Russell and Logical Empiricism[*]

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## 1. Introduction

Russell's work in logic, the philosophy of mathematics and epistemology was a major inspiration for logical empiricism, but no logical empiricist fully endorsed any of Russell's shifting strategies for making sense of scientific knowledge. In this chapter I will consider what we can learn about Russell's views by considering his interactions with logical empiricism. By around 1930 the logical empiricists Neurath, Carnap, Schlick and Reichenbach had publicly noted their various affinities with Russell, while also raising some concerns about Russell's realist metaphysics. These writings spurred Russell to think through his ties to logical empiricism and express his considered views on epistemology and metaphysics. Starting in the mid-1930s, Russell articulated a direct attack on the central tenets of logical empiricism. While these writings showed Russell's misgivings about logical empiricism, he struggled to clarify the basis of his non-empiricist alternative account of scientific knowledge. Russell used Reichenbach's logical empiricism as a foil to finally present such a theory in his 1948 *Human Knowledge: Its Scope and Limits*. This book defended a weak form of metaphysical and scientific realism on the basis of five postulates that cannot be justified by experience. The need for these postulates and the requirement that they be justified definitely distinguishes Russell from the logical empiricists. Russell argued that we must revise our conception of knowledge to allow for an externalist justification of his postulates.

## 2. Russell before logical empiricism

[*] Written for K. Klement (ed.), *Oxford Handbook of Bertrand Russell*.

Logical empiricism is typically centered on the Vienna Circle, a group of philosophers and scientists that met regularly in Vienna in the 1920s and 1930s. The most influential members of the Vienna Circle are Schlick (1882-1936), Neurath (1882-1945) and Carnap (1891-1970). The Vienna Circle made a wide range of contacts with allied groups in other locations, most notably Berlin, where Reichenbach (1891-1953) was especially prominent. These four philosophers were united by their insistence on empiricism about knowledge: all genuine knowledge was scientific knowledge whose justification ultimately traced to some experiential or observational basis. And each allowed that the "new logic" pioneered by Frege as well as Russell and Whitehead's *Principia Mathematica* was a significant new resource that permitted the resolution of various anti-empiricist objections. But beyond these broad principles, there was little philosophical substance to unite the logical empiricists. This prompted a series of methodological and conceptual debates, initially carried out in private, but starting around 1930, continued in public forums such as journals and conferences.[1]

An important entry in this "public phase" of the Vienna Circle is the co-authored 1929 "manifesto", "The Scientific Conception of the World: The Vienna Circle" (Hahn, Neurath, Carnap 1929). This pamphlet was dedicated to Schlick, the acknowledged leader of the Circle, and published to coincide with the Sept. 1929 Prague conference on the "epistemology of the exact sciences" (Hahn, Neurath, Carnap 1929, 299). Russell is mentioned in the second paragraph as one of "a very few leading thinkers" who advocate for the scientific world conception: "We find anti-metaphysical endeavours especially in England, where the tradition

[1] I survey some of the methodological debates within logical empiricism in Pincock 2016. For some orientation on the best scholarship on logical empiricism see esp. Friedman 1999, Stadler 2001, Richardson and Uebel 2007, Uebel 2007 and Uebel 2013.

of the great empiricists is still alive; the investigations of Russell and Whitehead on logic and the analysis of reality have won international significance" (Hahn, Neurath, Carnap 1929, 301). Russell is later singled out for developing and advocating a "method of logical analysis" (Hahn, Neurath, Carnap 1929, 306): a passage from the first lecture of Russell's *Our Knowledge of the External World* (OKEW) is given, signaling "the substitution of piecemeal, detailed and verifiable results for large untested generalities recommended only by a certain appeal to imagination" (OKEW, 4; given at Hahn, Neurath, Carnap 1929, 306). The point of using this method, for the Vienna Circle, is "unified science. The endeavour is to link and harmonise the achievements of individual investigators in their various fields of science" (Hahn, Neurath, Carnap 1929, 306). Russell is also praised, along with Wittgenstein, for "the clarification of the logical origins of metaphysical aberration" (Hahn, Neurath, Carnap 1929, 307). In terms that anticipate Carnap's later "Elimination of Metaphysics" (Carnap 1932), the authors speak of "two basic logical mistakes: too narrow a tie to the form of traditional languages and a confusion about the logical achievement of thought" (Hahn, Neurath, Carnap 1929, 307). The grammatical form of ordinary language may encourage unwarranted "substantialization". In addition, philosophers may be confused by supposing that "thinking can either lead to knowledge out of its own resources without using any empirical material, or at least arrive at new contents by an inference from given states of affair" (Hahn, Neurath, Carnap 1929, 308).

The Vienna Circle manifesto concludes with a list of names, divided into three parts: "members of the Vienna Circle", "those sympathetic to the Vienna Circle" and "leading representatives of the scientific world-conception". The last list includes only Einstein, Russell and Wittgenstein, while Ramsey and Reichenbach are deemed "sympathetic to the Vienna

Circle" (Hahn, Neurath, Carnap 1929, 318). Thus, despite the prominent place of Russell in the manifesto itself, its authors show some awareness of the distance between Russell and some aspects of logical empiricism. Perhaps the most salient disagreement that Russell would have had with the 1929 manifesto is its goal of overcoming metaphysics. For while Russell never tired of pointing out metaphysical errors tied to logical confusion, he did not take these errors to undermine the metaphysical enterprise. Instead, a reformed fallible metaphysics would proceed in the piecemeal fashion of "logical atomism". Similarly, while Russell shared the aim of "unified science" through the logical analysis of scientific results, it is clear that he sought to preserve a role for philosophical propositions and results.

To explore these divergences with the Vienna Circle manifesto program I will consider a selection of writings from 1914 through 1928, including OKEW, Russell's introduction to the *Tractatus* (CP9, 96-112) and the *Analysis of Matter* (AnMa). These writings mark some of Russell's most sustained attempts to come to grips with Wittgenstein's *Tractatus*. The *Tractatus* was a central text for the Vienna Circle as well, coming to dominate Schlick's thinking, influence Carnap and prompt forceful responses from Neurath. But unlike the logical empiricists, Russell rejected Wittgenstein's position that philosophy is an activity and not a theoretical discipline. This opened the door for ongoing metaphysical investigations.

The full title of Russell's 1914 book is instructive: *Our Knowledge of the External World as a Field for Scientific Method in Philosophy*. Philosophy and its metaphysical aspirations are not eliminated, for Russell, but dramatically reformed by tailoring a scientific method to philosophical subject-matter. Russell's attitude towards metaphysics is clearly stated towards the end of the first lecture:

> ultimate metaphysical truth, though less all-embracing and harder of attainment than it appeared to some philosophers in the past, can, I believe, be discovered by those who are willing to combine the hopefulness, patience, and open-mindedness of science with something of the Greek feeling for beauty in the abstract world of logic and for the ultimate intrinsic value in the contemplation of truth (OKEW, 29).

This combination of hard-headed empiricism and Platonic feeling permeates the book. Those who choose one of these over the other are shown to invariably fall short of the truth, but Russell presents himself as successfully integrating these tendencies.

