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*To Mr. Professor Agossi, with my
best wishes!*

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METAPHYSICS REGAINED

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Abstract. The traditional theory of meaning equated it with denotation. As Boolean algebra introduced the empty class that is the class of mermaids as well as the class of square circles, and both nouns denote nothing and so are meaningless. Frege refuted the traditional theory of meaning and identified meaning with both sense and reference, and senses reside in Plato's heaven. In his famous "On Denoting" of 1905 Russell tried to replace Frege's theory of meaning with one that disposes of the Platonic Heaven. He called it the overcoming of metaphysics. Wittgenstein's *Tractatus Logico-Philosophicus* of 1922 declared that logic proves all expressions of metaphysics necessarily defective. Russell criticized Wittgenstein in his Introduction to that book. It was popular nonetheless for a few decades. Meanwhile Russell admitted defeat in his 1940 inquiry into Meaning and Truth. The idea that Frege, Russell, and Wittgenstein shared, of an idea language, was refuted by Tarski and is now passé. Unlike Russell, Wittgenstein and his heirs were unable to admit failure. Nevertheless, the general understanding in the analytic school of philosophy is that at least in its linguistic form, anti-metaphysics is at an end. Metaphysics can now return to play a role in the advancement of science.

Key words: metaphysics, philosophy of language, philosophy of science, positivism, Wittgenstein, Russell, Vienna Circle

1. THE LINGUISTIC TURN

The philosophical school known as analytic philosophy is less than a century old, yet its history is already very problematic. What was its contribution to our understanding of the world? What does it stand for now and what did it stand for initially? The quasi-official position of the school in its zenith was expressed in a famous volume called *The Linguistic Turn*¹. It consisted of a series of broadcast lectures delivered by authoritative individuals, foremost among them was Gilbert Ryle. The thesis of the analytic school was, metaphysics is replaced by

¹ *** *The Linguistic Turn: Essays in Philosophical Method*, Richard Rorty (ed.), 1967, reissued with a new introduction in 1992.

clarifications that show it void. Its members no longer advocate this view. It is not clear when exactly it was eclipsed, but it is clear that it was advocated in the 50's when Wittgenstein's first and most famous posthumous publication, appeared, his *Philosophical Investigations*, as well as the already mentioned *The Linguistic Turn*, and that it decades later the picture changed. The leading member of the school, Saul Kripke, advocated a metaphysics of his own, for which he claimed the status of commonsense, and ascribed a philosophical problem to Wittgenstein without mentioning that Wittgenstein himself staunchly denied all his life that he had recognized any².

This raises a question: what else was/is analytic philosophy? Was there anything else that engaged analytic philosophers other than the search for the criticism of confusions that they believed would remove metaphysics? To my regret my own teacher, Karl Popper, took for granted the negative answer to this question. This essay is a criticism, then, of Popper's view. Already at the time analytic philosophers declared repeatedly that they were interested in language. To some extent this description was covered by the view of them as campaigners against metaphysics: their claim that all metaphysics is nothing but verbal confusions was repeatedly expressed as the doctrine that today the analysis of language replaces metaphysical speculations. But this is not all that there was to it. Benson Mates criticized analytic philosophy then by the claim that the study of language should be empirical. He was answered by Stanley Cavell, who said, the analytic philosopher is a native speaker capable of investigating language by introspection. This debate shifted the focus from subject-matter to method. And so complaints repeated that the study of language belongs to linguistics, theoretical or empirical, not to philosophy. This is a moot point, revolving around the extraneous matter of the division of learning or of the academy into departments. What could/did philosophers contribute to the study of language? This drags in the extraneous question, as we can now ask, is Noam Chomsky a linguist or a philosopher? To make things tougher, the school to which he belongs, the Massachusetts Institute of Technology, united the department of philosophy and of linguistics.

In the early sixties I asked a leading analytic philosopher, Paul Ziff, why not use the dictionary rather than analyze words? Because, he said, the dictionary is full of errors. This is true, but dictionaries have no monopoly over error, and their critical examinations improve them, not philosophy. Admittedly, some errors in dictionaries are of words that appear frequently in philosophical texts, but not all of them of this sort. Philosophy too has no monopoly over error, and so not all corrections of errors are corrections of words, and it is easy to list some famous

² Saul Kripke. *Naming and Necessity*. Cambridge MA: Harvard UP, 1980; *Wittgenstein on Rules and Private Language: an elementary Exposition*. Cambridge MA: Harvard UP, 1982. See also my *Naming and Necessity: A Second Look*, Iyyun, "The Jerusalem Philosophical Quarterly", 44, 1995, 243-272.

philosophical errors: whether one thinks that the foundations of science are empirical or intellectual, one is in the middle of a traditional philosophical controversy in which at least one party is in error. Analytic philosophy is innovative in that it does not enter this controversy, or any other: it comes to clarify not to argue. Suppose it has done so with a measure of success. This does not vindicate it: the suggestion that analytic philosophy chases philosophical confusions is different from the suggestion that analytic philosophy purges metaphysics as a series of confusions and nothing else. Wittgenstein has advocated this last idea and Popper opposed.³ Wittgenstein also considered his task to expose philosophy as sham. Richard Rorty, who considered himself by and large a follower of Wittgenstein, nevertheless severely criticized this idea of Wittgenstein and declared that philosophers should not police any intellectual endeavor.

The starting point of a critical discussion of analytic philosophy should be the paradigm of analysis, which is, by consensus, Russell's "On Denoting" of 1905. I asked Popper what he had to say of it. His response was two-edged. First, he said, the definite article is a common object of mathematical discourse, and so it deserves attention. This is very unsatisfactory, as it does not even point at a problem, not even to the slightest specifications of the task so that one could find out whether I was executed, and if so, to what degree of adequacy. This is particularly the case in view of the second part of Popper's response. He noted that G. E. Moore criticized Russell's theory of definite description by observations that Russell could not take seriously, one was that since *Waverley* could have been written by a woman, this fact should be reflected in the analysis of the statement describing King George's desire to find who the author of *Waverley* was. The other was that whereas the generic name for horses in English is "Horse", for whales it is "the Whale". All this is irrelevant to the initial problem that had engaged Russell.

The theory expressed in Russell's "On Denoting" came to replace Frege's theory; he found Frege's theory objectionable since it was Platonist. He declared characteristic metaphysical and his alternative the overcoming of metaphysics. Analytic philosophy was from then, at least, involved in the campaign against metaphysics, even though not in the narrow sense that identifies metaphysics with Platonism. Clearly, this was an innovation that involves the use of language in a fashion that deeply relates to the evolution of modern logic. More need be said about it, then, because even if anti-metaphysics is obsolete, language analysis is possibly here to stay. This was Russell's view as declared in the conclusion of his intellectual autobiography (*The Philosophy of Bertrand Russell*): he took credit for having introduced clarity into philosophy, although he never considered himself a member of the school of analytic philosophy.

