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**Methodology in 19<sup>th</sup> and Early 20<sup>th</sup>  
Century Analytic Philosophy**

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## Methodology in 19<sup>th</sup> and Early 20<sup>th</sup> Century Analytic Philosophy

In the fall of 1910 and the winter of 1911, G.E. Moore gave a series of 20 lectures which were published 42 years later (in substantially their original form) as *Some Main Problems of Philosophy*.<sup>1</sup> The first lecture, “What is Philosophy?,” is a useful indicator of the state of analytic philosophy in its early years. In it Moore discusses what he takes to be philosophy’s most important questions, outlines competing answers, and points to what later lectures will make clear to be his own position on many of these questions. Looking back a century later, the contemporary reader can’t help being struck by the thoroughly traditional conception of the aims of philosophy embraced by a founding father of a tradition that has often been seen as a revolutionary new departure in the subject. For Moore, the most important task of philosophy is to give a general description of the whole universe – by which he means an accounting of the kinds of things we know to be in it (material objects, human minds, etc.), the kinds of things which, though not known to be in it, may very well be (e.g., a divine mind or minds, human minds after death), and the relations holding among the different kinds of things (e.g., minds *attached* to bodies). Related to this metaphysical quest is the epistemological task of explaining how we are justified in knowing most of the things we ordinarily take ourselves to know. Finally, Moore thinks, there are questions of value – the rightness or wrongness of actions, the goodness or badness of states of affairs, and even the value of the universe as a whole. In short, metaphysics, epistemology, and ethics (traditionally conceived) make up the core of his conception of philosophy.

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<sup>1</sup> Moore (1910-1911).

Were we to supplement this sketch with the contemporaneous views of the two other major analytic figures of the day – Frege and Russell – logic, language, and mathematics would be added to Moore’s chief philosophical concerns. But the overall conception of philosophy wouldn’t change much. In these early days of the analytic tradition some previously neglected philosophical topics were given new prominence, but they didn’t replace traditional concerns, which continued to be addressed in new ways.

The chief change was the rise of logical and linguistic analysis as the means to achieve essentially traditional ends. The great engine of innovation was logicism, which was motivated initially by two questions: “What are numbers?” and “What is the basis of mathematical knowledge?” It was Frege who led the way in answering these questions.<sup>2</sup> Convinced that the highest certainty belongs to elementary, self-evident principles of logic – without which thought itself might prove impossible – he believed that the sublime certainty of arithmetic and higher mathematics (save geometry), must be deductively based on logic itself.<sup>3</sup> It was to demonstrate this that he developed modern symbolic logic in his 1879 *Begriffsschrift*.<sup>4</sup> The key step after that was to derive arithmetic from logic by (i) specifying a small set of logical truths of the highest certainty to serve as axioms, (ii) defining all arithmetical concepts in terms of purely logical ones, and (iii) producing formal proofs of all arithmetical axioms from these definitions plus the axioms of logic.

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<sup>2</sup> See, Frege (1884)..

<sup>3</sup> See section 14, and Preface, section xvii, of Frege (1893).

<sup>4</sup> Frege, (1879).

That audacity of the program was partially mitigated by his muscular conception of logic. For Frege, logic carried its own ontology. An infinitely ascending hierarchy of predicates was matched by an infinitely ascending hierarchy of concepts they denoted. First-level concepts were functions from objects to truth values, second-level concepts were functions from first-level concepts to truth values, and so on. In addition, every concept had an extension (itself taken to be a kind of object), which we may regard as the set of entities (possibly empty) to which the concept assigned the value truth. Frege's "logical axioms" guaranteed the existence of multiple entities of this sort. Today many would say that his logic looks a lot like set theory, which is now widely regarded not as logic *per se*, but as a fundamental mathematical theory in its own right.

But this is hindsight. The genius of Frege's philosophy of mathematics was his methodology for using his logico-set-theoretic foundation to address his deep philosophical questions about mathematics. Although prior to philosophical analysis we all know many arithmetical truths, we have no idea what numbers are and little understanding of how it is possible for us to achieve certain knowledge of them. *Frege's basic idea is that natural numbers are whatever they have to be in order to explain our knowledge of them.* Thus the way to discover what they are and how statements about them are justified is to frame definitions of each number, as well as the notion *natural number*, that allow us to logically deduce what we pretheoretically know from the definitions and other unproblematic knowledge.<sup>5</sup> How, for example, should 2, 3, 5, and addition be defined so that facts like those in (2) can be deduced from the definitions, plus our knowledge of logic plus empirical facts like (1)?

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<sup>5</sup> See sections 46, 56, 60, and 64-66 of Frege (1884).

1.  $\exists x \exists y (x \text{ is a black book on my desk} \ \& \ y \text{ is a black book on my desk} \ \& \ x \neq y)$   
 $\ \& \ \exists u \exists v \exists w (u \text{ is a blue book on my desk} \ \& \ v \text{ is a blue book on my desk} \ \& \ w$   
 $\text{ is a blue book on my desk} \ \& \ u \neq v \ \& \ u \neq w \ \& \ v \neq w) \ \& \ \forall x \forall y ((x \text{ is a black}$   
 $\text{ book} \ \& \ y \text{ is a blue book}) \rightarrow x \neq y)$
- 2a. The number of black books on my desk = 2 and the number of blue books on my desk = 3. (There are 2 black books on my desk and 3 blue books on my desk.)
- b. The number of books on my desk = 5. (There are 5 books on my desk.)