Many theses of Wittgenstein's 1913 "Notes of Logic" are directly incorporated into OKEW:

> Philosophy can neither confirm nor confute scientific investigation. Philosophy consists of logic and metaphysics: logic is its basis. Epistemology is the philosophy of psychology ... Philosophy is the doctrine of the logical form of scientific propositions (not only of primitive propositions). The word "philosophy" ought always to designate something over or under not beside, the natural sciences (Wittgenstein 1979, 106).

In lecture II, "Logic as the Essence of Philosophy", Russell develops these points with special emphasis on what he calls logical forms. First, there is a genuine subject matter for philosophy: "every philosophical problem, when it is subjected to the necessary analysis and purification, is found either to be not really philosophical at all, or else to be, in the sense in which we are using the word, logical" (OKEW, 33). The distinguishing mark of a logical principle is that it is a universal generalization that fails to mention any particular. One such logical principle is

isolated through an investigation of Mill's claims about causation and induction. At the root of any such inference must be a principle I will call (PROB):

> If a proposition is true in every instance that we happen to know of, and if the instances are very numerous, then, we shall say, it becomes very probable, on the data, that it will be true in any further instance (OKEW, 36).

These logical principles cannot be known from experience: "if it is known, it is not known by experience, but independently of experience" (OKEW, 37) because the scope of such principles must go beyond the particulars found in experience. Russell takes this to be sufficient to show that "the empiricist's philosophy can therefore not be accepted in its entirety, in spite of its excellence in many matters which lie outside logic" (OKEW, 37). A key premise here is that we do know some general propositions.

Later in Lecture II Russell introduces his notion of logical form: "In every proposition and in every inference there is, besides the particular subject-matter concerned, a certain form, a way in which the constituents of the proposition or inference are put together" (OKEW, 42). The enumeration of these forms is the proper subject matter of logic, and hence philosophy. Once a form is identified, it can be contemplated intellectually, and is apt to engender a pure sort of general knowledge that is not empirical: "general truths cannot be inferred from particular truths alone, but must, if they are to be known, be either self-evident, or inferred from premisses of which at least one is a general truth" (OKEW, 56). While in *Problems of Philosophy*, it was universals and relations between universals that played this role, now in OKEW, it is logical forms. Wittgenstein is credited with the insight that logical forms of facts are not universals:

> "Logical constants," in short, are not entities; the words expressing them are not names, and cannot significantly be made into logical subjects except when it is the words themselves, as opposed to their meanings, that are being discussed (OKEW, 208).

In a footnote Russell adds "In the above remarks I am making use of unpublished work by my friend Ludwig Wittgenstein" (OKEW, 208).

Both the need for, and the limitations of, empiricism are also emphasized in the last lecture during another extended examination of causation. The lecture begins with a concise summary of "the nature of philosophical analysis":

> We start from a body of common knowledge, which constitutes our data. On examination, the data are found to be complex, rather vague, and largely interdependent logically. By analysis we reduce them to propositions which are as nearly as possible simple and precise, and we arrange them in deductive chains, in which a certain number of initial propositions form a logical guarantee for all the rest. These initial propositions are premisses for the body of knowledge in question ... The discovery of these premises belongs to philosophy ... (OKEW, 211).

The scientific empiricist is impressed with the data and can endorse the process of systematization of this data. But this process will stall unless the logical insights proper to philosophy are employed: the logical principles needed are associated with an awareness of certain logical forms. In certain cases, doubt "will be checked by that direct vision of abstract truth upon which the possibility of the philosophical knowledge depends" (OKEW, 239). There remains a role for "genius" (OKEW, 241) even in the most cooperative and piecemeal

philosophical endeavor. Presumably, the resolute empiricist will miss these abstract truths, and so arrive at an overly restrictive conception of our knowledge.

This process is exhibited in debates about causation. When Russell "appl[ies] the analytic method to the notion of "cause"" (OKEW, 212) he endorses the suspicion developed by "Mach and others" that the traditional notion of cause is undermined by "anthropomorphic superstitions" (OKEW, 223-224). But Russell rejects the "purely 'descriptive' view of physics" of Mach that avoids "using causal laws to support inferences from the observed to the unobserved" (OKEW, 224). One should still use a notion of "causal laws" to vindicate these sorts of inferences. As already announced in lecture II, these inferences ultimately depend on a logical principle of probability. Russell repeats the point in his last lecture, now insisting that

> This proposition, therefore, if it is true, will warrant the inference that causal laws probably hold at all times, future as well as past; but without this principle, the observed cases of the truth of causal laws afford no presumption as to the unobserved cases, and therefore the existence of a thing not directly observed can never be validly inferred (OKEW, 222).

The choice, then, is between a self-evident logical premise and the pessimism of the descriptive view. Russell opts for the former without really clarifying what these logical forms are or how we gain knowledge of their character.

My reconstruction of Russell's later discussions of these issues is that (i) he dramatically altered his account of what makes a principle logical while (ii) retaining the requirement that knowledge of general truths about the physical world presupposed non-empirical knowledge of other general truths, esp. those relating to probability and causation. However, a frustrating

aspect of Russell's discussions of these generalizations is that he waited until 1948 to provide an account of how they are to be justified. This was a major gap in his epistemology that made it hard to pin down where, exactly, Russell diverged from the logical empiricists.

Russell's shift on the nature of logic was announced in *Introduction to Mathematical Philosophy* (IMT), which was published in 1919, but written in 1918 before Russell became reacquainted with Wittgenstein's work after World War I. In the book's concluding chapter Russell repeats much of his earlier emphasis on logical forms: "no particular things or relations can ever enter into a proposition of pure logic. We are left with pure *forms* as the only possible constituents of logical propositions" (IMT, 199). But unlike in OKEW, Russell now asserts that some purely formal propositions are not logical propositions. The axiom of infinity is singled out as such a proposition: "though it can be enunciated in logical terms, [it] cannot be asserted by logic to be true" (IMT, 202-203). A sufficient condition on being logical is being a "tautology" (IMT, 203), where this is associated with being derivable from the law of contradiction, and also with a special sort of logical necessity. Russell admits that he lacks a satisfactory definition of "tautology", but Wittgenstein is credited with this insight into the nature of logic (IMT, 205, fn. 1).

If only tautologies count as logical principles, then it is very difficult to maintain that Russell's claim (PROB) from OKEW about data and probability is a logical principle. For (PROB) links the number of known instances of some proposition to the probability of the truth of the next instance of that proposition. But it certainly seems logically possible for the world to violate this statement if its properties were distributed in a sufficiently misleading fashion. It is not clear when Russell realized the tension between his new Wittgensteinian account of logic

and his OKEW argument that logic is the ultimate basis of our knowledge of the external world. In 1919 he studied the *Tractatus* carefully with Wittgenstein and wrote an introduction setting out his interpretation of Wittgenstein's positions. Russell notes how Wittgenstein's views require that "Every philosophical proposition is bad grammar, and the best that we can hope to achieve by philosophical discussion is to lead people to see that philosophical discussion is a mistake" (CP9, 103). He also quotes a statement from the *Tractatus* that marks a crucial shift from the "Notes on Logic". While earlier Wittgenstein had said "Philosophy is the doctrine of the logical form of scientific propositions", now we are told that "Philosophy is not a theory but an activity" (*Tractatus* 4.112, given at CP9, 103). Later in his introduction Russell notes Wittgenstein's views on causation and induction: "The fact that nothing can be deduced from an atomic proposition has interesting applications, for example, to causality ... That the sun will rise tomorrow is a hypothesis. We do not in fact know whether it will rise, since there is no compulsion according to which one thing must happen because another happens" (CP9, 107). The logical independence of atomic propositions is crucial to Wittgenstein's clarification of the notion of a logical tautology. If we accept this independence, then we no longer have logical principles that can underwrite our non-logical knowledge. The subject matter for philosophical propositions has evaporated.