³ This is the topic of the bestseller by David Edmonds and John Eldinow, *Wittgenstein's Poker: The Story of a Ten-Minute Argument between Two Great Philosophers*, 2001. The authors' judgment goes against Wittgenstein: there are philosophical problems.

Russell's theory of definite descriptions, be it true or false, was seminal: it helped him solve his paradox. Yet the two items are independent. Thus, Wittgenstein endorsed the theory but rejected Russell's solution to the paradox: he claimed that viewing Russell's definition of normal classes as a definition of a class is indeed paradoxical, but normalcy is a predicate and is not paradoxical. It is hard to say whether this solution stands; the system of the *Principia* and the Zermelo-Fraenkel system reject it, but one may view the Gödel-Berneys system as one that incorporates something like Wittgenstein's idea in its distinction between classes and sets. One more example should clarify the situation sufficiently for the present purpose. It is Russell's analysis of the word "but" in his *Principles* of 1903: he said there, "but" is the same as "and". This invites some comment.

Consider this: "I went to the post office to buy a stamp but it was closed. But there was a stamp vending machine there. But it was out of order. But a passerby offered to sell me a stamp so my wish was finally granted." This story is rather clumsily put, but with no violation of grammar. It is alright to replace in it "but" with "and" and "But" with "and" or with "And". Indeed, this will make the wording of the story smoother. It will also make it lose some of its content, namely the indication that each step in the narrative goes in the opposite direction, swinging as it does from hope to disappointment and back. When Russell said "but" is synonymous with "and" he meant that they share a truth table (if this anachronistic expression is permissible). This is particularly the case with many traditional presentations of the syllogism, where the word "but" occurs in a manner that is better overlooked. More can be said of this: unlike "and", "but" is more properly a meta-linguistic expression, but Russell hardly considered philosophically important this verbal characteristic (that was important already then in mathematics) until he wrote his Introduction to Wittgenstein's first book. For example, he worded the *reductio* in the object language, or rather as the form of statements in the object language. The form is this: [if {if non-a then a} then a], and he said of it that it is the form of a tautology

$$\vdash \text{[if \{if non-a then a\} then a]}$$

where " \vdash " is the meta-linguistic Frege symbol, rather than the metal-linguistic theorem, written variously but always meta-linguistically thus:

If non-a then a, therefore, a

If non-a then a / a

If [(non-a / a), then \vdash a .

Under Wittgenstein's influence, Frege's symbol does not appear in the third edition of the *Principia* just because it is meta-linguistic: Wittgenstein always rejected the idea of the meta-language thereby giving up the idea of a formal language that was the heart of his first book. With this he should have given up the idea that all metaphysics is confusion. He did not.

Traditional grammarians and dictionary compilers were hardly sensitive to matters that signified for Russell: he wanted to capture as much of natural language in the formal system of the *Principia* as he could. The question, how much of this

can be achieved was very important in the early twentieth century, and it was understood that at the very least the *Principia* system should include all extant mathematics. Of course, Gödel and Tarski showed that this is not possible, but this is a different matter. Nevertheless, even linguists who do not belong to the analytic tradition employ much of the analytic technique. Thus, Chomsky analyses sentences by declaring that two sentences that are mutually deducible share a structure. Yet mutual deducibility can be established only in formal languages, not in natural languages, or else Quine could not deny, as he did, the possibility of perfect synonymy in natural languages. Chomsky clearly shares Russell's view of language as displaying imperfectly some perfect structure.

Russell viewed his formal language an ideal that captures the structure of all languages. This concern of his with the question of the adequacy of the formal language as a system that accommodates natural languages goes beyond Frege's: they shared the wish to develop a system that represents the ideal language. To do this, they agreed, it should be rich enough to accommodate mathematics. But Russell also wanted the ideal language to present relations as real and to capture natural language and more—much more. That he was disappointed is another matter, as it prevents us from neither learning of the intent behind analytic philosophy in its early stages nor appreciating the great significance of the venture.

2. VARIETIES OF ANTI-METAPHYSICS

Opposition to metaphysics permeates the modern philosophical tradition. The reason for it varied, and as they altered and diversified the object of their hostility altered and diversified as well. Perhaps the real object of hostility was theology, not metaphysics; but this was never official, as officially the scientific tradition was indifferent to religion. Initially, the hostility to metaphysics rested on the identification of all metaphysics with Aristotelian metaphysics. Officially, the most popular reason given against it was that of Sir Francis Bacon, and it was directed not against the metaphysical method, which is speculative. He observed the stagnation of academic scholarship and he blamed in on the metaphysics taught there, namely, Aristotle's, and he at once applied his hostility to all metaphysics: once a person advocates an idea that is not based on fact it takes hold on one, and one observes facts as confirming it regardless of the fact that someone else confirms a different metaphysics equally well. What is wrong with metaphysics is that it is speculative, preconceived. Supporters of a Metaphysical system become victims to unshakable faith in it; they are thus prejudiced; they disqualify as researchers.

Until recently, received opinion considered Bacon's methodology unchallengeable. Early in the twentieth century received opinion admitted the observation that no one can be free of all preconceived notions or prejudices, this invalidates Bacon's methodology. Perhaps the best way to reduce the damage of

prejudice is to proliferate it. This suggestion is now popular; it will not be discussed or used here.

Bacon opposed metaphysics because it is not properly founded. He expressed his sincere conviction that science will end up with a scientifically founded metaphysics. And then there will be no objection to metaphysics any longer. Descartes followed Bacon's demand to eschew all prejudice and yet he offer a metaphysical system of his own—on the supposition that it is demonstrated. Similarly, Kant wrote a *Prolegomena to Any Metaphysics that in Future Will Claim Scientific Status*, even though he spoke vehemently against committing oneself on metaphysical matters that are undecidable. The metaphysical questions that he found undecidable concern the existence or non-existence of a deity, the possibility or impossibility of continuity and of infinity of space and time (as these issues, he said, are antinomian or paradoxical: views on them are both provable and refutable); it is strange perhaps that he did not include among the undecidable choices the one between materialism and idealism. The metaphysical foundations of natural science he deemed proven *a priori* despite its being synthetic. This kind of treatment comes close to twentieth-century analytic philosophy in its concern with logic. Indeed, modern logic, the basis of modern analytic philosophy, was the product of Frege and of Russell who labored much in reaction to Kant's views of the possibility to prove *a priori* some synthetic propositions.