More generally, how might a proper understanding of what natural numbers and arithmetical operations are be used first to derive our purely arithmetical knowledge from the laws of logic, and then to derive empirical applications of that knowledge by appealing to relevant empirical facts? This, for Frege, is the most important question that a philosophical theory of number must answer.

The fact that no other philosophy of mathematics of his day could answer this question was the primary basis for his devastating critiques of Millian naturalism, psychologism, and crude formalism (as well as for his dismissal of Kant's conception of arithmetic as founded upon our experience of time). His most fundamental objections to Mill and others were (i), that they often don't even attempt to answer his fundamental question, and (ii), that what they do say only gets in the way of a proper answer. Thus, he thought they offered no real theory of number at all. By contrast his compelling conception of individual natural numbers as sets of equinumerous concepts (the extensions of which can be mapped 1-1 onto each other), his characterization of *the successor of n* (as the class of concepts G such that for some object x in the extension of G the concept *being a G that is not identical to x* is a member of n), and his definition of the natural numbers as consisting of zero plus its

ancestors under successor provided what appeared to be the basis for a powerful and elegant explanation of the knowledge to be explained.

Not one to rest with appearances, Frege painstakingly performed the needed derivations in Frege (1903) which, unfortunately, could not stand the shock of Russell's paradox. Though he cobbled together a temporary fix – which wasn't proven to be inadequate until many years later – he knew that the game, as he had conceived it, was up. The inconsistency of his logico-set-theoretic system plus the daunting task of repairing it without loss of requisite power carried an obvious lesson. The task of *justifying* arithmetical and other mathematical knowledge in terms of self-evident logical principles for which no similar problem of justification could arise was hopeless. On the contrary, the arithmetical axioms to be proved were, if anything, more secure and less in need of justification than the “logical axioms” posited to prove them. Hence, the classical version of the logicist project foundered.

When it came time for Russell's version, both the logic and the philosophy had changed. Whereas Frege's higher-order logic involved ascending levels of quantification over concepts of higher and higher levels, Russell's is most naturally read as involving quantification over ascending orders of classes – individuals, classes of individuals, classes of classes of individuals, and so on. Whereas extensions of concepts – classes – are all available at the lowest level of Frege's system, in Russell's they come presorted, with all classes of elements of level  $n$  coming at the next level up. By dubiously treating the type restriction regulating class availability as if they were constraints on the ability to speak meaningfully about classes at all, Russell was able to render his paradox unstateable, and so to

preserve his system from contradiction. However, since the natural numbers had to be located at some specific level – they are classes the elements of which are classes of individuals – he needed his infamous Axiom of Infinity, which posits infinitely many *individuals* (nonclasses), to guarantee that he won't run out of numbers.

Hence, the philosophy underlying his version of logicism had to change. Logicism, as classically understood, is the view that arithmetic and much of higher mathematics is derivable from pure logic, and so is properly a branch of logic itself. However, in Russell and Whitehead (1910) and later work, Russell recognizes that the Axiom of Infinity is at best an empirical, rather than a logical, truth – as well as being one he does *not* know to be true. In light of this, Boolos (1994) makes a good case that Russell's considered view was a weaker form of logicism according to which *mathematical concepts* are reducible to *purely logical concepts*, even though the proofs of many mathematical truths require non-logical existence claims about how many individuals there are.

This retreat, though significant, is not so bad – in part because it is extremely doubtful that the original, classical version of logicism is achievable and in part because the weaker version contributes to goals different from the original aim of *justifying* mathematics. By 1907 Russell had come to appreciate the central difficulty with doing that. *We are more certain of the axioms of arithmetic, and less in the dark about how we can know them to be true, than we are of the axioms of any purported system of logic or set theory to which they might be reduced.* As he realized, his own theory of types plus axioms of comprehension and infinity raise more questions, and are subject to greater

rational doubt, than the arithmetical system he derives from it. Hence the former can't be used to justify the latter.

By this time, he had come to view justification as going in the other direction -- from the reduced theory to the reducing theory, rather than the other way. In Russell (1907) he argued that sometimes previously unknown, and unobvious, logical or mathematic truths can be justified by the fact that they provide *explanations* of the known and obvious truths that follow from them. The suggestion is that his unobvious logico-set-theoretic system is justified, at least in part, by the fact that the intrinsically obvious and antecedently justified theory of arithmetic follows from it.

As a principle of metaphysical methodology to be employed in developing philosophical foundations for mathematics the principle is not unattractive. Some logical and metamathematical claims may be more foundational and explanatory than others, even though the latter may be more epistemically obvious than the former. When looking for the fundamental structure of a subject, one should, according to the view suggested, use the latter to justify the former. But what exactly does this come to in Russell's case? In Russell (1907), he lays down three ways in which the derivation of arithmetic from his underlying system helps justify the latter. First, he says, in showing that the arithmetical axioms, and through them the theorems of classical mathematics, are derivable from his system, we see how our overall system of mathematical knowledge is (or can be?) organized, and how different parts of that system are related to one another. Second, he notes, the reduction can lead to useful extensions and unifications of mathematical knowledge, such as the extension of our ordinary notion of number to include transfinite numbers. Third, he claims that by illuminating the logical nature of



mathematics we can throw light on the philosophical question of what mathematical knowledge amounts to, and how it is achieved.<sup>6</sup>

Although there may be merit in Russell's first two points, the third is more doubtful. Since his reduction relies on the Axiom of Infinity, which we don't, antecedently, know to be true, no appeal to it can explain how we achieved our antecedent knowledge of arithmetic and mathematics in general (supposing we have known these all along). Nor do we learn the Axiom of Infinity to be true by noting its role in Russell's reduction; he himself certainly didn't. So it is hard to see how his particular reduction succeeds in explaining anything about our knowledge of arithmetic. These issues could, of course, be side stepped by carrying out the reduction in another way – e.g. by deriving arithmetic from ZF set theory. But what would this accomplish? Is there some epistemic problem about arithmetic, and our knowledge of it, that is not equally a problem with ZF, and our knowledge of it? If so, I am not sure what it is.