Here, then, is the crucial point where Wittgenstein, and the logical empiricists that followed Wittgenstein on this point, diverged from Russell. One group denies that philosophy is a theoretical discipline, and conceives of philosophy as an activity. This position is prominent in Schlick as well as Carnap. Even Neurath, who was deeply suspicious of the *Tractatus*, endorsed a successor discipline to philosophy whose focus was the activity of clarification and the

development of a unified scientific language. Russell insisted that philosophy was a theoretical discipline, and that it should continue to try to resolve genuine philosophical problems. What changes for Russell, then, is the assumption that these resolutions will come from apprehending logical principles. In the 1920s, the solution to philosophical problems will arise from the discovery and refinement of various non-logical principles that will serve to vindicate our knowledge.

One early step in this direction is Russell's review of Keynes' *Treatise on Probability*. Russell had already reviewed proofs of this book in 1914 (CP9, 113), and its influence is apparent in OKEW.[2] When Keynes' book finally appeared in print in 1921, Russell praised its "logical" approach to probability, with one crucial caveat. Keynes articulates a principle of finite independent variety that is used to vindicate induction. But Russell notes that "if Mr. Keynes is right, the validity of induction as a method of establishing the probability of generalizations depends upon a characteristic of the world which is not logically necessary" (CP9, 121). So, unless we can somehow know that this characteristic obtains, or at least has some probability of obtaining, there is no knowledge of general truths.

"Logical Atomism" (1924) explores one way out of the tensions engendered by Russell's new account of the nature of logic. In an autobiographical introduction, Russell reports the "doubt whether philosophy, as a study distinct from science and possessed of a method of its own, is anything more than an unfortunate legacy from theology" (CP9, 163). The doubt is repeated later in the essay in connection with the theory of types, now presented as a semantic

[2] The OKEW lectures were delivered in March and April of 1914 (OKEW, v, fn. 1). CP9, 113 notes Russell's reactions to proofs of Keynes' book in Feb. and July of 1914.

claim: “there is not one relation of meaning between words and what they stand for, but as many relations of meaning, each of a different logical type, as there are logical types among the objects for which they are words” (CP9, 170). This leads to a “more complete and radical atomism” that, among other things, raises the issue of “the very existence of philosophy as a subject distinct from science and possessing a method of its own” (CP9, 170). This might suggest that Russell is now open to Wittgenstein’s position that philosophy is merely an activity of clarification and organization. However, Russell ends the essay with a sweeping “outline of a possible structure of the world” (CP9, 177) that builds the world out of events that stand in a relation of compresence. So the sort of fallible metaphysics from OKEW remains in place. What is its epistemological basis now that the earlier logical principles are abandoned?

Russell now justifies his metaphysical proposals using science itself:

> What are we to take as data in philosophy? What shall we regard as having the greatest likelihood of being true, and what as proper to be rejected if it conflicts with other evidence? It seems to me that science has a much greater likelihood of being true in the main than any philosophy hitherto advanced (I do not, of course, except my own). In science there are many matters about which people are agreed; in philosophy there are none. Therefore, although each proposition in a science may be false, and it is practically certain that there are some that are false, yet we shall be wise to build our philosophy upon science, because the risk of error in philosophy is pretty sure to be greater than in science (CP9, 175).

Before, philosophy tried to uncover self-evident logical principles like (PROB) of universal scope that can be used to reconstruct the data of science. Now, philosophy aspires to isolate those

"premises" that best serve to unify, make precise and interpret the initial "data" of scientific consensus. As in OKEW, Russell here champions his version of Ockham's razor "Whereever possible, substitute constructions out of known entities for inferences to unknown entities" (CP9, 164). This maxim is appropriate because it directs us to the best overall interpretation of our scientific starting point. We see how to eliminate contentious inferences to new types of entities in favor of constructions that use entities of the type we are already familiar with. A construction of all the entities deployed in science is possible using only events of the sort we encounter in our experience (CP9, 177). Philosophy is tasked with the reorganization and interpretation of the results of science as a whole. Now, unlike in OKEW, the new premises that are uncovered along the way are not logical principles with any kind of independent self-evidence. The new principles are only justified indirectly through their capacity to unify and regiment the scientific starting point.

In 1924, then, it looks like Russell is adopting a derivative justification strategy for his basic principles. They do not have any intrinsic justification or self-evidence, but are instead justified by their capacity to recover some other beliefs such as the contents of our current scientific consensus. One problem with this proposal is that it does not address the source of justification for the shared beliefs of current science. All Russell says is that these scientific beliefs are more likely to be true than any conflicting philosophical beliefs. But this does not address how the scientific beliefs are justified. One possibility is that Russell supposed that their justification was tied to the simple fact that they were believed. Russell would then be best read as endorsing what is now called conservatism in epistemology.[3] Another possibility is that

[3] See, e.g., McCain 2008 for a statement and defense of epistemic conservatism.

the picture described in 1924 is purely methodological: this is the method we should follow, but it does not require that we take a stand on the justification of the basic principles that issue from this analysis.

Russell did not clarify these issues until 1948. In the meantime, he continually bracketed out the justification of induction for later discussion. This strategy is prominent in 1927's *Analysis of Matter*. While the systematization of scientific knowledge that is only sketched in 1924's "Logical Atomism" is developed in considerably greater detail, nothing further is said about induction:

> Some of the difficulties raised by Hume, it is true, have not yet been disposed of; but they concern scientific method in general, more particularly induction. On these matters I do not propose to say anything in the present volume, which will throughout assume the general validity of scientific method properly conducted (AnMa, 7).

Thus, the constructions carried out in the book are not certain, but "recommended by the usual scientific grounds of economy and comprehensiveness of theoretical explanation" (AnMa, 10). This is an undischarged assumption that complicated how the logical empiricists engaged with Russell's work, and also overshadows his later criticisms of the logical empiricists in the 1930s.

Our review of Russell's work from 1914 to 1927 has made clear the extent to which Russell's "scientific world-conception" falls short of the logical empiricism outlined in the Vienna Circle manifesto. From Carnap's perspective at this stage, Russell's continued defense of realism is a kind of residual echo of traditional metaphysics. In the *Aufbau*, for example, Carnap aligns his constitution theory of our concepts quite closely with Russell's OKEW. But in the

concluding discussion of realism, Carnap argues that a metaphysical concept of reality is illegitimate: "The concept of reality (in the sense of independence from the cognizing consciousness) does not belong within (rational) science, but within metaphysics" (Carnap 1928, section 176). Carnap concludes his discussion by citing Russell's remarks on realism:

> It seems that we agree with Russell [Scientif.] 120ff. in the indicated conception that the concept of nonempirical reality cannot be constructed. However, this does not seem to be consistent with the fact that, in Russell, questions of the following kind are frequently posed, which (independently of how they are answered) imply a realistic persuasion: whether physical things exist when they are not observed; whether other persons exist; whether classes exist; etc. (Carnap 1928, section 176).