Traditionally, the meaning of "metaphysics" or the answer to the question, what is metaphysics, was unproblematic: it was *philosophia prima*. The views of Bacon, Descartes and Kant on it were different, since they all endorsed its traditionally ascribed role as that of the foundations of science. This is reflected also in a lecture Wittgenstein is reported to have given as an undergraduate in the Cambridge Moral Science Club early in the twentieth century. Though he spoke not of metaphysics but of philosophy, he viewed the latter as the chief component of the former, and he defined the former as that which is common to all science. He had a good reason for the change of terminology. In any case, he clearly endorsed no more than the axioms of logic. (In this he followed Russell to some extent; see below.) A little later E. A. Burt's path-breaking *The Metaphysical Foundations of Modern Physical Science* appeared; the expression "*metaphysical foundations*" in it has the same meaning as "metaphysics". This is not to say that all who spoke against metaphysics used this term as synonymous with "*philosophia prima*".

The source of latest hostility to metaphysics is the philosophy of Mach, not of Bacon and not of Kant. Yet it, too, was not quite modern, as he never engaged in any activity remotely resembling modern analysis—philosophical or logical or verbal. It still is modern, as he repeatedly denied that he had any metaphysics. (Disciples of Wittgenstein did so later too.)

Mach rejected most of Kant's reasoning and paid no attention to either logic or antinomies. His starting point was one that Kant had received from Bacon: disputes are all unscientific, since the truth is incontestable: in science all claims

are founded, not open to dispute; one should better stay out of all disputes as they are interminable. Whereas Kant insisted on the existence of matter, the thing in itself of which we know nothing except that it exists, Mach insisted on keeping out of the dispute about the reality of matter. He considered the dispute between the materialists and the idealists the chief metaphysical dispute, and metaphysics as the chief area of unresolved disputes. So he rejected both idealism and materialism.

Whether Mach was successful in evading metaphysics is open to dispute: he endorsed neutral monism, the doctrine that declares only sense data real, and, many commentators say, neutral monism is not neutral to metaphysics; rather, as it is opposed to materialist metaphysics, it is a metaphysical doctrine: it includes the denial of the (independent) existence of matter. It seems quite clear that neutral monism is neutral in the sense that it includes the denial of the (independent) existence of both matter and mind. Nevertheless, it is important to observe in the present context that it was the claim of neutral monism to metaphysical neutrality that supported the hostility to metaphysics of both Mach and Russell. It is also significant that Russell expected modern logic to substantiate his position, though as he learned, it could not. This is why he stressed repeatedly that (to his regret) untenable as solipsism is, it is logically possible, as other metaphysical doctrines are, insignificant though they are. It is therefore reasonable to introduce a new name, "realism" for the claim that matter exists (independently of any sensation), regardless of whether or not this claim is coupled with the assertion or denial of the (independent) existence of the mind.

This term is somewhat lopsided, for sure, as it is realism regarding matter, not minds. Moreover, the term designates the neutrality to the question of the existence of minds not in the ordinary sense of the word, which is preposterous, but in the metaphysical and in the religious senses. Yet the term suits well the modern temperament, as it overlooks the question of the (independent) existence of the mind. Whether one admits the existence of disembodied minds or not, it is a curious fact that as far as philosophy is concerned (but not theology), in the seventeenth century no one dared deny it publicly and in the twentieth century no one dares affirm it. The dispute concerns the (independent) existence of matter, not of mind. Nowadays, it is safe to say, the (independent) existence of matter is no longer an issue either; we have to be reminded of the fact that around 1900 idealism was the popular philosophical doctrine: it was popular then to admit the (independent) existence of minds and deny the (independent) existence of matter. This is curious, since idealists were not expected to declare the existence of disembodied minds the way all philosophers were expected in the seventeenth century. It is theologians who are still expected to declare (as they still often do) that minds spend eternity in Heaven or Hell after brief sojourns on earth, spent in bodies.

Traditionally, realism also had a different meaning: in the Middle Ages it was the affirmation, in the twentieth century the denial, of the (independent) existence (not of minds but) of Plato's Heaven, of the non-place which includes abstract

entities like shapes and universals or classes. This might be of a minor significance but for the fact that Frege postulated the existence of Plato's Heaven as a part of his theory of meaning, and Russell deviated from this and undertook the task of getting rid of the need for that hypothesis. This undertaking of his he called the overcoming of metaphysics. He never completed that task. He finally admitted defeat.

In Kant's view the (independent) existence of matter is essential; in Mach's view it is not to be discussed, because it is controversial. Considering the role of either Kant's or Mach's view as the prevention of controversy, it must be judged a failure, since its effect was the increase of controversy and the creation of new ones between their relative disciples. The debate about scientific realism is still raging, even though it is likely to have but little value.

Russell advocated realism, and he expected to close the controversy about it (to introduce scientific method into philosophy, to use his expression): he thought that logic could be used to prove the reality of objects and thus to disprove idealism. Wittgenstein claimed to have presented a logical system which conformed to Mach's systematic indifference, establishing Mach's rule in a Russellian way. That was the heart of (classical) analytic philosophy, the presumption that metaphysics has no place in proper language. Russell identified metaphysics with Platonism. Wittgenstein was much more ambitious in his wish to abolish all metaphysics. So he had to explain what he viewed as metaphysics proper, how he demarcated metaphysics. Possibly his answer is this: any dispute that can be settled is scientific, and any dispute that cannot be settled is metaphysical and rooted in verbal confusion. This would not do: possibly all disagreements that are mere verbal confusion are not decidable and are also seeming disagreements, not real ones; but surely not all of these are metaphysical in the traditional sense. This question seems to have occurred to Rudolf Carnap. For, he tried to answer it. As an effort to capture traditional metaphysics his effort (and any similar one) must fail: any specification of a kind of confusion that engenders metaphysics is bound to enable one to generate new confusions that hardly known within tradition. This was sooner or later recognized, and the ant-metaphysics schools, especially the Vienna Circle, did not mind that the concept was broadened that way, as they had little respect for the philosophical tradition. The height of hostility to metaphysics was not in the Wittgensteinian camp: when Popper demarcated science from pseudo-science, he identified pseudo-science with metaphysics and he thus followed his Viennese peers in broadening the field. For example, he said, not only "God exists" is metaphysical, but also "a mermaid exists", "a sea-serpent exists" and similar purely existential statements taken in isolation. This was an error on his part.

The Vienna Circle considered as metaphysical all possible expressions outside science and logic. It is not clear whether Wittgenstein did too. (His text is too confused to provide a reasonably clear answer to this question.) Possibly he had a definite view of what renders metaphysical the ideas that these expressions are vainly meant to express, since, unlike his Viennese followers, he declared not all

metaphysics meaningless but all efforts to articulate metaphysics. (This made Russell dismiss him as a mystic, not his Viennese followers.) Perhaps he understood metaphysics to be tacit *philosophia prima*—in some sense of tacit: he insisted both that these cannot be properly said and that they can be *shown*. How? This question will be left out of the present discussion, except to observe that showing could involve the use of language, but not the proper use of it, akin to stuttering, perhaps. If this is allowed, then Wittgenstein's claim that some things cannot be said ceases to surprise: the surprise is that he thought we can at all say anything clearly, without any trace of a stutter, and to proscribe all stutter. But then he was a perfectionist, and like all perfectionists he rashly assumed that perfection is possible.