That, of course, isn't how Russell saw things – in part because ZF was still on the horizon in 1910 and in part because he thought he had eliminated classes (sets) from his ontology. Although he allows himself to use the language of “sets/classes” he explicitly disavows commitment to them as entities. His general position is sketched in section 2 of Chapter 3 of the Introduction to Russell and Whitehead (1910).

“The symbols for classes, like those for descriptions, are, in our system, incomplete symbols: their uses are defined, but they themselves are not assumed to mean anything at all. That is to say, the uses of such symbols are so defined that when the *definiens* is substituted for the *definiendum*, there no longer remains any symbol supposed to represent a class. *Thus classes, so far as we introduce them, are merely symbolic or linguistic conveniences, not genuine objects as their members are if they are individuals.*” (my emphasis, pp. 71-72)

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<sup>6</sup>Russell (2007), 282-3.

The contextual definition of the usual class notation is given at \*20.01.<sup>7</sup>

$$F(\{x: Gx\}) =_{df} \exists H [ \forall y (Hy \leftrightarrow Gy) \& F(H) ]$$

According to this definition, a formula that seems to say that  $F$  is true of the class of individuals satisfying  $G$  is really an abbreviation for a more complex formula that says that  $F$  is true of something that is true of all and only the individuals that satisfy  $G$ . According to Russell, this something is “a propositional function.” If propositional functions were still functions from individuals to old-fashioned Russellian propositions, then to say that such a function is true of an object would be to say that it assigns the object a true proposition, and to say that propositional functions are *extensionally equivalent* would be to say they are true of the same things. (Similarly for two properties or for a property and a propositional function.) So whenever  $G$  and  $G^*$  stand for extensionally equivalent properties or propositional functions,  $[F(\{x: Gx\})]$  and  $[F(\{x: G^*x\})]$  will, according to the definition, agree in truth value – as they should.

Next consider a propositional function that takes a property or propositional function as argument. Call it *extensional* iff it whenever it is true of its argument  $A$ , it is true of all arguments extensionally equivalent to  $A$ . As Russell notes at *Principia* \*20, not all propositional functions are extensional in this sense.

“[the propositional function designated by] ‘I believe  $\forall x \Phi x$ ’ is an *intensional* function [and so not extensional] because even if  $\forall x (\Phi x \leftrightarrow \Psi x)$ , it by no means follows that I believe  $\forall x \Psi x$  provided that I believe  $\forall x \Phi x$ .” (p. 187)

Suppose that  $p_{\rightarrow x}$  and  $p_{\neq x}$  are different but extensionally equivalent propositional functions, the former mapping an arbitrary individual  $a$  onto the proposition *that if  $a$  is a human, then  $a$  is a human* and the latter mapping  $a$  onto the proposition *that if  $a$  is a featherless*

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<sup>7</sup> Russell and Whitehead (2010), 190.

*biped, then a is a human.* Now let  $\Phi$  a first-level predicate variable. Then the propositional function designated by  $[I \text{ believe } \forall x \Phi x]$  -- which maps propositional functions onto propositions expressed by the corresponding belief ascriptions – may assign  $p_{\forall x}$  a true proposition about what I believe while assigning  $p_{\exists x}$  a false proposition. Thus, the propositional function designated by the belief ascription is *intensional*, rather than extensional. However, since, as Russell plausibly holds, *only* extensional propositional functions are relevant to mathematics, the system in Russell and Whitehead (1910) can be restricted to them. When one does this, the only thing about the proposition assigned by a propositional function to a given argument that matters to the construction is its truth value. This being so, we can reinterpret the entire construction in terms of functions from arguments to truth values (rather than propositions) – *without losing anything essential to the reduction.*<sup>8</sup>

Although the result is pleasing, Russell would not have liked it. A function from arguments to truth values is *the characteristic function of the set* of things to which it assigns truth. There is no mathematically significant difference between working with sets and working with their characteristic functions; anything done with one can be done with the other. Nor does there seem to be any important ontological or philosophical difference between the two. But then, Russell’s treatment of classes as “logical fictions” would have been empty and pointless – which is how most of the mathematicians, logicians, and philosophers who followed Russell saw it.