Carnap here refers to Russell's paper "On scientific method in philosophy", which was written soon after OKEW. Russell again advocates the investigation of logical forms, and concludes his essay with an application of "the analytic method" to "the question of realism" (CP8, 70). Carnap was surely encouraged to read how Russell starts his analysis:

> If we ask: "Are our objects of perception real and are they independent of the percipient?" it must be supposed that we attach some meaning to the words "real" and "independent", and yet if either side in the controversy of realism is asked to define these two words, their answer is pretty sure to embody confusions such as logical analysis will reveal (CP8, 71).

Part of the confusion is tied to notions of causation that must be replaced by the clearer notion of causal laws. But once this clarification is made, Russell goes on to endorse the existence of objects that are independent of minds: "objects of perception do not persist unchanged at

times when they are not perceived, although probably objects more or less resembling them do exist at such times ... the propositions of physics do not presuppose any propositions of psychology or even the existence of mind" (CP8, 72). This sort of realism can be made clear, and defended on the usual scientific grounds.

Neurath also had reasons to exclude Russell from logical empiricism, whatever his broader service to the scientific world-conception. For Neurath, the goal of a genuinely unified science required a rejection of logical forms or any other autonomous domain of fact beyond what could be scientifically tested and evaluated. In his 1931 article "Physicalism", this position is developed as a criticism of Wittgenstein's *Tractatus*, but the criticism would apply even more forcefully to Russell:

> All members of the Vienna Circle agree that there is no "philosophy" with its own special statements. Some people, however, still wish to separate the discussions of the conceptual foundations of the sciences from the body of scientific work and allow this to continue as "philosophising". Closer reflexions show that even this separation is not feasible, and that the definition of concepts is part and parcel of the work of unified science (Neurath 1983, 52).

There can be no "pre-linguistic means" to "attempt to confront language with reality" (Neurath 1983, 52). Instead "unified science is built on the basis of scientific language from the beginning; scientific language itself is a physical formation whose structure, as physical arrangement (ornament), can be discussed by means of the very same language without contradictions" (Neurath 1983, 53). Russell's examination of our percepts and his attempt to relate it to scientific language is contrary to this physicalist program.

Neurath developed his physicalism in opposition to Schlick's "Turning Point in Philosophy" (1930). Schlick maintained that philosophy remained as a distinctive form of activity. A number of claims in this paper and the later paper "Positivism and Realism" (1932) require the rejection of the aspects of Russell's work that we have focused on, especially the idea that there are new logical methods that permit the resolution of the traditional problem of the external world. For example, after noting the development of "new logical methods" in the work of Russell, Frege and Wittgenstein, Schlick asks "Does it [the new logic] give us general rules with those [whose] help all the traditional problems of philosophy can at least in principle be resolved?" (Schlick 1930, 55). The answer is "no": no mere "technical progress" could bring about the change in philosophy that Schlick argues for. Russell may have played a role in allowing the "turning point" in philosophy, but he has missed its true character.

For Schlick, what is essential is a more fundamental appreciation of the nature of logic of the sort that he ascribes to Wittgenstein's *Tractatus*. On his reading of Wittgenstein, the nature of logic mandates that philosophy is only an activity of clarifying meanings. There are thus no genuinely philosophical problems left to solve, including Russell's problem of our knowledge of the external world: "What have been considered such up to now are not genuine questions, but meaningless sequences of worlds" (Schlick 1930, 56). The same point is developed at greater length in "Positivism and Realism" with respect to "the so-called problem of the reality of the external world": "it is quite senseless to set two views [realism and idealism] in opposition in this manner, for neither party really knows what it wants to say (which is the case with every metaphysical proposition)" (Schlick 1932, 85). Unlike Russell, Schlick does not see any way to clarify the issue so that the debate makes sense. Once we

clarify what the realist and the idealist are arguing about, we find that there is no meaningful question left to resolve.

## 3. Russell and the rise of logical empiricism

In 1935 Russell returned in earnest to philosophical work with the aim of securing an academic position (CP10, xiv). By this time logical empiricism was widely recognized as an important, new philosophical movement, and its various opponents were sharpening their criticisms of its approach to empirical knowledge. We will trace Russell's concerns about logical empiricism in a number of papers in this period, culminating in *Inquiry into Meaning and Truth* (MeanTr). As we will see, Russell's main worry is that a coherent empiricism is impossible, and must be supplemented by non-empirical, genuinely metaphysical assumptions. The attempt to bypass such assumptions either destroys genuine knowledge or else leaves the crucial links between experience and our beliefs unresolved.

In Sept. 1935 Russell travelled to Paris to attend the Congress of Scientific Philosophy, one of the largest gatherings of logical empiricists and those sympathetic to the movement. In his brief contribution to the Congress Russell praises "the combination of empiricism with mathematical method" (CP10, 120) in terms reminiscent of the method of *Our Knowledge*. But soon after returning to England, Russell developed the kernel of his objections to empiricism quite generally and logical empiricism in particular. The resulting essay, "The Limits of Empiricism", was composed late in 1935 and presented to the Aristotelian Society in April 1936. Russell here develops four worries about empiricism that together point to some non-empirical source of knowledge. The challenge to logical empiricism is clear in the first two worries: how to allow for the "knowledge most immediately dependent upon" sense-data (CP10, 314) and

"the difficulty of justifying inferences from facts to facts" (CP10, 319). The latter problem is associated with Wittgenstein's *Tractatus* and the denial of the causal nexus which we have noted above. But now in his presentation of the problem Russell mentions and criticizes Carnap's "grammatical" strategy:

> It seems that, when we perceive that A precedes B, we can attend to the relation "preceding", and *perceive* that it has the characteristics of transitiveness and asymmetry. Wittgenstein and Carnap attempt to explain such propositions as merely grammatical, but I am not satisfied that their attempt is successful (CP10, 320).

According to Russell's proposal, some knowledge of the general features of relations arises from perception, but empiricists must deny this. The grammatical proposal is not further discussed, but it is surely the program developed by Carnap in *Logical Syntax of Language*: when we propose a language that has a word like "precedes", we thereby propose some rules that fix the inferential properties of sentences involving that word. As Carnap puts it, "syntactical sentences ... must further be completed by stating the language which is referred to; from this statement it can be seen whether the sentence is an assertion or proposal, e.g. a new rule" (Carnap 1934, 302). Russell doubts that these proposals can lead to genuine knowledge, such as knowledge of the properties of future sense-data. For if we merely stay at the level of language, and avoid connecting the language to what it is about, we will not have any knowledge of extra-linguistic reality.