3. SENSATIONALISM VERSUS REALISM

Consider Russell's *The Scientific Outlook* of 1931. It is an expression of his love for science and of his endorsement of it as a world-view, as metaphysics. He differed greatly from Mach, who viewed science as a mundane, pedestrian affair. Mach took the scientific world-view to be nothing but the sum total of all extant scientific knowledge; and all knowledge, he said, is mere experience. His picture of the world thus ended up in nothing more than a heap of impressions ordered for the sake of mental economy. It is no surprise, then, that in the eve of his life he groped towards extra-scientific, mystical, unifying principle. By contrast, Russell viewed science as exciting: the scientific venture is Promethean madness. Yet he shared sensationalism with Mach, and viewed science as based on perception and perception as confined to sense-data; despite his passionate desire to stay loyal to realism, he repeatedly found himself driven by sensationalism to the view that only sense-data are real (neutral monism; Quine called it "phenomenalism" in his prestigious "Two Dogmas of Empiricism").

Loyal to both realism and sensationalism, Russell was in an impossible quandary, yet both remained central to his view of himself as a philosopher: he viewed as hardly philosophical a large part of his stunning output, the part not directly relevant to either doctrine, realism or sensationalism; his other works, he said, expressed his reflections as a concerned citizen. The only thing more central to his philosophy than these doctrines, he indicated, was his philosophical logic, which he viewed as the source of both. His realism, in particular, rested on his view within logic that relations are no less real than properties, and on his celebrated theory of definite description. He always took seriously Bradley's view that the conception of relations as unreal introduces both idealism and irrationalism. Consequently, at times he identified metaphysics with Hegel's idealism.) His theory of definite descriptions, he made clear in his monumental *A History of Western Philosophy*, is what he wished to be remembered by, and clearly it is so because of its realism.

Russell valued his theory of definite descriptions not only for technical reasons but also, perhaps more so, as it welded to an eminently realistic metaphysics, as it dispenses with Plato's Heaven that played a central role in Frege's theory of naming which it came to replace. The criticism of the technical aspects of this theory (as Leonard Linsky has proposed), diminishes its significance much less than extant efforts to return to Frege's theory. The significant mode of reasoning that it illustrates, moreover (in addition to the specific ingenious arguments it marshals), lies in the way it combines realism within modern logic, as well as in the way it uses logic to treat natural language to reconstruct ordinary expressions. His philosophical logic is thus the heart of what was later known as analytic philosophy, and the claim that it exhibits logic as thoroughly realist is its real claim for fame. Note that already Brentano tried to achieve this, but with little or no success. Russell too failed: he admitted this in two ways: first, he admitted that he could not get fully rid of Platonism; second, he admitted, in despair, that idealism, even solipsism, is not inconsistent. But these failures should not obscure the high hopes he had in 1905, nor the partial success he had that should still be acknowledged.

This presentation places Russell in the center of analytic philosophy. This is admittedly an exaggeration, a seeming slight on the significant contributions of its other acknowledged founders, Moore, Ramsey and Wittgenstein, perhaps also an injustice to the cohorts of others who swore allegiance to that school. Most of these have contributed little that is durable and conspicuous; some of these are in the wrong camp. An example is Otto Neurath, the self-styled follower of Marx and of Mach, the second and last leader of the Vienna Circle, the group outside England most closely identified with analytic philosophy. His hostility to metaphysics was Machian, and his arguments were Machian, not from modern logic or from language analysis. As far as language is concerned, he expressed loyalty to Duhem's holistic theory of meaning, though, in accord with his own doctrine of the unity of science (only one language exists), he denied Duhem's contrast of science with commonsense. Sensationalism, too, he explained, is but a part of his doctrine of the unity of science: by this doctrine, he insisted, the world is flat. This is far from Russell's view of science as a Promethean madness as well as from Wittgenstein's view of the mystical, as he called it.

Moore's contribution to (analytic) philosophy is hard to summarize, his having rescued Russell from Hegel's influence by helping him revert to realism notwithstanding. He won Russell's admiration—for his uncompromising honesty and for his staunch commonsense, even for his amazing naiveté—but he had no good word for Moore's output. He evidently took it for granted that though Moore's commonsense merits admiration and endorsement, his defense of commonsense does not; nor did Russell endorse any other idea initiated by Moore, if he did initiate any. No insult is meant in this aside: Moore did not claim any priority. (His early contributions to philosophical logic are of historical importance,

but they were almost immediately superseded by Russell's. His contribution to ethics and esthetics is somewhat original, but this lies outside the scope of the present discourse.)

Russell's dismissal of Moore's output is rather sad, as at least his lectures on metaphysics are serious philosophy; they are in the traditional vein, being realist and Lockean. Russell overlooked them as he deemed its contents commonplace and trivially true. They are not: sensationalism contradicts commonsense: things are normally observed in the realist mold and the contents of perceptions are trusted, but not constantly. This is a very simple and uncontested empirical observation: perception is realist but fallible. Like all empirical observations, this one may be overturned, or it may be made more precise and then tested and perhaps overturned. Yet for now it stands, well in the manner that is customary in empirical science: it invites explanation. And so, perception theories that share it should be stated in testable versions. As it happens, some of these are refuted. Locke and his followers were sensationalists, including Moore, Russell, and Ayer, but not the old Wittgenstein (Anscombe said, not the young Wittgenstein either) and not John Austin. Whereas Locke's version is refutable and was amply refuted, that of Moore is frankly metaphysical. Russell began by joining Moore, but finally, replying to critics (*The Philosophy of Bertrand Russell*), he proposed it as a (scientific?) hypothesis, to be eschewed if it turns out to be not realist.

Sensationalism is still popular—because it is a part of the view of science as inductive. It thus served as the view of science as well-founded, unlike metaphysics that is so troublesome because it is speculative. The alternatives to sensationalism, shared by perception theorists like Külpe and Gibson, rest on the view of science as trial and error. The early methodology of Popper, as expressed in his *Logik der Forschung* of 1935, best embodies this idea, except that it was Mach-style anti-metaphysical. His later philosophy is different. Yet he never belonged to the analytic school: it was a great point with him that his early hostility to metaphysics was Machian, Wittgensteinian. He repeatedly criticized the analytic view with the historical observation that some metaphysics became scientific. The paradigm case is atomism, which in Antiquity was too slender to be testable but was strengthened in the nineteenth century sufficiently to become highly testable. He put the difference here between himself and the Vienna Circle in general terms: they demarcated the language of science (science as a language) whereas he demarcated science within some given language. None of Popper's peers did him the courtesy of agreeing to differ with him about language. They followed Schlick's cagey hint that the hostility to metaphysics of the young Popper should have made him tone down his criticism of the Vienna Circle.

