two aspects being members of the same thing: “...as the Comedy of Errors illustrates, we may be led astray if we judge by resemblance. This shows that something more is involved for two different things may have any degree of likeness up to exact similarity” OKEW, 113. He then argues that continuity won’t do either. He then seems to settle on a different criterion altogether: conformity to the laws of physics. “Things are those series of aspects which obey the laws of physics” OKEW, 115-6.

²⁹ UCM, 102.

³⁰ OKEW, 83.

³¹ RSDP, 118.

³² OKEW, 95, 97. Russell acknowledges the influence of Leibniz's Monadology on his logical construction of space out of private perspectives, where each mind "looks out upon the world...from a point of view peculiar to itself."

³³ OKEW, 97-8.

³⁴ OKEW, 98.

³⁵ OKEW, 98. For discussion, see Gary Hatfield 'Perception and Sense-Data' in Michael Beaney, The Oxford Handbook of the History of Analytic Philosophy (Oxford University Press, 2014): 948-973, 959-60.

³⁶ OKEW, 98-9.

³⁷ OKEW, 99-100.

³⁸ OKEW, 100; RSDP, 117-119; MPD, 107-8

³⁹ Russell relied on these two locations to construct a six-dimensional space of perspectives: each aspect has a three-dimensional location as the place from which the aspect is perceived, and another three-dimensional location at which the aspect resides. Aspects then have six-dimensional locations within the system of perspectives.

⁴⁰ OKEW, 118-9.

⁴¹ OKEW, 77-8.

⁴² OKEW, 75, 77.

⁴³ OKEW, 75, 77.

⁴⁴ OKEW, 78-79.

⁴⁵ OKEW, 77-8. Russell believed it would be "pathological" to doubt our sense-data. OKEW, 78.

⁴⁶ OKEW, 19.

⁴⁷ OKEW, 79. Without knowledge of other minds, “testimony heard or read is reduced to noises and shapes, and cannot be regarded as evidence of the facts which it reports.” OKEW, 89-90.

⁴⁸ OKEW, 79-80.

⁴⁹ OKEW, 100.

⁵⁰ “A complete application of the method which substitutes constructions for inferences would exhibit matter wholly in terms of sense-data, and even, we may add, of the sense-data of a single person, since sense-data of others cannot be known without some element of inference. This, however, must remain for the present an ideal...It would give me the greatest satisfaction to be able to dispense with it, and thus establish physics on a solipsistic basis”

RSDP, 116.

⁵¹ RSDP, 116.

⁵² OKEW, 101-103. Russell immediately adds: “In actual fact, whatever we may try to think as philosophers, we cannot help believing in the minds of other people, so that the question whether our belief is justified has a merely speculative interest. And if it is justified, then there is no further difficulty of principle in the vast extension of our knowledge, beyond our own private data, which we find in science and common sense.” OKEW, 103-4.

⁵³ Even worse, the very idea of knowing about material bodies on the basis of testimony, and knowing testimony on the basis of other minds, puts the wrong foot forward: for we know about other minds on the basis of their behavior, and so of their bodies. If we didn’t already have some knowledge of material bodies that already goes beyond our knowledge of our own sense-data, then we’d be very hard pressed indeed to know about their behavior and so to know about their minds. Cf. Soames, op. cit.

⁵⁴ OKEW, 103.

⁵⁵ RSDP, 117.

⁵⁶ G.F. Stout, 'Are Presentations Mental or Physical? A Reply to Professor Alexander' Proceedings of the Aristotelian Society, vol. 9 (1908-9): 226-247, 238. This debate is discussed at length in Omar Nassim, Bertrand Russell and the Edwardian Philosophers: Constructing the World (Palgrave MacMillan Press, 2008). See also Hatfield, op. cit.

⁵⁷ Russell was partly inspired by T. Percy Nunn, 'Are Secondary Qualities Independent of Perception?' Proceedings of the Aristotelian Society, vol. 10 (1909-10): 191-231.

⁵⁸ RSDP, 113-4.

⁵⁹ OKEW, 104.

⁶⁰ OKEW, 104.