For Russell to launch this objection to Carnap he must have some alternative account of how we can know and speak about reality. This account is sketched as part of Russell's diagnosis of the first limit of empiricism: to arrive at knowledge from sense experience, we

must show how a person's verbal expression of that knowledge arises from that very sensory experience. In Russell's example, we have three pieces of knowledge that are intimately related: "(1) a sensible fact expressed, perhaps inaccurately, by the words "there is a cat"; (2) that I say "there is a cat"; (3) that I say "there is a cat" because a cat (or a sensible appearance resembling that of a cat) is there" (CP10, 317). It is knowledge of the third component here that is said to take us beyond the limits of empiricism. For Russell supposes that the causal relation between the verbal statement and the sensible fact is not something that the empiricist can admit that they know: "the word "because" seems to take me beyond what an empiricist ought to know" (CP10, 317). The solution is to suppose "I can perceive *some* relation having an intimate connection with that of cause and effect" (CP10, 318). The idea seems to be that an individual's awareness of this relation tied to causation can engender knowledge of some general causal principle. In both cases, then, Russell supposes that there is an awareness of a relation that provides us with general knowledge that applies to the future. In his later work Russell continues to emphasize the inability of empiricists to make sense of what we know. For example, in his 1936 review of Ayer, Russell complains that Ayer never addresses how verification works: "when some empirical proposition is verified by an occurrence, what is the relation between the occurrence and the proposition, and how is this relation known?" (CP10, 333). But Russell did not ultimately endorse this view from 1936 that our awareness of relations was adequate to justify the required principles for our knowledge.

Soon after "The Limits of Empiricism", Russell tied the logical empiricist's perceived failure to connect sentences to experiences with their rejection of metaphysics. This worry is develop in the paper "On Verification", Russell's 1938 presidential address to the Aristotelian

Society. “Neurath, Hempel and (less definitely) Carnap” are there charged with sacrificing the “whole basis of empiricism” (CP10, 351) due to their inability to integrate experiences into their process of sentence acceptance. Russell here draws on the so-called protocol sentence debate, where Neurath, Carnap and Schlick, among others, sought to clarify the character of the empirical basis of our scientific knowledge. While Schlick mandated a role for experience and acts of assigning meanings in terms of experience, Neurath responded that Schlick had fallen victim to metaphysics. Russell notes Neurath’s claim that “Reality must be replaced by a number of systems of sentences not compatible with each other but internally self-consistent” and Carnap’s apparent agreement that it is “our culture circle” that plays a decisive role in what we take to be true (CP10, 351). Russell responds that “if nothing but convention and majority opinion decides as to matters of fact, the whole basis of empiricism, namely the appeal to experience, is gone” (CP10, 351).

On the one hand, then, logical empiricists like Schlick and Ayer who emphasize verification are said to ignore the non-empirical presuppositions of verification, such as the alleged perception of causal relations noted in “The Limits of Empiricism”. On the other hand, logical empiricists like Neurath and Carnap who eschew the links to experience are charged with abandoning empiricism altogether. Russell’s own preferred path forward can be isolated by noting how he rejects both alternatives. First, Russell insists on the core tenet of empiricism, as he sees it, that the experiences of individuals are necessary ingredients in scientific knowledge: “social knowledge is built on the knowledge of individuals, and impossible except on this foundation” (CP10, 352). Second, Russell argues that these experiences, though essential, are not sufficient to generate our scientific knowledge. The non-empirical supplement

is derived from our knowledge of relations. These relations are experienced relations, to be sure, but the way that these experiences give rise to causal knowledge or general knowledge takes us beyond empiricism. It is here that metaphysics proves necessary. As Russell concludes "On Verification", "if, through language, we can know facts, that implies a relation between the structure of sentences and the structure of facts, which may possibly justify, in some degree, the traditional attempt to use logic as a clue to metaphysics" (CP10, 359). Twenty-four years after *Our Knowledge*, the value of metaphysics for scientific knowledge remains.

Russell's worries about various strands of logical empiricism are more fully developed in the 1940 book *Inquiry into Meaning and Truth*, although Russell's non-empiricist epistemology remains obscure. The preface notes that Russell is "as regards method, more in sympathy with the logical positivists than with any other existing school" (MeanTr, 6). Nevertheless, "I differ from them, however, in attaching more importance than they do to the work of Berkeley and Hume" (MeanTr, 6). This difference is enunciated in the concluding paragraph of the entire book where Russell presents "the goal of all our discussions": "complete metaphysical agnosticism is not compatible with the maintanence of linguistic propositions" (MeanTr, 437). The book reaches this goal through two routes. First, "language is an empirical phenomenon like another" (MeanTr, 437) and so to clarify how words mean what they do, one must say what a word is and how it relates to real-world items. Second, and perhaps more crucially, the relationship between language and experience must be analyzed if one is to make sense of genuine knowledge. Once this relationship is understood, it follows that "partly by means of the study of syntax, we can arrive at considerable knowledge concerning the structure of the

world" (MeanTr, 438). A resolute application of the logical empiricists' own methods should thus lead one to a properly metaphysical conclusion.

Russell's main innovation in *Inquiry* is to posit a basic type of sentence that serves as a semantic foundation for all other types of sentences. These are what Russell calls "basic propositions": "a proposition which arises on occasion of a perception, which is the evidence for its truth, and it has a form such that no two propositions having this form can be mutually inconsistent if derived from different percepts" (MeanTr, 174). The words that make up basic propositions include only "object-words" (MeanTr, 92) that a speaker acquires through habituation. No logical terms are included in basic propositions as this would violate the requirement of logical independence. For similar reasons, no general or existential claims are made by basic propositions. Russell handles these more complicated propositions by showing how their truth can be traced back to various families of basic propositions. For example, "All As are Bs" requires for its truth that each of the A occurrences also is a B occurrence (MeanTr, 322-323).

Within this semantic framework, a person can know a basic proposition when they have the appropriate experience, and they express this knowledge by activating the habits tied to their acquisition of the relevant parts of the "primary language" (MeanTr, 76). Knowledge of general propositions is supposed to be possible through knowledge of basic propositions along with additional inductive principles. However, Russell insists that this issue "lies outside the scope of the present work" (MeanTr, 323), which is primarily focused on questions of meaning and truth. Even with this epistemic aspect unresolved, Russell argues confidently for a correspondence theory of truth and the unrestricted application of the law of excluded middle.

Some of Russell's harshest criticism is directed against Neurath. After clarifying his notion of basic proposition, Russell considers the view that there are no such propositions. Neurath is said to maintain that "'truth' is a syntactical, not a semantic concept: a proposition is 'true' within a given system if it is consistent with the rest of the system … the world of words is a close self-contained world, and the philosopher need not concern himself with anything outside it" (MeanTr, 175). This is an unfair reading of Neurath, but we can use it to appreciate how Russell approached these questions in this period. Neurath certainly did reject any correspondence theory of truth as a hidden form of metaphysics, and focused instead on the processes through which groups of scientists evaluate and adopt proposed statements. By emphasizing this sort of confirmation holism, Neurath was led to abandon any rigid "logic" of confirmation in favor of a socially-mediated choice. So Neurath's physicalism downplayed the role of individual experiences in favor of public, physical states of affairs. From Russell's perspective, any role for socially structured decision procedures undermines an individual's genuine knowledge. Russell first rehearses his familiar objections to the coherence theory of truth: if the fit with a system makes a statement true, then any statement can be made true with respect to some system.[4] Obviously, for Russell, the right system to adopt is governed by one's experiences and the resulting basic propositions that an individual knows. By contrast, as Russell notes, "The practice of life, Neurath says, quickly reduces ambiguity; moreover the opinions of neighbours influence us" (MeanTr, 177). A sympathetic interpretation of Neurath on this point would emphasize our collective capacity for rational judgments through

[4] Cf. "The Nature of Truth", CP5.

testimony, checking what others have done and shared goals. Russell sees only a form of relativism, which he drives home in fairly personal terms:

> In a different culture circle another body of propositions may be accepted; owing to this, Neurath is in exile. He remarks himself that practical life soon reduces the ambiguity, and that we are influenced by the opinions of our neighbours. In other words, empirical truth can be determined by the police. This doctrine, it is evident, is a complete abandonment of empiricism, of which the very essence is that only experiences can determine the truth or falsehood of non-tautologous propositions (MeanTr, 185).