Sensationalism resonates with the demarcation of science as a language, the way the Vienna Circle understood Wittgenstein. He stressed that all propositions are reducible to atomic ones, and that these come in pairs, as the negation of an atomic proposition is meaningful too. The Vienna Circle took Wittgenstein's "atomic propositions" to mean observation reports and thus (!) reports about

sensations. The stress scholars still put on this point is understandable, as the negations of scientific theories are traditionally considered unscientific, yet the language of science, whatever it is, allows negation. Thus, Schlick repeatedly stressed, verifiability is the ability to be verified or refuted as the case may be. Unlike Schlick's demarcation of science, Popper's demarcation follows tradition here. Misrepresented as also the demarcation of the language of science, it both includes and excludes the negations of scientific theories. This is how the Vienna Circle distorted his theory then and easily refuted it.

Popper's early hostility to metaphysics rests on his view of science as distinct from metaphysics and independent of it: even while admitting the heuristic value that it had exhibited, he ignored this contribution when he demarcated science. Consequently, though he shared Russell's realist sentiment, he explicitly (and erroneously) kept it out of his methodology, and, in accord with this policy, he said once that his methodology allowed for Carnap's version of sensationalism which he attacked elsewhere in his first book. This conflicted with his dissent from sensationalism and led to confusion. The confusion persists as Popper never explicitly took back the neutralist policy of his early days, even though his later praise of metaphysics renders it superfluous.

Sensationalism lost its central place as a result of Popper's durable contribution, which is his equation of empirical testability with empirical refutability, where refutation is finding a contradiction between a theory and an observation report proper (hardly ever reports of sensations, except in psychology or physiology, and even then they are limited to repeatable observations of sensations). Popper mistakenly equated the empirical with the scientific: traditionally and by a broad, general scientific consensus, the scientific is empirical but not always the other way around: to be scientific a theory should conform to mechanism, or to some other unifying principle or intellectual framework or metaphysics. Thus, the refutation of many widespread superstitions never received scientific status, not even those of Faraday. Testable theories may belong to applied mathematics and play significant roles in technology, even if they are scientifically uninteresting.

4. METAPHYSICS AND SCIENCE

Russell and Popper viewed science as an admirable Promethean madness by reason of its serving as a cosmology, a world-view. Here both went off course: science plays a role in cosmology when it follows some unifying ideas. In a way this is farewell to analytic philosophy; in another way this is its natural continuation: since by now it sanctified commonsense metaphysics in accord with Moore, surely it should not ban scientific metaphysics. An effort to shift the analytic tradition from Wittgenstein's hostility to metaphysics to Moore's commonsense metaphysics appeared first in Geoffrey Warnock's *English Philosophy Since 1900 of 1958*. Had Warnock mentioned Popper there, he might have succeeded.

Metaphysics is ubiquitous, although good metaphysics is not: mostly it is not even consistent, let alone satisfactory. A scientific idea made inexact and general may be a metaphysics. (Newton's theory of gravity is often confused with his metaphysical postulate of the world as consisting of particles interacting with Newtonian forces. Another example is Einstein's alternative view of natural laws as pertaining to fields invariant to some laws of transformation.)

The most common metaphysical principles are the least satisfactory: those of myth and magic, whose language uses no fixed references and limits its discourse to what bears good or bad meanings. The finest progress in metaphysics happened in Antiquity, as all magical acts and world-views gave way to universalism and the convention of fixing meanings. This shockingly banished meaning out of the cosmos and heralded mechanistic metaphysics. The shock is softened by blending magic and mechanism regularly, if inconsistently, especially in the narrative arts.

The scientific revolution jumbled three metaphysical ideas: Copernicanism, inductivism, and mechanism. Up to a point these were in harmony. The most forceful idea of Copernicus was the observation that since the ancient Greeks disagreed, the reliance on their authority is not as informative as was assumed. By inductivism the independent human intellect can achieve knowledge, as already Bacon stressed. Also, inductivism goes well with mechanism in its demand to attend to details first and to totalities only after every detail was exhaustively studied, as both Bacon and Descartes stressed. Yet inductivism does not agree with Copernicanism, nor Copernicanism with Euclidean geometry: by that geometry space is infinite, and so it has no center, Copernican or any other.

The rejection of metaphysics underwent great transformations. The latest two were Mach's placing its root in sensationalism and Russell's placing it in logic. As modern logic leaves science to empirical research, sensationalism should have left too. Indifference to scientific theories was the great innovation of modern logic: traditional logic was also a methodology of science, and so it was ambiguous and allowed for ambiguity in metaphysics. (Kant's transcendental logic is a way station toward a divorce between logic and science.)⁴

From its inception, traditional logic played the role of the unification of science with metaphysics. Aristotle presented logic as two theories that are isomorphic, one of criticism and one of science; his idea of science was that of a natural classification or of natural kinds: it was supposedly a scientific metaphysics, a streamlined deductive system that allegedly explains all facts with certitude. Logic was also a theory of the ideal language, of the essence of language, as reflecting that metaphysics; and as a theory of language—the essence of language is nouns—it was also a theory of meaning: meaning is denotation.

⁴ For all this see Nimrod Bar-Am, *Extensionalism: The Revolution in Logic*, 2008.

Today we marvel at the resilience of the poor and confused theory that is Aristotelian logic. Yet it did seem a powerful unifying idea. Also, the obvious error it contained were disregarded on the excuse that logic requires good judgment. Things changed when research in mathematics raised the demands for rigor, and, to that end, the demands for formal reasoning that left no room for judgment.

This is how the idea of formal logic was developed as a mathematical logic, divorced from all empirical judgments; it triumphed only after the attainment of sufficiently robust foundations of mathematics that demanded a total ban on the use of the excuse that good judgment supplements the defects of logic. The methods of science first suffered neglect and reentered the agenda after mathematical logic was a resounding success.

The founders of modern logic, Boole and Frege, had little or no concern for either metaphysics or epistemology. Boole was attracted to Kant's epistemology yet mistrusted it: as a theory of the empirical intellect, he wrote, it should undergo empirical examination: much progress is required in the knowledge of the empirical intellect. He developed Boolean algebra partly to mathematize Aristotelian logic by establishing it as a logic of classes. (Terms meant earlier variably concepts, classes, and statements.) Partly it was to develop his (interim) theory of probability (interim logic of science). Frege was less concerned with epistemology. He ignored even geometry; he deemed it synthetic *a priori* knowledge but, single-minded like Boole, he showed concern only for foundations, not for possible benefits. The analytic works of Russell, and more so of young Wittgenstein, were not just a return to epistemology, but the view that since logic is realist, it cannot be properly understood without epistemology, even though it does not in the least decide the truth value of any synthetic statement. (See Quine, *The Roots of Reference*.)

