

THE PHILOSOPHICAL TENDENCIES OF MR. BERTRAND RUSSELL

JEAN NICOD

Introduced and translated by

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Jean Nicod, born in 1893, died far too young in 1924. He is remembered today as one of the foreign disciples (among them Ludwig Wittgenstein and Norbert Wiener) attracted to Cambridge by Russell after the publication of the *Principia*. We publish here a translation of “Les tendances philosophiques de M. Bertrand Russell”, which appeared in the *Revue de Métaphysique et de Morale* in 1922. The article is testimony not only to Nicod’s philosophical talents, but also of how Russell’s philosophy could be received in France at the beginning of the twentieth century.

Jean Nicod (1893–1924) is often mentioned alongside Couturat, Herbrand, Lautman and Cavailles to illustrate the strange destiny that marked the lives of the French philosophers of logic and mathematics all of whom died prematurely in the first half of the twentieth century.¹ The little we know about his short life is almost entirely contained in the preface that André Lalande wrote for *Le problème logique de l’induction*. Let us quote it:

Born in 1893 of a family of great intellectual culture, Nicod at first turned towards the sciences, and he had acquired by the age of eighteen, after two years of special mathematical studies, that solid fund of knowledge and technical habits which are

¹ Compare what van HEIJENOORT wrote in the preface to Herbrand’s *Ecrits logiques* (1968): “In the first half of the twentieth century, a bad fate seems to have befallen logic in France.... A series of untimely deaths robbed it of several of its champions. Couturat was killed on August 3, 1914, in an accident caused by a military car carrying mobilization orders. Nicod died of illness in 1924, at the age of thirty-one [i.e. thirty]. Herbrand died at the age of twenty-three on July 27, 1931, in a mountain accident. Cavailles and Lautman were shot by the Germans, one at the beginning of 1944 and the other on August 1, 1944, for Resistance activities.”

obtained only with difficulty in later education. But philosophy appealed to him and ... he came to the Sorbonne, where in three years he obtained his degree, diploma of graduate studies and the [agrégation of philosophy].... Meanwhile, he had pursued graduate course in the Ecole des Hautes Etudes, and in the Faculty of Sciences; he had learned both Greek and English so well that he ... carried off first prize at Cambridge University in competition with British students. Too frail in constitution to be drafted, he spent the greater part of the war period at Cambridge, working diligently on the most varied subjects (he even went so far as to learn Persian in a few months of his leisure time), taking the English degrees, studying particularly, under the invaluable direction of Bertrand Russell, problems of logic and logistics which had already awakened his curiosity during his studies at the Sorbonne.... On his return from England he married one of his student comrades, Miss Jouanest.... At first he followed the usual career of young [agrégés]: he taught philosophy at the lycées of Toulon, Cahors and Laon; but the fatigue of lecturing made itself felt and he had to give up secondary teaching. With his extraordinary faculty of learning, and as a result of a competitive examination in which law and political economy played the principal part, he acquired a post, in 1921, with the International Bureau of Labour of the League of Nations.... An improvement in health allowed him to come to Paris for some time where he was able to give a course on the history of Greek philosophy, and where he worked at the same time on his theses. But in winter of 1922–23, a rest at [a sanatorium] in Leysin became necessary, and after that, in spite of periods of relative improvement in health, he was no longer destined to resume work. He had just returned to his functions at the International Bureau of Labour at Geneva, his doctoral theses were printed and handed in, and he was to defend them soon after at the Sorbonne, when abrupt complications set in; on February 16, 1924, he was removed from the affection of his family and friends.²

The two parts of the “thèse de doctorat”,³ *La géométrie dans le monde sensible* and *Le problème logique de l’induction*, were published in 1924, and a volume in English, bringing together a translation of the two works, appeared in 1930. The volume was read and used by some prominent philosophers in the 1930s: Wittgenstein dealt with Nicod’s analysis during his phenomenological period,⁴ Eaton and Hempel⁵ based their developments on induction and confirmation on his analysis. This suggests what kind of intellectual destiny Nicod

² ANDRÉ LALANDE, Preface to NICOD, *La géométrie dans le monde sensible* (1924); in English, in NICOD, *Foundations of Geometry and Induction* (1930), pp. 167–9. There is also an obituary notice, probably by the editor, XAVIER LÉON: “Jean Nicod (1893–1924)”, *Revue de métaphysique et de morale* 31 (July–Sept. 1924): supp., 15–16.