Russell saddles empiricism with the view that an individual's experiences determines the truth of all propositions that extend our knowledge. This determination is both semantic and epistemic: each such proposition is about these experiences, and each such proposition is known on the basis of these experiences. Of course, Russell has already rejected this sparse form of empiricism, at least on the semantic side. However, Russell clearly aspires to retain the semantic anchor of individual experiences, and this version of a correspondence theory of truth.

Russell advances another, more sweeping, objection to Neurath, which is also later applied to "Carnap and the whole school to which he belongs": "unless each single observation yields some knowledge, how can a succession of observations yield knowledge?" (MeanTr, 395). In Neurath's case, there must be basic knowledge of what others have asserted (MeanTr, 185). Russell raises the same point against Carnap's "Testability and Meaning": Carnap approaches testing in terms of a thing language whose predicates apply to ordinary things, and not our experiences. Some of these predicates are classified as observable based on our

capacity to easily decide that those predicates apply. Russell first objects that this is a merely causal test for observability: "Nothing is said – and I do not see how, from his point of view, anything can be said – to show that there is any reason (as opposed to cause) why these observations should lead to this belief" (MeanTr, 395). More crucially, in starting with things, Carnap has started too late: no single experience can provide knowledge of things. And we must identify what is known in virtue of a single experience if we are to make sense of how many experiences can generate any richer forms of knowledge. There is thus an epistemic atomism at the heart of Russell's misgivings, which motivates him to deny any kind of confirmational holism.

However, if Russell resolutely adhered to this form of epistemic atomism, then he should have sided with Schlick in the protocol-sentence debate and endorsed Schlick's conception of the "foundations" of our knowledge. Yet Russell recoiled from Schlick's apparently unrestricted application of verificationism. If we insist that "The meaning of a proposition is its method of verification" (Schlick 1936, emphasized by Russell at MeanTr, 290), then we are launched on a kind of regress. Proposition P's verification is obtained via proposition Q, which is in term verified by proposition R, and so on. Russell concludes that we must make an exception for his basic propositions: "All those who make 'verification' fundamental overlook the real problem, which is the relation between words and non-verbal occurrences in judgments of perception" (MeanTr, 387). In these cases, a correspondence theory of truth is required. And once we have a correspondence theory here at the base, we should allow for meaningful propositions whose truth goes beyond what we can in principle verify (MeanTr, 383).

Carnap offered a conciliatory reply in his "Empiricism, Semantics and Ontology" (1950). On this mature theory of linguistic frameworks, the rationality of a given belief is tied to the linguistic framework that one has adopted. Within this framework, we have reasons, and not merely causes. However, Carnap famously invokes a different sort of consideration when motivating the choice of the linguistic framework itself. He argues that only pragmatic considerations are appropriate in considering which framework to adopt. This allows him to criticize metaphysical questions about the match between a framework and the world as misguided. Carnap applies this approach explicitly and critically to Russell's *Inquiry* theory of propositions. Carnap articulates a framework for propositions whose rules fail to make any connection to mental events and experiences. This is sufficient for Carnap to show that we need not follow Russell in identifying propositions with mental events: "Any further explanations as to the nature of the propositions … are theoretically unnecessary because, if correct, they follow from the rules. For example, are propositions mental events (as in Russell's theory)? A look at the rules shows us that they are not …" (Carnap 1950, 210). More carefully, Russell is best seen as proposing a linguistic framework which adds unnecessary features to propositions. Carnap's framework for propositions should thus be preferred on pragmatic grounds. Unlike in Russell, for Carnap there are no aspects of meaning or knowledge in place prior to his frameworks that have special standing in our philosophical reconstructions of science.

Neurath offered a characteristically more spirited reply to Russell's attack in "Universal Jargon and Terminology" (Neurath 1941). Neurath first clarifies his aim to develop a reformed language that is suitable for unifying the sciences: "How can we form a Universal Jargon for this

purpose which may prepare a Lingua Franca for the sciences?" (Neurath 1941, 229). He thus takes Russell's criticisms to be tied to the demand for an alternative sort of linguistic reform. Neurath identifies the roots of Russell's misgivings in "This tendency of Russell to imagine a solitary thinker of absolute constancy of personality" (Neurath 1941, 228). This is a mistake for Neurath as it involves a tacit absolutism and rationalism that holds certain things completely fixed in the ongoing attempt to improve our practical and epistemic situation. Neurath claims that his approach avoids these fixed elements: "My proposal is to treat all observation statements democratically, irrespective of whether they are made by the same person at different times or by different persons, and then I propose to make no difference in principle between observation-statements made by a person a few seconds before or years ago" (Neurath 1941, 228). Russell's criticisms of Neurath are thus traced to a tacit form of solipsism and the myth of Robinson Crusoe's private language. Ultimately, Neurath notes, it would be instructive to trace these commitments to their sociological origins (Neurath 1941, 229). As with Carnap, then, Neurath takes Russell to be a prisoner of an outdated absolutism about knowledge, experience and the self.[5]

4. Russell's late alternative to logical empiricism

As we have seen, Russell repeatedly noted the need for non-empirical input to our knowledge, but also continually deferred his discussion of the source of that input. In his final major philosophical work in 1948, *Human Knowledge: Its Scope and Limits*, Russell finally

[5] A more detailed discussion could contrast this point from 1941 with the more optimistic remark about Russell in "Personal Life and Class Struggle" (1928). There Neurath claims that Russell's and Einstein's combination of socialism with bourgeois class "seems almost a form of dissolution of metaphysical and half-theological thought" (Neurath 1973, 295).

addressed the problem: if the non-empirical input to our knowledge was not logical in character, then how was it possible? Russell argued that we should change our concept of knowledge, and allow that facts in the world that an agent is not aware of can justify some of their knowledge. This early version of externalism about justification was arrived at through a confrontation with our last logical empiricist, Reichenbach. Of all the logical empiricists, Russell seemed philosophically closest to Reichenbach. Both agreed that genuine knowledge required experiential input, and that some form of scientific realism was required to make sense of scientific practice. Russell and Reichenbach also saw the solution to their epistemic problems in terms of probability and its proper interpretation. Ultimately, though, Russell diverged from Reichenbach on a number of crucial issues concerning the nature of probability, induction and the role of non-empirical assumptions in scientific knowledge.