5. METAPHYSICS AND LOGIC

Frege first attempted to apply Boolean algebra to Dedekind's theory of numbers and failed. So he went back to the idea, already adumbrated by deMorgan, that a logic of sets should be supplemented with the logic of relations. This idea was of a great metaphysical import, as was noted by Russell in his path-breaking 1900 *An Examination of the Philosophy of Leibniz*. The tremendous import of logic for metaphysics is crucial for the understanding of the development of analytic philosophy. Recent studies of Russell's early philosophy led to the emphasis on the import of the role of relations in the philosophy of Bradley and his associates, of Bradley's despair of reason, since classical logic fails to cater for relations. On this Russell had the help of Moore, as he adequately acknowledged. He also acknowledged generously the inspiration of Leibniz. Yet his influence was the most crucial: he assigned to relations ontological status. As Russell treated relations as real, Einstein treated the relativity of time as real. These moves share

the idea of Leibniz that space is not a substance but a set of relations. Kant considered this view of space idealistic. Russell developed aversion for Kant's theory of space and admired Einstein's. The prevalence of the view of Einstein as Kantian testified to ignorance rather than to dispute with Russell.

The rise of modern logic was indebted to developments in mathematics in two ways. First (as J. O. Wisdom has shown⁵), Berkeley's critique of the infinitesimal calculus led to the recognition of the need for rigor. The abstractness of mathematics was thus increased, especially in the works of Lagrange, whose (failed) attempt to present the infinitesimal calculus as a branch of algebra led to the development of group theory, when consequently a new level of mathematical abstraction was achieved. The idea of a calculus in the modern sense is the combination of both: the great innovation of Boole and Frege was the very idea of logic as a calculus. In addition, Frege refuted the ancient theory of meaning and developed his alternative to it that appears these days in diverse textbooks in splendid isolation, without any background information or explanation; Russell's alternative to it then suffers the same fate. Both appear in textbooks these days without background, as detached from its historical background in mathematics and as detached from any theory of meaning; this is delegated to introductory courses on philosophical analysis, where it is detached from its historical background too. The nearest to a background to the theory of meaning is Gilbert Ryle's casual remark that the theory of meaning as reference is still advocated as late as in Mill's *Logic*⁶. He too did not explain.

The basis of Frege theory of meaning is his refutation of the ancient theory of meaning as reference. This theory is so significant because it presents logic as a logic of terms. Frege's refutation of the ancient theory of meaning imposes the view (presumably adumbrated by Kant if not by Leibniz) that the objects of logic are assertions or statements or propositions, not terms. (This is why Kant's critique of the theory of essential definitions is so important, in addition to its opening the way to Boole's extensionalism.)

Frege's familiar argument against the ancient theory is his observation that a true statement of identity need not be analytic, though this is required by the substitutability of terms with identical referents. This constitutes a paradox, and he proceeded to eliminate it. Now the observation that statements of identity can be synthetic is still under dispute. This does not reverse the clock, however, since Frege's paradox remains valid as a criticism of the ancient theory of meaning. It is a sophisticated version of the classical demand that denotation should be one-to-one: language should contain no homonym and no synonym. Diverse commentators complained vociferously about deviations from this rule. Rectifying

⁵ J. O. Wisdom, *Berkeley's Criticism of the Infinitesimal*, "The British Journal for the Philosophy of Science", 1953, 4:22-25.

⁶ Gilbert Ryle, *The Theory of Meaning*, in *British Philosophy in the Mid-Century*, A. C. Mace (ed.), 1957, 239-243, Section 1.

this defect would take care of all terms except for those that denote nothing. These are meaningless, metaphysical; they should be struck off the dictionary. Now this amounts to the absurd demand that we should not speak before we know much more than we know today—or even that we can ever know. The possibility of the existence of a chimera is by the classical theory the possibility of the permission to speak of it, but the wish to examine that possibility requires doing so.

The traditional solution obviously precludes traditional nominalism, as nominalism presents class names as both homonyms and synonyms, since it presents "human" as the name of every human individual. The persistence and popularity of nominalism thus rested on confusion, which in its turn also rested on the classical demand for good judgment. With the introduction of the empty class the replacement of good judgment by rigor destroyed the classical theory of meaning as denotation. Frege had the advantage of approaching matter formally, and this is the cause of the prevalence of the failure to understand his refutation at the time—among philosophers and mathematicians—with the exception of the few, like Peano, who cared for rigor. Having refuted the ancient theory of meaning, Frege replaced it with his theory of meaning as both sense and reference—sense residing in Plato's Heaven. Meinong became an even more ardent advocate of Plato's Heaven despite his sensationalism. At first Russell was ambivalent about Meinong.

It all depended on the readiness to admit that terms with no reference are legitimate. Boolean algebra has but one empty class, though it has many different names. And there was no way back: extensionality killed essentialism, as Wisdom noted⁷, and this led to the discrediting of intuition and thus of judgment. The demand for formality—by Frege, Hilbert or Peano—bespeaks the demise of the demand for judgment. Frege himself found this hard to follow, and this led him to the erroneous denial of the validity of inferences with contradictory premises⁸. Russell corrected this error, though he, too, was not too clear about the matter; only the later theories of inference made this tolerably clear.

Analytic philosophy began when Russell cleared a related major confusion in logic, one that was also due to the demand for good judgment: by the canons of the classical theory of meaning inconsistent terms have none, as they denote nothing, so that, rigorously speaking, classically the inconsistent is meaningless. Russell cleared his paradox by declaring it ungrammatical, and he stressed then that by simple formal considerations contradictions are meaningful: a string of words that begins with the negation sign is meaningful if and only if it is meaningful without it. Here the demand for judgment plus the classical theory of meaning clash with the demand for rigor. Analytic philosophers of the ordinary language persuasion often miss this simple point, as they confuse the two sense meaningfulness, the

⁷ J. O. Wisdom, *The Metamorphosis of Philosophy*, 1947.

⁸ *** *Translations from the Philosophical Writings of Gottlob Frege*, P. Geach and M. Black (eds.), 1952, "Function and Concept".

ordinary and Russell's. Nor can they accuse Wittgenstein for their confusion here: he was always clear on it. As his leading disciple John T. D. Wisdom observed, Wittgenstein always enjoined his disciples to beware of contradicting metaphysicians, since endorsing the negation of any metaphysical item amounts to recognizing it as meaningful; in his view they are all meaningless.

6. ORDINARY MEANING AND ORDINARY INTUITIONS

In 1905 Russell considered a great success his theory of denotation as it does not invoke Plato's Heaven; he suggested then that metaphysics was thereby overcome by logic. This he did prior to his proposal of a fully-fledged alternative theory of meaning. This he did when he announced, in 1927, in the preface to the German edition of his *The Problems of Philosophy*, of all places, the theory of meaning as use. This was meant as a clearly behaviorist theory; he gave it up before 1940, when he published his *Inquiry into Meaning and Truth*, where he admitted inability to avoid Platonism altogether. Waismann offered another theory of meaning, when he announced the verification theory of meaning, or the verification criterion of meaning, which he said he had found in Wittgenstein's classic, canonic 1922 *Tractatus Logico-Philosophicus*. The attribution of this theory to Wittgenstein is contested. Discussion of it is encumbered by the fact that the attribution much depends on whether one allows Wittgenstein to provide theories proper or not. He denied then the possibility of total verification, as did Schlick soon after, and as did the rest of the Vienna Circle eventually.