³ At the beginning of the twentieth century in France, a “thèse de doctorat” was composed of two parts, the “thèse principale” and “thèse complémentaire” (which before 1910 was to be written in Latin). Nicod’s final degree, awarded posthumously, was a *Doctorat ès Lettres*.

⁴ See SOUTIF, “La Signification de Nicod pour la phénoménologie de Wittgenstein” (2005).

⁵ See EATON, *General Logic* (1930), and HEMPEL, “Studies in the Logic of Confirmation” (1945).

might have had, had he been able to contribute to the debates his works opened.⁶

It is not, however, on the promising intellectual, prematurely gone, who could have implanted analytical philosophy in France at an early stage, that we will focus our attention here. The interest of Nicod's short piece, a translation of which is given here,⁷ lies in the fact that it represents an invaluable testimony of how Russell's philosophy appears when viewed from the point of view of the French intellectual world of the early 1920s.

Invaluable it is indeed, because, as Lalande's brief biography recalls, Nicod comes from the inner circles of French philosophy; he is a "*sorbonnard*" and an "*agrégé de philosophie*". But at the same time, Nicod's knowledge of Russell's thought was that of a close disciple, comparable to that of Wittgenstein, perhaps even deeper than that of Carnap. Thus, "The Philosophical Tendencies of Mr. Bertrand Russell" was written by someone who was as familiar with Russell's works as he was with the usual frame of reference of the readers of the *Revue de métaphysique et de morale*.

Let us pause on Nicod's relationship with Russell. Nicod's first paper is tightly connected to the *Principia*: it contains the proof that the five primitive propositions used by Whitehead and Russell for axiomatizing (what we call today) propositional logic can be reduced to one Pp (primitive proposition) containing, as a unique logical constant, the new logical connective introduced by Sheffer in 1913.⁸ One also knows from the correspondence that Nicod did some research on type theory. In addition to his study on the logic of *Principia*, Nicod seems to have developed a strong interest in Russell's *Our Knowledge of External World*, in particular on the issue of logical constructions, considered both from a technical and philosophical point of view. This topic, mentioned several times in the correspondence,⁹ occupies a central place in

⁶ For more on Nicod, see VUILLEMIN, "La géométrie dans le monde sensible" (1971), MOULINES, "Die Mathematisierung der Erfahrung: Vorgänger zu Carnaps 'Aufbau'" (2001), GUILLAUME, "La logique mathématique en France entre les deux guerres mondiales: quelques repères" (2009), and DUBUCS, "Jean Nicod, l'induction et la géométrie" (2015). In Works Cited, under his name, we have assembled all the publications by NICOD that are known to us. No collection of private papers is known.

⁷ References are to the original pagination, pp. 77–84, provided in the margins below.

⁸ See the preface to the second edition of *PM*, I: xiii: "The most definite improvement resulting from work in mathematical logic during the past fourteen years is the substitution, in Part I, Section A, of the one undefinable '*p* and *q* are incompatible' (or, alternatively, '*p* and *q* are both false') for the two undefinables 'not-*p*' and '*p* or *q*'. This is due to Dr. H. M. Sheffer. Consequentially, M. Jean Nicod showed that one primitive proposition could replace the five primitive propositions *1·2·3·4·5·6."

⁹ See the letter to Russell of 15 June 1919: "I have been thinking a tremendous time on the External World, with no really clear results. Also, I have been yearning in vain to help it a *faire peau neuve*" (*Auto.* 2: 166). See also his article for the *Britannica* (p. 875) and, of course, *Géométrie*.