By contrast, Russell took the elimination of classes seriously. By the time Russell and Whitehead (1910), his view of propositional functions had become a radically

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<sup>8</sup> See pp. 39-40, Burgess (2005).

deflationary version of his earlier “realist” view of them as nonlinguistic entities. The result was a thoroughly de-ontologized interpretation of his technical reduction. In this work he speaks of propositions and propositional functions in various, not always consistent, ways. But most of the time he seems to take propositions to be sentences, and propositional functions to be formulas one gets from them by replacing an occurrence of an expression with a free occurrence of a variable. Thus, looking back in Russell (1940) he says “In the language of the second-order variables denote symbols, not what is symbolized,” (p. 192) while in Russell (1959) he says “Whitehead and I thought of a propositional function as an expression” (p. 92). If this so, it would seem that a sentence of the form ‘ $\forall P \dots P \dots$ ’ must mean that *every value of the formula ‘ $\dots P \dots$ ’ is true.*

Russell and Whitehead (1910) is replete with language like this. For example, in section 3 of chapter 3 of the Introduction, Russell sketches the idea of a hierarchy of notions of truth that apply to the different levels of his type construction. Assuming that truth has already been defined for quantifier-free sentences at the lowest level, he explains first-order quantification as follows:

“Consider now the proposition [ $\forall x \Phi x$ ]. If this has truth of the sort appropriate to it, that will mean that every value of  $\Phi x$  has “first truth” [the lowest level of truth]. Thus if we call the sort of truth that is appropriate to [ $\forall x \Phi x$ ] “second truth,” *we may define [ $\forall x \Phi x$ ] as meaning [every value for ‘ $\Phi x$ ’ has first truth] ... Similarly... we may define [ $\exists x \Phi x$ ] as meaning [some value for ‘ $\Phi x$ ’ has first truth].*<sup>9</sup>

Here, in addition to assuming that a similar explanation can be given for higher-order quantification, we are to assume that “first-truth” conditions and meanings have been given for quantifier-free sentences at the lowest level.

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<sup>9</sup> My emphasis, p. 42. I have here changed Russell’s notation in inessential ways, and used corner quotes to clear up some of the use/mention sloppiness.

Although it might appear from this that Russell took quantificational statements to express metalinguistic facts about language (even though their instances make entirely non-metalinguistic claims), this surely cannot be right. There is, however, another interpretation that could be given to his remarks.<sup>10</sup> On this interpretation, the quantifiers in Russell's reduction are what are now called "substitutional." So understood, they don't range over objects of any kind – linguistic or nonlinguistic, but rather are associated with substitution classes of expressions. Although their *truth conditions* are stated metalinguistically, *their content* is supposed to be nonlinguistic. Using objectual quantifiers over expressions, we can give substitutional *truth conditions* of quantified sentences in the normal way – as Russell does.  $[\forall x \Phi x]$  and  $[\exists x \Phi x]$  are true, respectively, iff all, or some, of their substitution instances are true, where the latter are gotten from replacing free occurrences of 'x' in  $\Phi x$  by an expression in the relevant substitution class. This explanation will work, provided that the truth values of the sentences on which the quantified sentences depend are already determined before reaching the quantified sentences, and so do not themselves depend on the truth or falsity of any higher-level, substitutionally quantified sentences.

There are three important points to note. First, if one combines the hierarchical restriction inherent in substitutional quantification with Russell's system of higher levels of quantification, the type restrictions he needs for his logicist reduction will fall out from the restrictions on substitutional quantification, without any need for further justification. Second, on the substitutional interpretation, there is no need for what look like higher-

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<sup>10</sup> This interpretation is defended in Landini (1998) and in Klement (2004).

level “existential” generalizations – i.e.  $[\exists P \Phi(P)]$ ,  $[\exists P_2 \Phi(P_2)]$ , etc. – to carry any ontological commitment. They won’t – as long as the relevant substitution instances can be true even when the constant replacing the bound variable doesn’t designate anything. Third, for this reason, it is tempting to think that no quantificational statements in the hierarchy carry any ontological commitments not already carried by quantifier-free sentences at the lowest level. Since Russell took accepting the latter to commit one only to individuals and simple properties and relations, it would be natural for him to characterize classes, numbers, and nonlinguistic propositions and propositional functions as “logical fictions,” while nevertheless appealing to them when “speaking with the vulgar,” as he does in Russell (1919).

The virtue of the substitutional interpretation of quantification is that it makes some sense of Russell’s ill-advised enthusiasm for no-class theory. Its vice is that it is technically insufficient to support the reduction in *Principia*, while undermining his other important achievements in philosophical logic.<sup>11</sup> To fully appreciate Russell’s contributions, it is best not to read him this way. However, the substitutional interpretation did play a role in stoking his enthusiasm for his conception of logico-linguistic analysis as a method of ontological reduction in the philosophy of mathematics and beyond.

His next significant steps were taken in Russell (1914, 1918-1919), in which two broad tendencies are discernable. The first is an ambitious analytic reductionism, by which he sought to avoid ontological commitment to entities thought to be problematic. Just as he took his theory of descriptions and his analysis of ordinary names as disguised

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<sup>11</sup> This is argued in chapter 10 of Soames (forthcoming).

descriptions to provide the treatment of negative existentials needed to finally put to rest his earlier broadly Meinongian ontology,<sup>12</sup> so he took his multiple-relation analysis of judgment to eliminate propositions,<sup>13</sup> and his reduction of natural numbers to classes to dispense with an independent category of abstract objects. But that was only the beginning. His more radical view of classes themselves as “logical fictions” advanced a strikingly minimalist metaphysical agenda, present from Russell and Whitehead (1910) onward. In Russell (1914), he took a further ontological step in the service of epistemological concerns. It was there that he renounced commitment to physical objects as independently existing substances, characterizing them instead as “logical constructions” out of the objects of immediate sense perception. By this time his view of reality had been stripped of all abstract objects except “universals” – simple properties and relations – and all particulars except for individual selves (themselves to be eliminated in Russell 1918-1919) and the fleeting, private objects of their immediate perception.