The hostility to metaphysics that the Vienna Circle exhibited was not new; their innovation, if any, was their claim that this hostility is an unavoidable corollary of logic. This is the by now extinct verification principle (or criterion or theory). This invites a historical comment. Classically, the view that metaphysics is meaningless rested on the claim that metaphysical terms—especially the Holy Name—denote nothing. Strangely, this view appears even in Wittgenstein's famous *Philosophical Investigations*, in a passage where he discusses an objection to his view about meaning as divorced from the psychology of meaning: what if the deity were to give a parrot the power to understand what he previously was merely parroting? Wittgenstein dismisses this objection (§346) with the observation that the expression denoting the deity was not given meaning [it denotes nothing], quite in line with his earlier *Tractatus* (6.53). This is no oversight (though it may be an unhappy expression; as the book's publication is posthumous, this is no censure): Wittgenstein always endorsed Russell's theory of denotation, and it asserts explicitly of some expressions that they denote objects. A statement that refers to nothing as if it were something, then, is not meaningless but false. The objection just cited, the argument from the parrot mentioned above, possibly does not obtain and possibly it does not; hence it is quite legitimate though too sketchy. Wittgenstein then invoked it in vain.

Russell viewed his theory of definite descriptions as the downfall of metaphysics in the sense that it does away with Platonism. Here another unhappy expression intrudes: the classical controversy between realism (i.e., Platonism) and nominalism took place within the classical theory of meaning as denotation: it concerns the question, what do universal terms denote? This is traditionally deemed central to philosophy. With the demise of the traditional theory of meaning, the dispute over universals altered; the old terminology persists and its meanings were altered as well. Kant, and in his wake Mach, declared that metaphysical controversies cannot be settled. And science then verifies its assertions (and refutes their negations). What then is the status of Platonism?

The attraction of the verification principle lay in the claim made repeatedly by adherents to that theory, namely, that it secures the demise of metaphysics: whatever cannot be verified (in principle) is not an assertion. Logic tells us, said Carnap then, that metaphysics is meaningless. When Popper declared metaphysics meaningful he not only fell back on the Humean idea that empirical verification is impossible; he also argued against any theory that seeks meaning in experience, claiming that even were verification possible, one would have to comprehend a theory before deciding whether it is verifiable, let alone seek its verification. This criticism of the verifiability criterion of meaning is still overlooked, under the pretext that anyway verification is impossible. But then the erstwhile advocates of the extinct verifiability criterion of meaning may wish to offer an alternative, and if this critique is valid, then it precludes a vast class of them. A few such criteria were offered in by Carnap, in his short *Testability and Meaning* of 1936-7. They are all refuted by this argument of Popper's of 1935.

Carnap's *Testability and Meaning* inspired hundreds of studies, most of them irrelevant, as they discuss its theory of meaning not of propositions but of terms, of dispositional terms. Popper had observed in his classic *Logik der Forschung* of 1935, make verification impossible (since observation reports that employ them entail ever newer refutable predictions). The study of dispositional terms came to present terms that are not dependent on theories, at least not the way Popper described them. Moreover, this reinforced the study of subjunctive conditional statements (as the unfolding of a dispositional term is subjunctive: "x is soluble in water" entails "x would dissolve were it placed in water") which caught the eye of the sensitive to the limitations of logic due to its extensional character.

Subjunctive conditionals are these days the subject-matter of a large-scale industry, led by Saul Kripke, David Lewis and Hilary Putnam. Lewis and Putnam hardly say what import they ascribe to the studies subjunctive conditionals. Kripke says this of his study: it revives essentialism on the basis of the hypothesis that native verbal intuitions more-or-less-rightly reflect natural kinds. Many if not all traditional problems of metaphysics may be solved or nearly solved when the knowledge of natural kinds were available, as Nelson Goodman argued. For example, the mind-body problem is decidable, Kripke suggests, by a reply to the question, do humans and automata belong to the same natural kind? This is hardly

surprising, since natural kinds were meant to serve as a metaphysical framework for the comprehensive scientific system. It is therefore quite amazing that ancient doctrine is deemed analytic just because Kripke finds Aristotelian intuitions in ordinary parlance. He converts the traditional philosophy that is found unreliable as it trusts informed intuition with a new philosophy that he finds reliable as it trusts "ordinary" intuitions. Rather than revealing the ground for his account, he dismisses the observation that science has revised natural kinds. (He mentions the example of the elimination of marine mammals from the list of fish.) He casually declares such changes inessential. Are all the changes of natural classification due to science inessential? (Copernicus eliminated Earth from the list of planets and added Sun to it; was this change of natural kinds also inessential?) Kripke's argument is hardly superior to that which Molière cited about the essence of opium: it puts one to sleep because it has *vis dormativa*.

The technique of finding the contents of "ordinary" intuition as reflected in the "ordinary" use of language has many unstudied ramifications. This is no complaint. Yet, clearly, the question arises at once, is the outcome of intuition—even the best extant—consistent with science? What is its import for science? How should science consider it? Duhem asserted that science must ignore commonsense. He endorsed the theory of natural kinds as commonsense, but not as science, as it is too abstract. The existence of diverse cultures, each with its own commonsense, invites rethinking the matter. Already Russell said ("The Cult of Common Usage", reprinted in his *Portraits From Memory*), philosophers of the ordinary language persuasion consider a locution ordinary if and only if it belongs to the vocabulary of the Oxbridge University common-room chat, that displays ignorance of science. And things can be worse: Ryle complained that ordinary-language philosophers find it useful to question in philosophy seminars terms they understand perfectly well in the common room.

Analysis of ordinary language requires a balanced attitude to it, between servility (the cult of common usage) and utter dismissal (Frege). In addition, common intuition is better checked where it defies science, as Kripke suggests, however reluctantly. Russell's theory of definite descriptions strikes this balance; it was this theory, then, that heralded language analysis, as it was the admission of ordinary locutions, but as in need of elucidation. "I thought your yacht is larger than it is" is Russell's immortal paradigm for an ordinary assertion that rightly no one takes literally. He reports that only after this discovery did he find a way to handle his paradox: the way out was his modification of the concept of class-inclusion and his rendering it exact in the manner that launches his theory of types.