Géométrie, and, as we will see, one finds several echoes of it in “Tendencies”. Finally, even if it is in reference to Keynes and not to Russell that the discussion on induction and probability is conducted in his complementary thesis (*Induction*), Nicod explained to Russell, in three letters from 1923, his guiding ideas, and asked for his opinion. For his part, Russell helped Nicod publish his research. Nicod wrote the section devoted to mathematical logic and the foundations of mathematics for the supplement to the eleventh edition of the *Encyclopaedia Britannica*, and it is hard to imagine that this choice was not endorsed by Russell. Furthermore, when Schlick asked him to be the editor of a new journal Reichenbach and himself wanted to create, Russell suggested that they contact Nicod for a paper.¹⁰

This scientific collaboration was accompanied by a friendship between the master and his disciple. There is no doubt that Nicod admired Russell, to whom he dedicated his *Géométrie*.¹¹ But Russell, too, felt attachment for Nicod.¹² In his *Autobiography*, he wrote:

Jean Nicod was a young French philosopher, also a pupil of mine, who had escaped the War through being consumptive.... He was one of the most delightful people that I have ever known, at once very gentle and immensely clever. He had a type of whimsical humour that delighted me. Once I was saying to him that people who learned philosophy should be trying to understand the world, and not only, as in universities, the systems of previous philosophers. “Yes,” he replied, “but the systems are so much more interesting than the world.” (Auto. 2: 96)

One cannot easily put this statement down as the homage paid to a student who died too soon. Nicod became part of Russell’s circle of students and friends. Dora Russell made this short sketch of Nicod, the first time she met him (and Russell) in 1916: “Tall and slim, Nicod had a shock of very fair hair, very blue eyes, an extremely prominent nose, and a most pleasing large mouth from which issued careful slow judgments, often beginning with ‘We-ell you see....’”¹³ Indeed, after his return to France, Russell and Nicod continually stayed in touch and meet on different occasions. In September 1919, Nicod and his wife, Thérèse, spent one month in Lulworth, where Russell rented a

¹⁰ See the letter to Russell dated 13 September 1923 (Auto. 2: 169–70).

¹¹ The dedication runs as follows: “*A mon maître, l’honorable Bertrand Russell, Membre de la Société Royale d’Angleterre, en témoignage de reconnaissante affection.*” Thérèse Nicod wrote to Russell 22 July 1924: “I remember that last winter I wrote to Jean that he was the most beautiful type of humanity I knew. (I do not recollect what about—We had outbreaks like that from time to time) and he answered immediately: ‘*Moi le plus beau type d’humanité que je connais c’est Russell*’” (Auto. 2: 170).

¹² In a letter to K. Blackwell dated 12 June 1971, Constance Malleson wrote that “Nicod was B.R.’s favourite: a gentle creature” (RA3 Rec. Acq. 1,233a).

¹³ *The Tamarisk Tree* (1975), p. 52.

house with J. E. Littlewood during the summer. It is during this stay that Russell, Nicod and Dorothy Wrinch discussed Wittgenstein's manuscript.¹⁴ There were at least two other shorter visits of Russell to Nicod: in April 1920 and January 1923.¹⁵ And not only did Russell agree to write the preface to *Géométrie*, but he also agreed to write the preface for the 1960 second edition of the English translation of *Induction*.¹⁶

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“Les tendances philosophiques de M. Russell” is comprised of three sections and a short conclusion. The first section is a presentation of Russell's logicism, i.e. the claim, developed in *Principia* (the “monument” Nicod is speaking about in “Tendencies”) and *The Principles of Mathematics* (a “first draft”, he says), that mathematics is a part of logic. A particular emphasis is put on the fact that Russell's logic is different from the traditional syllogistic logic inherited from the Aristotelian tradition. This focus is not altogether original, it can be found, for example, in *Our Knowledge of the External World* (Lecture 2); but Nicod gives a distinctive twist in voicing the opposition between the new and the old logic. First, logic is described by him as what reason does, and the opposition between the two logical frameworks is thus staged as an opposition between two ways of conceiving the nature of reason and its activity. Second, this contrast is characterized with the help of two series of adjectives, which play on the opposition of the dead and the living, often taken up in the French philosophical literature of the time: in the perspective of the old logic, reason appears *pauvre, sèche, étroite, étriquée*, while it appears *riche, abondante, ample, inépuisable*¹⁷ when seen from Russell's point of view.

The second section is the most interesting one. Nicod explains there how, for Russell, logic and reason provide not only the core of mathematics, but also the core of philosophy. One finds there two central Russellian theses: first, the claim that philosophy is a theoretical activity, which should proceed in a

¹⁴ Wittgenstein is an important reference for Nicod. Nicod devoted a section to the *Tractatus* in *Géométrie*, and uses the distinction between saying and showing to criticize C. I. LEWIS's intensional calculus in “Les relations des valeurs et les relations de sens en logique formelle” (1924).