In all of this, we see the second broadly methodological tendency, which linked his evolving metaphysical minimalism with an ambitious search for secure epistemological foundations. At this point, Russell’s epistemological practice consisted of two distinguishable sub tasks. The first was to isolate a domain of putative pretheoretic knowledge, which though revisable at the margins was taken to be, on the whole, beyond serious doubt. In the case of logicism this domain was our knowledge of arithmetic and other branches of mathematics; in the case of the external world it was our

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<sup>12</sup> In, Russell (1905) and chapter 16 of Russell (1919).

<sup>13</sup> In Russell (1912).

knowledge of physical science, and of the truth of most ordinary judgments about “physical objects.” The second sub task was to identify a minimal set of underlying notions to be used to identify analytically primitive judgments or axioms, plus definitions from which the overwhelming majority of the pre-theoretic claims taken as data could be analyzed/derived. Russell did not require the underlying axioms or definitions to be self-evidently obvious. It was enough that they could be used to explain how the pre-theoretic claims under analysis could be known to be true, while avoiding puzzles and paradoxes generated by the gratuitous postulation of entities the nature and existence of which we have no way of knowing.

Russell makes his methodology explicit in lecture one of Russell (1918-1919). His aim is to outline the structure of a world we are capable of knowing, based on the ideas (i) that most of what we are given by the empirical and deductive sciences, and by the most fundamental judgments of common sense, is true and capable of being known, (ii) that although we are justifiably confident of this, we do not know the real content of these truths, and (iii) that the job of analysis is to elucidate this content, thereby explaining how we do, or at least could come to, know it. He warns that we can't anticipate the end result of analysis in advance, and admonishes us not to dismiss what may seem to be highly revisionary characterizations of the knowable content of pretheoretic claims. At this point one wonders, is the task to explain what justifies the vast pretheoretic knowledge we already have, or is it to articulate what our evidence really justifies, and hence *what we could come to know, if we adopted a frankly revisionary view of the world?* Although Russell often speaks as if he adhered to the first conception, the results he reaches suggest the second.



Applying his method to physics, he says:

“You find, if you read the words of physicists, that they reduce matter down to...very tiny bits of matter that are still just like matter in the fact that they persist through time, and that they travel through space...Things of that sort, I say, are not the ultimate constituents of matter in any metaphysical sense...*Those things are all of them...logical fictions...It is possible that there may be all these things that the physicist talks about in actual reality, but it is impossible that we should have any reason whatsoever for supposing that there are.*” (My emphasis, pp. 143-144)

Although this sounds startling – *Nothing really persists through time or moves through space?* – it is simply a recapitulation of the view for which Russell argues in *Our Knowledge of the External World*. There he maintains that the only *knowledge* we use material-object sentences (from physics or everyday life) to express is *knowledge of our own private sense data plus the private sense data of others*. The task he envisions (but only vaguely sketches) is that of translating all material-object sentences into other statements (logical forms of the originals) in which only agents and their sense data are explicitly mentioned. It is only in this way, he thinks, that one can capture what science really teaches, along with what we *justifiably* report when we talk about things like tables, chairs, desks, or human bodies. Although he takes it to be possible to imagine epistemically inaccessible entities beyond our sense data, he takes it to be *impossible* to provide any empirical justification for such speculative claims, which are unknowable.

The new element in Russell (1918-1919) is his treatment of all sentient agents as *logical fictions*. Previously, he had regarded other minds as theoretical posits the justification of which was that they were needed in the logical construction of material objects. Since, in the presence of his implicit epistemology, this move had all the virtues of an appeal to the unknowable axiom of infinity to “explain” our knowledge of arithmetic, he needed to eliminate minds in his mature atomism. On the view outlined in lecture 8 of Russell (1918-1919), each agent is a series of experiences that bear a

similarity relation dubbed “*being experiences of the same person.*” Of course series, along with classes, are *logical fictions* for Russell, so no persons or other agents *really* exist. The only genuinely existing particulars are momentary, private, sense data. Some of these – call them “M-experiences” – are “mine,” and others – call them “J-experiences” are “Jones’s.” All M-experiences bear the relation *being experiences-of-one-person* to one another, and to nothing else, while all J-experiences bear that relation to one another, and to nothing else (including the M-experiences). So, when I say that *I exist* all I am really saying is that certain experiences are M-related. The same goes for Jones; when he says that *he exists* all he is saying is that other experiences are J-related.

The end result is a conception of reality in which all particulars are momentary sense data bearing certain relations to other sense data. Allowing ourselves some useful “logical fictions” we can describe these particulars as arranged into two different cross-cutting systems of “classes” – those that constitute “agents” and those that constitute the things – like tables, chairs, human bodies, etc. – which we pretheoretically (but ultimately misleadingly) describe “agents” as “perceiving”. To be sure, Russell doesn’t claim to know this fantastic conception of the universe to be correct. Still, it is his last pre-Tractarian stab at the truth. Who would have thought that supposedly hard-headed logical and linguistic analysis would lead to a metaphysical system as thoroughly revisionary of our ordinary conception of ourselves and the world presented to us in science or in ordinary life? More revisionary than Berkeley’s system, Russell’s analytic revisionism may surpass the dreamlike conception of Reality in McTaggart (1921, 1927) as an eternal, unchanging community of human souls. If one had thought that the new tradition

in analytic philosophy had left such extravagant metaphysical speculation behind, Russell's example should convince one otherwise.