An exception to the claim that the servitude to ordinary intuitions is in defiance of science is the case of Hilary Putnam. But perhaps he rejects ordinary intuitions; it is not clear how much his output is analytic. He is the former student of Reichenbach, who possibly was a follower of Wittgenstein; but he (Putnam) follows Quine, who never was. He endorses Quine's demand to endorse science in

as simplistic a manner as possible, meaning, presumably, all scientific assertions currently endorsed, not defunct ones. This is too opaque to be satisfactory, especially in view of the fact that scientific assertions are seldom meant in a simplistic manner (think of Schrödinger's equation which is obviously a way station, as it follows Newton rather than Einstein) and always invites interpretations according to some added metaphysical blanket principles. It is a miracle that the clashes between diverse scientific theories taken literally did not disturb Quine and Putnam, but at least Quine has the virtue of ignoring subjunctive conditionals; it is hard to see how Putnam can help matters by analyzing them.

7. THE AFTERMATH

Russell's "On Denoting" of 1905 still enjoys a high status—as a matter of course and without explanation⁹. The reason is hardly his early assessment of it as establishing logic as a substitute for metaphysics, to wit, as rendering Platonism redundant. It was less an assessment than a battle cry, understandably uttered in the exuberance of a triumphant mood. He soon found his early assessment erroneous. In 1916 he wrote famous letter to Lady Ottoline Morel, narrating that Wittgenstein had convinced him of the impossibility of a victory and the bitterness that this had elicited in him.

It is perhaps fortunate that Wittgenstein forged ahead regardless of his severe criticism that had brought Russell to despair. The outcome, his *Tractatus Logico-Philosophicus*, Russell declared very interesting and very important, yet too wild and definitely not the last word. Unfortunately, from then on communication between them broke down. Otherwise, perhaps the Vienna Circle would not have taken the book so uncritically. Carnap modified Wittgenstein's message in the light of Russell's criticism and consequently had to struggle with the problem of universals—while denying the existence of philosophical problems. His *Die logische Aufbau der Welt* was nominalist: "white" is the name of the list of all white things. This sidesteps the issue, since he replaced the word "class" with the word "list", using it the same way; he then solved it by using the formalist philosophy of mathematics.

This could not succeed. Formalism is a (forceful and surprisingly robust) meta-mathematics, not a solution to the problem of universals. Carnap suggested that it is, as it approaches formal systems as signals, and signals are sensible objects. Not so: signals are identified by their shapes, that look suspiciously Platonic.

In his 1940 *Inquiry into Meaning and Truth* Russell declared himself philosophically nearest to Carnap, presumably due to their shared concern for science and against Platonism: he always identified anti-metaphysics with anti-Platonism. He then declared unsuccessful all efforts to banish Platonism, his own

⁹ See Leonard Linsky, *Referring*, 1967, that is still the last word on the subject.

included. Nevertheless, in his *A History of Western Philosophy* of 1946 he still stood by his 1905 theory of description and viewed it as his main contribution to philosophy.

The most authoritative history of the period, Alberto Coffa's 1991 posthumous *The Semantic Tradition from Kant to Carnap, To the Vienna Station* declares the 1935 ideas of Tarski and Popper as the end of the (Wittgensteinian) analytic tradition. Usually this honor goes to Gödel's slightly earlier result, his proof of the undecidability of some well-formed formulas. Coffa is right: decidability is tricky; the Gödelian statement undecidable in the object-language is decidable in the meta-language. Tarski and Popper went further: their arguments do not depend on any specific theory of proof but rather on the hypothetical character of everyday and of scientific assertions alike. Verificationism should have died there and then, yet Schlick and Neurath showed more concern with public relations than with the truth.

Politicking led to the neglect of all studies of world-views that may be relevant to science and to other significant human affairs in favor of the study of "ordinary" intuitions as expressed in "ordinary" verbal conduct as well as the role that science plays in the forging of new intuitions, especially those concerning new risks to life on our planet brought about by new science-based technologies. Back to Russell's *The Scientific Outlook*.

8. APPENDIX: ON RUSSELL'S PROBLEMS OF PHILOSOPHY

The literature on the history of philosophical analysis ignores all details of the impact of mathematical logic except for one topic: Michael Dummett took for granted Frege's philosophical views;¹⁰ others contest his Platonism; the situation is vague: all other aspects of mathematical logic are ignored. Gödel was excited about the achievements of Abraham Robinson, as his discovery (of non-standard arithmetic) employed sophisticated tools from logic in order to develop mathematics. Gödel then expressed the hope that this will force mathematicians to pay attention to logic. This hope was reduced after the invention of two ways to formulate Robinson's theory in a traditional way. Most mathematicians still prefer to work intuitively and ignore logical *finesse*. Rigorism was never generally received even within mathematics, and it is excessive to expect philosophers to do better. The idea of rigorism was dual: that rigor leads to axiomatization and that proper axiomatization demands strict logic. Strict logic was slowly found to be formal, and this last step is the contribution of Boole, Frege and Russell. Russell was elected to the Royal Society of London as a mathematician. Of course, this was not so all the way, and in 1900 the discussion on the foundations of mathematics and the logic it involves was considered by sufficiently many interested parties to be of great philosophical import. How are such things determined?

¹⁰ Frege: *Philosophy of Language*, 1973, 1981.

This is a social affair pertaining to the division of the academy into departments. Yet there is often a feeling that some studies “naturally” belong to a certain department, and this feeling deserves study. As to the import of logic to philosophy, it was Russell’s argument in his 1912 *Problems of Philosophy* that tipped the scale: he argued there that modern logic alters the problems traditionally considered central in philosophy. He also hoped that logic would help solving them. His 1916 letters to Lady Ottoline Morel narrates that Wittgenstein had convinced him of the impossibility of this project. The project was executed nevertheless, with the limited success it could attain after Wittgenstein’s criticism was acknowledged, as Russell describes in his *Analysis of Matter*, his *Analysis of Mind* and his *Outline of Philosophy*. These analyses, possibly also his Introduction to Wittgenstein’s *Tractatus Logico-Philosophicus*, are all obsolete as they are sensationalist. That some philosophers view Russell as an idealist and others view him a scientific realist is due to his inconsistency. It is therefore only reasonable to take his scientific realism as more significant than his sensationalism, as is obvious from his *The Scientific Outlook* of 1931, his *Inquiry into Meaning and Truth* of 1940, his *Human Knowledge, Its Scope and Limits* of 1951, and more and in line with Einstein’s reading (in *The Philosophy of Bertrand Russell*) and with Russell’s own declaration that his liberation from idealism was his greatest and most significant philosophical progress ever.

Russell’s *Problems of Philosophy* sounds today so obvious because it was a restatement of the obvious problems in the light of the new logic, now so obvious. Not then, though. Yet what matters in the present discussion is that Russell wrote it when he was still hopeful about his project; hence, it is as far as possible from Wittgenstein’s view that there are no philosophical problems. Russell never deviated from the views he proposed in this programmatic book, much as he altered his view on the program itself and on its prospects.

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