Russell had few negative things to say about Reichenbach in *Inquiry*, noting at one point that "I shall not controvert Professor Reichenbach's views, since I believe that, by a small modification, they can be rendered consistent with my own" (MeanTr, 400-401). The views in question concerned the relationship between probability and truth. Russell maintained that the notion of truth was prior to the notion of probability. This seemed to conflict with Reichenbach's plan to dispense with truth in terms of a semantics tied to probability. For Reichenbach this was the main contribution that logical empiricism could make, once a more extreme verificationism was superseded (Reichenbach 1936). In 1944 Reichenbach compared his approach to Russell's in his contribution to the Schilpp volume devoted to Russell's work.[6] Reichenbach begins "Bertrand Russell's Logic" by noting that "he agrees very much with the

[6] Cf. the earlier Reichenbach 1929.

fundamental views of Bertrand Russell" (Reichenbach 1944, 23). After surveying Russell's contributions to deductive logic, he turns to Russell's discussion of induction and scientific knowledge. Here Reichenbach questions both the need for the concept of truth as well as Russell's conception of basic statements.

Reichenbach endorses the epistemic atomism that motivates Russell's defense of basic statements, labelling as a "sound argument" the point that "if such statements were empty their sum also would be empty, and no synthetic knowledge could be derived from them" (Reichenbach 1944, 51). However, Reichenbach also argues that "Inductive methods always work both ways" (Reichenbach 1944, 51). That is, basic statements can support predictions for future observations, but it is also the case that various future observations can undermine one's earlier basic statements. This form of fallibilism shows that basic statements do not need to be about any special type of thing. Instead, one should extend the class of basic statements to include claims about ordinary things, and not just experiences.

In his brief reply Russell reaffirmed the value of a semantic notion of truth and questioned the coherence of Reichenbach's approach to induction. Reichenbach conceives our knowledge "as a system of posits used as tools for predicting the future" (given at Schilpp 1944, 683; CP11, 20), but Russell is confused by this appeal to posits and tools: "I do not understand this" (Schilpp 1944, 683; CP11, 20). Instead, "I do not see any way out of a dogmatic assertion that we know *the inductive principle*, or some equivalent; the only alternative is to throw over almost everything that is regarded as knowledge by science and common sense" (Schilpp 1944, 683; CP11, 20, emphasis added). The words "the inductive principle" suggest that even in 1944 Russell still had in mind some generic principle like (PROB). Russell's basic worries about

empiricism thus remain intact: there is no way to avoid a substantial assumption about the world if we are to have the knowledge we initially suppose ourselves to have.

In a note written in 1959 Russell singled out 1944 as the year when his views on induction and probability shifted "owing to the discovery that induction used without common sense leads more often to false conclusions than to true ones" (CP11, 138). It seems likely that Russell made this discovery while considering his disagreement with Reichenbach. One piece of evidence in favor of this connection is that Russell's "discovery" is used in Russell's main attack on Reichenbach's justification of induction in *Human Knowledge* (HK). This attack can be divided into two parts. First, Russell scrutinizes the interpretation of probability that is at the heart of Reichenbach's defense of induction (HK, Part V, ch. 4). According to this interpretation, probabilities are limiting relative frequencies. For example, the probability that a coin will come up heads is ½ because the ratio of heads to flips approaches ½ in the limit as the number of flips is increased. This interpretation of probability is linked to rational predictions via a posit: we suppose that when the relative frequency of a series of 1, …, N observations has stayed within epsilon of fraction p after the N/2-th observation, it is the case that the limiting relative frequency is within epsilon of p. Thus if the relative frequency of heads to flips ranges from .49 to .51 from flip 500 through flip 1000, the posit indicates that the probability that the next flip is heads is within .01 of .50 (HK, 364). This substantial assumption is used to link our finite observations to probabilities that we can use to make predictions for the future.[7]

[7] See Eberhart and Glymour 2011 for a detailed survey of reactions to Reichenbach's "probability logic."

While Russell raises some difficulties for this interpretation of probability in its own right, we will focus on the problems for Reichenbach's closely related justification of induction (HK, Part V, ch. 7). What justifies our claim that the next swan will be white when we have observed 1000 swans and found them each to be white? Reichenbach assimilates this question to a question about the probability that the next swan will be white. If in fact the limiting relative frequency of swans that are white is 1, then the probability that the next swan will be white is 1. And our observations, along with his posit, justify our conclusion that the probability that the next swan will be white is close to 1. As Russell puts it, "When a large number of $\alpha$'s have been observed, and all have been found to be $\beta$'s, we shall assume that very nearly all $\alpha$'s are $\beta$'s" (HK, 413).

But what ultimately justifies the posit itself that Reichenbach deploys? Russell summarizes Reichenbach's so-called "pragmatic" approach by saying "If his inductive posit is true, prediction is possible, and if not, not. Therefore the only way in which we can obtain any probability in favour of one prediction rather than another is to suppose his posit true" (HK, 413). Russell responds by arguing that Reichenbach's posit is easily shown to be false. Consider any case where the posit genuinely applies: we examine the members of class $\alpha$, and find that each of them is also a member of class $\beta$. In the best case scenario for Reichenbach's posit, in fact the next $\alpha$, call it A, that we will observe is also in class $\beta$. Russell points out that in any situation like this, there will also be a class $\gamma$ that is defined to be the class with all the members of class $\beta$ except for A. Clearly, Reichenbach's posit applies to classes $\alpha$ and $\gamma$ just as well as it applies to classes $\alpha$ and $\beta$: all our observations of $\alpha$'s up to now have been $\beta$'s and also $\gamma$'s as well. But by assumption our next $\alpha$ will not be a $\gamma$, as $\gamma$ has been defined so that our next $\alpha$, A, is

not in ɣ. This shows that an indiscriminate application of Reichenbach's posit then will lead us astray at least half the time. In his 1959 retrospective discussion of the problem, Russell says that it is "common sense" that restricts our inductive practices so that they yield knowledge (CP11, 138).

Johnsen points out that Russell has here arrived at what is essentially Goodman's new riddle of induction (Johnsen 1979). Just as Goodman showed that only some predicates were apt to be confirmed through induction, so too Russell argued that induction can only generate knowledge for some special species of classes. It seems that Russell and Goodman developed these worries independently through their engagements with logical empiricists: Goodman targets his initial discussion at Hempel and Carnap (Goodman 1946), while Russell focuses on Reichenbach.

It is worth noting that Russell's argument is not only a problem for Reichenbach's posit, but also for the principle (PROB) that Russell had advanced in OKEW. I conjecture that up until 1944 Russell hoped to defend a principle like (PROB), but that afterwards he adjusted his strategy: knowledge of some more restricted principle or principles was needed to justify our inductive practices. The goal of the last part of *Human Knowledge* was to identify a series of postulates that are sufficient to legitimate our most basic forms of scientific knowledge. These postulates make claims about how features of the world are distributed in terms of similarity, causal lines and spatio-temporal connections. For example, the postulate of quasi-permanence says "Given an event A, it happens very frequently that, at any neighboring time, there is at some neighboring place an event very similar to A" (HK, 488). This allows Russell to populate the world with more or less stable "things" as series of similar events. Another "structural"

postulate places causal processes in the spatio-temporal world: “When a number of structurally similar complex events are ranged about a center in regions not widely separated, it is usually the case that all belong to causal lines having their origin in an event of the same structure at the center” (HK, 492). Thus a radio broadcast radiates out radio waves that account for our hearing the Prime Minister’s broadcast. When combined, Russell’s five postulates license conclusions about the frequency of various types of future events on the basis of observations of past events.