How did "logical analysis" lead to such a stupefying metaphysical vision? It did so because for Russell it was merely a tool in the service of a highly restrictive antecedent conception of what is required for empirical knowledge. For the most part, he simply took it for granted without extended examination that perceptual evidence can't justify claims about genuine three-dimensional objects persisting through time which continue to exist whether they or not they are perceived. In addition to this implicit presupposition about what knowledge must be, he was committed to an unusual sort of fidelity to most of our ordinary knowledge claims about ourselves, material objects, and the deliverances of science. Taking the pretheoretic content of these to be utterly opaque to us – much as Frege, more understandably, took our pretheoretic conception of number to be essentially blank – Russell required that *the sentences* used to express what we pretheoretically take to be empirically known to be capable of being systematically assigned contents that can be seen to be both true and justified by the restrictive body of sense experience he took to be available to us as evidence. In brief, a narrow and largely unreflective conception of what knowledge and justification consisted in, coupled with a commitment to speak with the vulgar, set the parameters for what counted as correct logic-linguistic analyses. "Analysis" yielded the results that it did, because, at this stage, it was merely a tool in the service of Russell's independent philosophical ends.

In assessing Russell's methodology concerning our knowledge of the empirical world it is instructive to compare his approach to that of Moore's, as expressed in Moore (1909), Lectures 5 and 6 Moore (1910-1911), Moore (1925), and Moore (1939). When

Moore took it to be evident that he knew that there were human hands, pencils, and what not, on the basis of perception, he did *not* mean merely that the *sentences* he used to report this knowledge could be assigned *some content or other* that would make them come out true and knowable. On the contrary, in Moore (1910-1911) and Moore (1925) he rules out phenomenalistic “analyses” of the sort advocated by Russell as *not* capturing the content of what he pretheoretically knows. The great failure of Moore’s epistemology was, of course, that he was never able to make clear just how it is that perceptual evidence justifies what he rightly took himself to know.<sup>14</sup> However, this does not negate the crucial Moorean lesson: *Broad philosophical theories about knowledge are answerable to our firmest pretheoretic convictions involving particular things that we know, which cannot be arbitrary reconstrued, or overturned wholesale, when they conflict with philosophical theory.*

It is also instructive to contrast Frege and Russell’s transparent conceptions of meaning with their practice of assigning contents to sentences subject to philosophical analysis. When Frege presented his strategy for the logicist reduction he contended that “the content” of sentences about number were, in effect, given by his ingenious set-theoretical translations of them. However, it was not clear in 1884 what his notion of “content” was supposed to come to, since this was well before his distinction between sense and reference in Frege (1892). Moreover, it is clear that Fregean translations of ordinary sentences of arithmetic do not share the Fregean senses expressed by the arithmetical originals – since an agent who understands both may sincerely assent to one without assenting to the other. A similar point holds for Russell’s version of logicism.

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<sup>14</sup> For attempts to improve on Moore, see Pryor, James, (2000, 2004).

Given the usual criteria employed by both philosophers for determining when two expressions, or sentences, mean the same thing (think of Russell on logically proper names), the pretheoretically given sentences undergoing logicist analysis do *not* mean the same thing as the sentences that provide the analyses. This is all the more evident for his phenomenalist reduction of statements about the external world to statements about sense data. Thus there appears to be a sharp conflict between introspectivist accounts that take meaning to be highly transparent, seemingly favored by Frege and Russell, with some of their more ambitious philosophical claims about the fruits of logico-linguistic analysis. One way of dealing with this tension would be to take the results of “analysis” to replace, rather than explicate, the claims being analyzed. It is significant, however, that neither philosopher adopted this strategy forthrightly and consistently.

Up to now, I haven’t said anything about modality. Since the distinction between necessary and contingent truth is mostly irrelevant when it comes to mathematics, it is not surprising that Frege and Russell were not concerned with it when developing their logicist views. However, when the focus of logico-linguistic “analysis” shifts to the external world, the distinction between what could and could not be, as well as between what would, as versus what wouldn’t, be if various conditions were fulfilled, becomes relevant. Although Russell paid very little attention to these issues, he did not ignore them entirely, as illustrated by the following passage from Russell (1918-1919).

“Particulars have this peculiarity, among the sort of objects that you have to take account of in an inventory of the world, *that each of them stands entirely alone and is completely self-subsistent*. It has the sort of self-subsistence that used to belong to substance, except that it usually only persists through a very short time. That is to say, *each particular that there is in the world does not in any way logically depend upon any other particular*. *Each one might happen to be the whole universe; it is merely an empirical fact that this is not the case*. There is no reason why you should not have a universe consisting of one particular and nothing else.

That is a peculiarity of a particular. In the same way, in order to understand a name for a particular, the one thing necessary is to be acquainted with that particular. When you are acquainted with that particular, you have a full, adequate, and complete understanding of the name, and no further information is required.” (p. 63, my emphasis)

In speaking of “particulars” Russell means his ultimate metaphysical simples – the momentary sense data named by logically proper names in the logically perfect language he imagines emerging at the end of analysis. Once this stage is reached, our description of the world will include names for all such particulars plus claims (quantified and otherwise) to the effect that they have various simple (unanalyzable) properties and stand in various such relations to one another. The point to notice about the passage is the way in which the *logical* independence of metaphysical simples is linked with their *modal or metaphysical* independence. Does Russell think that each simple concrete particular is *logically* independent of all others because each *could* exist in splendid isolation from all others, or is it the other way around? Although he may not have clearly distinguished the two, it is the latter that is most noteworthy here. What reason is there to think that each such particular could exist all by itself? Let  $n$  be a logically proper name of a concrete particular  $o$ . Since  $[\sim \forall x x = n]$  isn't a logical truth, it is *logically possible* for  $o$  to be the only existing concrete particular. The implicit (unargued) suggestion is that all logical possibility is modal or metaphysical possibility – in which case, it will follow that it is *metaphysically possible* for  $o$  to be the only existing concrete particular. Since the converse inference is likely to seem even more plausible, I suspect that Russell implicitly takes modal necessity/possibility and logical necessity/possibility to coincide (despite the

evident implausibility of supposing that a single sense datum, e.g. a single tactile sensation of hardness, could have existed by itself in the universe.)<sup>15</sup>