¹⁵ Recall that Russell went to the USSR in 1920 and spent a year in China from the end of 1920 to 1921. In her autobiography, DORA RUSSELL says that “at news of the sudden death of Jean [Nicod], Bertie and I left London at once for Geneva to try and comfort Thérèse” (*The Tamarisk Tree*, p. 108).

¹⁶ See *Auto.* 2: 171. In a letter to Thérèse Nicod dated 12 January 1961, Russell wrote “I am struck afresh by the exquisite clarity of his style in which every sentence gives one aesthetic pleasure.”

¹⁷ Poor, arid, narrow, narrow-minded; rich, abundant, ample, inexhaustible.

rational way, as science does, and should not rely on any special mystical insight (see for instance *OKEW*₂, pp. 39–36); and second, the claim that the function of logic in philosophy is not “to legislate what the world is” but, on the contrary, “to show the possibility of hitherto unsuspected alternatives” (*OKEW*₂, pp. 18–19, and more generally, 14–21). But Nicod’s version of it is truly remarkable. Let us explain why.

In *Our Knowledge of the External World*, Russell usually describes his own position by contrasting it with two others. First, with what he calls the classical tradition, which goes from Plato to Hegel (and Bradley), and which, if it places logic and reason at the centre of philosophy, considers it as a means to prove that certain things must exist and that others cannot. Second, with what he calls “Evolutionism”, which is essentially a reaction against the classical tradition based on the idea that philosophy should draw conclusions from what empirical science teaches us about the world. Russell presents his new scientific philosophy as a synthesis between the classical tradition and its rival: as in the classical tradition, the new scientific philosophy gives to logic a central importance, but its function has nevertheless nothing to do with what it formerly was, in line with the strongly anti-*a priori* and anti-dogmatic leaning of Evolutionism.

In Nicod’s article, Russell is described as the most recent and convincing champion of the traditional rationalist tradition:

It is not the first time that logic forms the seed of a conception of things. From Parmenides to Hegel, the most extreme rationalist philosophers believed that there is no need for metaphysical revelation, and that logic, for those who understand it well, reveals the features of reality and appearance.... Logic cannot say what the world is, but only what it is impossible for it to be; it says this effectively with a twist by positing the ultimate forms of every proposition, proceeding from any truth.
(“Tendencies”, p. 79)

Nicod makes, of course, a distinction between Russell and Bradley. But he connects them both to the same rationalist line, which he opposes to an anti-intellectualist trend based on the idea that philosophical investigation rests on a specific *révélation*, and not on logic alone. For Nicod, the difference between the old and the new logic suffices to explain the distance between the classical tradition and Russell’s own brand of rationalism. From this perspective, there is no need to distinguish, as Russell himself does in his works, the standpoint of the classical tradition and that of the new scientific philosophy. The improvement of logic, notably the pushing of “the limits of the possible beyond the horizon”, would naturally lead classical rationalism towards the Russellian shores. We will soon return to the reasons for the twist Nicod gave to the standard presentation of Russell’s position.

The last section of “Tendencies” is devoted to Russell’s method of logical

construction, as it is developed, for example, in Lectures 3 and 4 of *Our Knowledge*. Nicod recalls Russell's distinction between two directions of scientific development:

By a movement of expansion, science grows in subjects and outcomes that continually add new wings and new floors to its house. But, in reverse, more thoughtful and less evident, it seeks to bring back its first notions to even more fundamental concepts; it tries to probe what it first thought of as the ground and to discover a new basis. ("Tendencies", p. 82)

The construction of physical objects from sense-data is described as one case of this foundational reverse movement, which returns science to its basic notions, and which is viewed by Russell as the task of the new scientific philosophy. Nicod also recalls Russell's opposition to Evolutionism, which then blossomed in the works of Spencer, James, and Bergson. Russell saw it as an undue and inappropriate generalization of particular results that relate to the life sciences, and he opposed this tendency with his own constructive approach, which, by connecting the various natural sciences with sense-data, makes it possible to better link them together and harmonize the building of science (see, for instance, *Our Knowledge of the External World*, Lectures 1 and 3).