Identifying these postulates as sufficient conditions for the inductive conclusions that we in fact draw does not pin down their epistemic standing. In his discussion Johnsen supposes that Russell is here invoking an assumption of structural similarity: “the inference to the generalization ‘All A’s are B’s’ from its positive instances is valid if and only if all A’s are similar in structure and all B’s are similar in structure” (Johnsen 1979, 94). The structure of a particular is given by its parts and how they are related. But Johnsen points out that this solution must privilege some relations over others, and he sees no way for Russell to do this without invoking the vocabulary of some extant science. As a result, “the problem of distinguishing projectible from non-projectible predicates arises with respect to the predicates used to characterize structural similarities” (Johnsen 1979, 96) and Russell is left with no viable solution.

An equally negative evaluation is offered by Grayling in his otherwise sympathetic survey of Russell’s later epistemology (Grayling 2003). Grayling provides the crucial passage of Russell’s discussion of our knowledge of these postulates that compares our knowledge to the unconscious, habitual “animal knowledge” exhibited by non-human animals. In both cases,

> Owing to the world being such as it is, certain occurrences are sometimes, in fact, evidence for certain others; and owing to animals being adapted to their environment, occurrences which are, in fact, evidence of others tend to arouse expectations of those others. By reflecting on this process and refining it, we arrive at the canons of inductive inference. These canons are valid if the world has certain characteristics which we all believe it to have (HK, 496, given at Grayling 2003, 471).

My interpretation of this proposal is that Russell is here offering an externalist account of justification: a belief in a postulate can be justified simply in virtue of the world having certain characteristics. It is not required that the agent have any awareness through experience, or some non-experiential source, of these features. Interestingly enough, Russell here avoids a purely reliabilist account of justification. For he emphasizes that the initial, external justification should be backed up by the success of additional investigations: "The inferences made in accordance with these canons are self-confirmatory and are not found to contradict experience" (HK, 496). As these successes accumulate, it is appropriate for an agent to endorse these postulates with increasing confidence.

Grayling seems to miss the crucial role for external validation, and puts all the weight on the success of ongoing scientific investigations. For this reason he complains that "the most that Russell's argument establishes is that, so far, the general principles on which our empirical thinking relies have been largely successful. But this looks like exactly the kind of unbuttressed inductive inference Russell was anxious to caution against …" (Grayling 2003, 472). This is not Russell's proposal. Knowledge of a general principle can be achieved simply through acquiring a belief in the principle so long as that principle is true. This purported knowledge is not

consciously accessible to the agent, and any principle that they put forward as known could turn out to be unknown. But for Russell this fallibilism about knowledge claims is simply the price that one must pay to avoid skepticism.[8]

Russell's externalism also allows him to avoid the regress worry raised by Johnsen. For Russell does not need to invoke the privileged vocabulary of some special science in order to identify the projectible predicates. It is the world that makes some properties and relations privileged, or "natural", in the vocabulary of later debates about Goodman. So, if, in fact, our reasoning is in line with these privileged properties, then we will arrive at knowledge of general claims of the form "All A's are B's". Of course, there is no guarantee that we have done this in any particular case. This is the limited role that is played by ongoing success: these successes reassure us that we are reasoning with privileged properties.

This interpretation of Russell's *Human Knowledge* also allows a satisfying account of the non-empirical character of Russell's postulates. Russell assumes that an empiricist must restrict the scope of empirical justification to what an agent is consciously aware of in virtue of the agent's experiences. Russell's postulates transcend what is given in experience, and so there is no way for Russell to justify his postulates using these limited resources. As we have seen, Russell arrived at a clear realization of this point in the 1930s, but up until around 1944 he was unable to articulate any non-empiricist alternative. After 1944 the solution became clear: features of the world would provide the justification, independently of an agent's conscious awareness.

[8] The unpublished manuscript "Non-Deductive Inference" presents the argument in a compact form that is easier to grasp than the sprawling HK. See CP11, 121-129.

Stevens notes the possibility that Russell aimed for a kind of externalism in *Human Knowledge*, but rejects this interpretation due to "insufficient evidence" (Stevens 2011, 518, fn. 17). It must be admitted that many things that Russell says earlier in the book do not appear to be consistent with externalism about justification. For example, Russell says "the reason for believing no matter what must be found, after sufficient analysis, in data, and in data alone" (HK, 383-384). If all justifications are reasons and data is restricted to what an agent is aware of, then externalism is ruled out. These passages should be weighed against Russell's warning in the preface to the book. There he says "The Prophet announced that if two texts of the Koran appeared inconsistent, the later text was to be taken as authoritative, and I should wish the reader to apply a similar principle in interpreting what is said in this book" (HK, vi). The externalist claim that "Owing to the world being such as it is, certain occurrences are sometimes, in fact, evidence for certain others" occurs right at the end of the book, and should thus be given prominent consideration in an interpretation of Russell's late epistemology.

Reichenbach was unconvinced by Russell's arguments. He replied to Russell's various concerns in a long letter in 1949 as well as an imagined conversation between Russell and Hume from the same year (Reichenbach 1949a, 1949b). It seems that Reichenbach, like Johnsen, Grayling, and Stevens, was unable or unwilling to countenance Russell's proposed externalist conception of knowledge. For Russell, knowledge must be justified, but this justification can arise from a combination of internal and external sources. This externalism is Russell's revolutionary shift in our conception of knowledge. Reichenbach urges a different kind of revolution: knowledge can be based on posits that initially possess no justification. As a

result, a system of knowledge with respect to some posits can look quite different from a system of knowledge based on some other admissible posits.

## 5. Conclusion

In his 1945 paper "Logical Positivism" Russell reflected on the method of the logical positivists and its political significance:

> I attended in 1936 a "Congress of Scientific Philosophy" in Paris, where logical positivists of many countries met ... The severe logical training to which these men had submitted themselves had, it appeared, rendered them immune to the infection of passionate dogma, and capable of reasoning on political matters with the same scientific candour as they were in the habit of giving to questions of logic (CP11, 148).

Despite this praise, Russell's misgivings about this method were essentially the same as the worries he expressed about the scientific empiricist of OKEW: too much will be abandoned in the use of this method for the final product to be sustainable. While in 1914 Russell had appealed to an almost mystical "direct vision of abstract truth" (OKEW, 239) to avoid this outcome, by the end of his career he opted instead for a more naturalistic conception of knowledge, as shaped by both common sense and science. Throughout this transformation, Russell repeatedly engaged with logical positivists and refined his views in light of his criticisms of their various approaches. These interactions show how significant logical empiricism was for Russell's later epistemology and how Russell finally arrived at an alternative to it.

## References

Abbreviations: AnMa, CP5, CP9, CP10, CP11, IMT, HK (US, 1st ed., 2nd printing), MeanTr (US, 1st ed.), OKEW (1st ed.)

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