Next notice his implicit assertion that for any concrete particular *o*, the claim that *o* isn't the only existing thing is "empirical," and hence *can be known only a posteriori*. Why would that be? Well, if all apriori truths are logically necessary, then the fact that the italicized claim isn't logically necessary shows that it can't be known apriori. For one who shares Russell's grand vision of analysis, this reduction of epistemic modality to logical modality is well-nigh irresistible. It is a central aim of logical atomism to replace unanalyzed terms, predicates, and sentences/propositions – which may stand in conceptual relations to one another – with logically proper names, simple unanalyzable predicates, and fully analyzed sentences/propositions. When this aim is achieved, the conceptual properties of, and relations holding among, unanalyzed expressions and sentences/propositions are traced to genuinely logical properties of, and relations holding among, fully analyzed sentences/propositions of one's logically perfect underlying language. To take a simple example, it is knowable apriori that all squares are rectangles because the unanalyzed sentence *all squares are rectangles* is reduced, on analysis, to the fully analyzed logical form *all rectangles with equal sides are rectangles*, which is *logically necessary* – and hence knowable apriori. The idea that analyses with similar results can be carried through whenever we encounter conceptual dependencies in unanalyzed language is a driving force behind logical atomism. In this way, Russell is

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<sup>15</sup> Not that he explicitly says so. On the contrary, his use of normally modal terms like "possible" and "necessary" is decidedly idiosyncratic. However, it is hard for anyone to get along without sometimes implicitly invoking metaphysically modal notions – as he does in using counterfactual conditionals in his informal discussion of the reduction in Russell (1914), and as he does in Russell (1918-1919) in discussing possible states that the universe could be, or have been, in.

led down a path that makes a reduction of epistemic and metaphysical modalities to logical ones seem plausible.

When one moves to *The Tractatus* – Wittgenstein (1922) -- once finds a superficially similar system of logical atomism that is put to a remarkably different purpose. Like Russell, Wittgenstein posits a multiplicity of metaphysical simples denoted by logically proper names of an imagined logically perfect language. However, his conception of the aim of analysis was not epistemic. Whereas Russell's aim was to find the right substratum for explaining all ordinary and scientific knowledge, Wittgenstein's was to articulate a parallel between language and reality that would make sense of his thesis that metaphysical necessity and epistemological apriority are logical necessity and nothing more. On his picture, metaphysical simples are eternal, unchanging bare particulars with no intrinsic "material" properties of their own, but with the possibility of combining with other simples to form atomic facts. For every possible atomic fact, there is an atomic sentence of the ideal language that would be made true were the fact actually to exist. Just as every atomic sentence (which specifies various simples as standing in one or another relation) is logically independent of every other such sentence, so every possible atomic fact is metaphysically independent of any other. Just as every assignment of truth values to atomic sentences is logically possible, so every corresponding combination of possible atomic facts is a (complete) genuinely possible way the world could have been. In keeping with this, Wittgenstein held that all meaningful sentences are truth functions of atomics sentences, which is itself quite remarkable despite the fact the he had a rather rich conception of truth functionality. Thus, a specification of the atomic facts making up a possible world-state determines the truth value of every



meaningful sentence at that world-state. The “tautologies”, which are made true by every assignment of truth values to atomic sentences, are true at every possible world-state; the logical contradictions, which are not made true by any assignment, are true at no possible world-states; and all other meaningful sentences are true at some world-states, but not others. To understand a sentence is to know the possible world-states at which it is true.

Since all possible facts are atomic facts, there are no necessary facts for “tautologies” to state. Since they are true at all possible world-states, understanding them and knowing them to be true doesn’t give one any information about the actual world-state – the way things actually are – that distinguishes it from any other merely possible ways things might be. This leads Wittgenstein to claim that “tautologies” are empty; they don’t *say* anything. They are simply the result of having a symbol system that includes truth functional operators. So, Wittgenstein thought, whether or not something is a tautology should be determined (and in principle be discoverable) by (examining) its form alone. Thus we have (i) – (iii).

- (i) All necessity is linguistic necessity, in that it is the result of our system of representing the world, rather than the world itself. There are sentences that are necessarily true, but there are no necessary facts that correspond to them. These sentences tell us nothing about the world, rather, their necessity is due to the meanings of words (and therefore is knowable apriori).
- (ii) All linguistic necessity is logical necessity.
- (iii) Logical necessity is determinable by form alone.

With these doctrines in place, it was a short step to the Tractarian test for intelligibility. According to the *Tractatus*, every meaningful statement S falls into one or the other of two categories: either (i) S is contingent (true at some possible world-states and false at others), in which case S is both a truth function of atomic propositions and something that can be known to be true or false only by empirical investigation, or (ii) S

is a tautology or contradiction that can be known to be such by purely formal calculations. The paradigmatic cases of meaningful sentences are those in the first category. The sentences in the second category are included as meaningful because they are the inevitable product of the rules governing the logical vocabulary used in constructing sentences of the first category. For Wittgenstein, tautologies and contradictions don't state anything, or give any information about the world. But their truth or falsity can be calculated, and understanding them reveals something about our symbol system. Thus, they can be regarded as meaningful in an extended sense.