In the main part of his *Géométrie*, Nicod continued and extended the constructive programme found in Russell and Whitehead, and, in order to fully understand the significance he ascribed to it, it is to this work that we should turn. Two elements in "Tendencies", however, demonstrate the originality of Nicod's approach. First, Russell's method of construction is described as the descendant of the philosophies of nature found in the classical tradition. Of course, Nicod does not want to suggest that logic, for Russell, "provides physics with an *a priori* heterogeneous basis for this body of science" ("Tendencies", p. 83), as was the case for Descartes, for instance; he simply points out that Russell makes logic play a crucial role in the ordering and delimitation of the various natural sciences, and that, also in this respect, Russell can be seen as a descendant of classical rationalism. Second, Nicod sketches an algebraic interpretation of Russell and Whitehead's construction method in terms of change of variables.¹⁸ This idea was to be developed in Part I of *Géométrie*.¹⁹

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¹⁸ "Tendencies", p. 83: "The predictions of physics ... are similar to equations.... [F]rom equations giving sensory facts as a function of non-sensory facts, [the philosophical physicist] derives the expression of the latter as a function of the former."

¹⁹ One of us is currently writing a paper on this interpretation.

About “Tendencies”, Nicod wrote to Russell the following on 18 April 1922:²⁰

I send you a short article on you in the *Revue de Métaphysique*. I did not presume to summarise your work, nor did I say quite what I think of your way of philosophy—that it makes the rest look a perfect muddle, and gives one the quiet pleasure of knowing the sort of thing truth is. No one would have taken it from me, as it is not easy to believe. I have tried to show your position as it must appear to the ordinary reader of the *Revue*, as it appeared to me when I was fresh from the Sorbonne. I have brooded too long over this small article, and have written it in a hurry, fearing that otherwise I should never write it at all. (However, as you must see it, here it is. (RA3 Rec. Acq. 1,027)

Nicod’s goal was thus to describe Russell’s position “as it must appear to the ordinary reader of the *Revue*, as it appeared to me when I was fresh from the Sorbonne” to show how this specific aim explains the deviations from the usual presentations that we noted in our summary of “Tendencies”.

From the French perspective in which Nicod places himself here, the main issue raised by Russell’s work is that of his relationship to Bergson’s anti-intellectualism. It is difficult today to imagine Bergson’s pre-war success (precisely during the period when Nicod was studying philosophy) in France, but also in the United States²¹ and in the United Kingdom.²² This was not lost on Russell, however, who had devoted one entire paper,²³ several long passages of *Our Knowledge*,²⁴ a rejoinder and two reviews to Bergson’s works.²⁵ The overall tone is critical, but it would be wrong to believe that Russell didn’t get anything out of it. It is likely that Bergson, who is a major reference in Nicod’s *Géométrie*, was an important topic of discussion between Nicod and Russell.

How did an ordinary reader of the *Revue* view Bergson’s philosophy at the time? Alquié, in an article from 1941, explained:

²⁰ The letter is kept in the Russell Archives.

²¹ Bergson and James were friends, and James was instrumental in calling the attention of the Anglo-American public to Bergson’s work. Invitation in the United States in 1913.

²² Bergson had been invited to London and various other places in 1911. In a letter to L. Donnelly dated 28 October 2011, Russell wrote: “Tonight I am in London, having come up to meet Bergson at dinner. He is giving lectures in London which are reported in the daily papers—all England has gone mad about him for some reason” (SLBR 1: #180).

²³ RUSSELL, “The Philosophy of Bergson” (1912).

²⁴ In *OKEW*₂, there are at least four places where Russell discussed Bergson’s philosophy: in Lecture I (pp. 18–41), Lecture V (pp. 138–58), Lecture VI (pp. 179–88), and Lecture VIII (pp. 232–40).

²⁵ On the relation between Russell and Bergson, see the headnotes to the papers on Bergson in *Papers* 6: 309–46.