It was this doctrine about the limits of meaning/intelligibility, more than anything else, that captured the attention of analytic philosophers like Carnap in the 1920s and 1930s. Wittgenstein's route to the doctrine – via an utterly fantastic metaphysics and a completely unrealistic conception of an ideal, logically perfect language, somehow underlying our ordinary thought and talk – were, by and large, treated as baggage that could be dispensed with, so long as the emerging view of philosophy as nothing more than the logical analysis of language -- scientific, mathematical, and/or ordinary -- could be preserved and extended.

Indeed, it was this uncompromising view of philosophy that emerged from the *Tractatus* which had the strongest, the most immediate, and the most lasting impact. Just as, according to Wittgenstein, the most fundamental ethical claims are neither tautologies nor contingent statements about empirically knowable facts, so philosophical claims are, in general, neither tautological nor contingent statements about empirical facts. Like ethical sentences, they are non-sense. Hence, there are no meaningful philosophical sentences; there are no genuine philosophical questions; and there are no philosophical

problems for philosophers to solve. It is not that philosophical problems are so difficult that we can never be sure we have discovered the truth about them. There is no such thing as the truth about them, because there are no philosophical problems.

This view, dramatically expressed in the *Tractatus*, was taken over in less flamboyant form by Carnap and other logical positivists by the early 1930s.<sup>16</sup> The key *Tractarian* inheritance was the distinction between analytic and synthetic sentences, the former being empty of empirical content and knowable a priori on the basis of understanding their meanings alone, and the latter being contingent, knowable only a posteriori, and subject to one or another version of the verifiability criterion of meaning. There was, of course, also a substantial remnant of Russell in the appeal to sense experience as the touchstone of empirical meaning, which in turn led to a resurgence of phenomenalism in some quarters.<sup>17</sup> Despite the official exclusion of metaphysics, ethics, and other forms of traditional philosophical speculation, there was, of course, plenty of work for Carnap and his band of scientifically-minded philosophers to do in attempting to work out precise and detailed formulations of what was to prove to be a very difficult view to sustain. It was at this stage that logical and linguistic analysis was officially proclaimed to be the essence of philosophy, rather than merely a powerful tool to be employed in the service of more or less traditional philosophical ends. Thus it is in Carnap (1934) that we find the bold philosophical manifesto, “Philosophy is to be replaced by the logic of science – that is to say by the logical analysis of concepts and sentences of the sciences.” (p. 292 of the English translation)

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<sup>16</sup> For illuminating early statements of the positivist view, and its debt to Wittgenstein, see, Schlick (1930-1931), Carnap (1932), and the introduction to Ayer (1959).

<sup>17</sup> See, for example, Carnap (1928), Ayer, (1936), Ayer (1940), and Schlick(1934).

Looking back at the first 55 years of analytic philosophy, from Frege's *Begriffsschrift* to Carnap's *The Logical Structure of Language*, one finds enormous philosophical progress, especially in philosophical logic, the philosophy of mathematics, and the philosophy of language, but few enduring positive lessons about philosophical methodology, and the role of analysis in philosophy. Despite the enormous advance of logicist philosophy of mathematics over what had preceded it, attempts to use the logicist conception of analysis as an excuse to rewrite the content of what is pretheoretically known in other areas to fit largely unexamined preconceptions about knowledge did not meet with very much success. Nor did the linguistic turn in philosophy -- based as it was on an unfortunate conflation of the logical, linguistic, epistemic, and metaphysical modalities -- provide a solid and broad-based foundation for linguistic and logical analysis. By contrast, Moore's reminder that ordinary pretheoretic convictions have a useful (though limited and fallible) role to play in evaluating philosophical theories was, though modest (when properly understood) of lasting value.

Other than that, my favorite statement of philosophical methodology from the period was almost a throw-away comment by Russell in lecture 8 of Russell (1918-1919).

"I believe the only difference between science and philosophy is that science is what you more or less know and philosophy is what you do not know. Philosophy is that part of science which at present people choose to have opinions about, but which they have no knowledge about. Therefore every advance in knowledge robs philosophy of some problems which formerly it had, and if there is any truth, if there is any value in the kind of procedure of mathematical logic, it will follow that a number of problems which had belonged to philosophy will have ceased to belong to philosophy and will belong to science." (p. 154)

The point, as I would summarize it, is that philosophy is the way we approach problems that are presently too elusive to be investigated scientifically. The goal is to frame questions, explore possible solutions, and forge conceptual tools needed to advance to a

more definitive stage of investigation. If one looks back at the philosophers in the first 60 years of the analytic tradition, it is impossible not to be impressed with their seminal contributions to the development of modern symbolic logic in all its present richness, the mathematical theory of computation, as well as to later advances in cognitive science and computational theories of mind, including the formulation of productive frameworks for investigating the semantics of natural human languages (to which the contributions of Frege and Russell can hardly be overestimated). These are, of course, only a few of the most obvious achievements of many ongoing lines of philosophical investigation initiated during the founding period of analytic philosophy. To my mind, they are far more important than the manifest philosophical failures that seem all too obvious when we focus narrowly on the shortcomings of individual philosophical projects and systems.

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