In the Introduction in which they present their review to the readers, [the founders of the *Revue* in 1893] speak out against a reduction of philosophy to science, [wanting] “to give more emphasis to the doctrines of philosophy proper”, [and] to constitute in a word a theory of knowledge, a theory of existence and a theory of action. This programme was that of Bergson himself. It is understandable, then, that the *Revue* opened its columns widely to Bergson and Bergsonians.... Yet the founders of the *Revue* were not ... fully supportive of Bergson. If their programme was his, they intended to carry it out in any other way. Noting that at that time “between the current positivism that ends with the facts and the mysticism that leads to superstition, the light of reason is as weak, as vacillating as ever”, the *Revue* wants above all to revive this light and to put itself at the service of rationalism.²⁶

Bergson and the Bergsonians were well established in the *Revue* (Xavier Léon, the review editor, was a personal friend of Bergson), but Bergson’s anti-intellectualism (be it genuine or supposed) was an enduring bone of contention that would divide and animate the *Revue*. “Tendencies” should be placed in this context. Writing on Russell, Nicod took a stand within a discussion on Bergsonism that was stirring the French philosophical scene. This is why Nicod simplifies Russell’s position. He understands very well that, from the French perspective, what is important in Russell is the complete renewal of rationality, of its nature, its characteristics and its functions, to which the discovery of the new logic leads. It is precisely on this point that Nicod focuses in “Tendencies”. In section 1, he attributes to reason the characteristics (again, *richesse, abondance, amplitude, inépuisabilité*) that Bergsonians attribute to intuition and insight. In section 2, Nicod portrays Russell as an heir to the classical rationalists, who, however, has the means to encompass everything that, according to the friends of intuition, reason is forced to exclude. He is not an anti-intellectualist who retaliates by condemning reason; he is a logician who protests in the name of logic itself in its new scope. At last, Nicod inscribes the method of logical construction within the tradition of the philosophies of nature, reinforcing continuities where Russell would probably have sought to mark differences. All these slight deviations from the usual presentations are due to contextual reasons: the weight of Bergsonism in the *Revue* and more generally in France, and the desire to oppose it, using Russellian thought as a powerful antidote.

Let us note finally that by setting the debate on the terrain of anti-intellectualism, Nicod gives himself the means to make right and even to resume certain Bergsonian claims. Thus, in *Géométrie* Nicod will give a logical version of Bergson’s central thesis about the perception of movements. This is completely in line with what is defended in “Tendencies”: what is condemnable in Bergsonism is the anti-intellectualism; the *riche, abondante, ample, inépuisable*

²⁶ ALQUIÉ, “Bergson et la *Revue de Métaphysique et de Morale*” (1941), pp. 315–16.

reason that Russell describes can perfectly accommodate what, in Bergsonism, is a matter of intuition alone.²⁷

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²⁷ We wish to thank the Editor for his assistance and his research in the Russell Archives. We also wish to thank Russell Wahl and James Levine for their help with the translation.

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We will not summarize Mr. Bertrand Russell’s system because he does not have one and he likes to delve into each question in depth for itself, without a comprehensive preconceived plan; but we will attempt to highlight very briefly some of the main tendencies of his mind, as they seem to emerge from the main works he has given us so far.

First, we encounter a monument erected to the glory of pure reason. In a first draft, and then in a masterly treatise written in collaboration with Mr. A. N. Whitehead, arithmetic is brought back to logic, not only in its demonstrations, but also in its notions and axioms. Fundamental mathematical notions reach a hitherto unknown degree of abstraction, generality and rigour. Order and all properties of series are shown to be free from any spatial or numerical character, as a development solely of the idea of relation. The integer is reconstructed in terms of pure logic: detached from any enumeration, prior to any distinction of finite and infinite. It appears, in the universality that it holds in its nature, as an essential property of any concept; and the finite is in turn logically characterized as the domain of step by step induction. Arithmetic operations turn out to be purely abstract: as addition, for example, is based on the disjunction of several concepts and does not determine the result or even the possibility of a material operation, such as the juxtaposition of several objects. p. 78

But the logic on which everything rests, and which suffices for everything, is no longer Aristotle’s logic. Classical logic—a narrow system—the result of a first analysis, ignored or neglected too many

things. In its pursuit of the relationship between concepts, it lost sight of the fact that the essence of the proposition is to apply a concept to individuals; and in its adoption of the subject-predicate form as the unique form, it declared all relations as secondary and ultimately negligible.

Mr. Russell's logic, less hasty, is infinitely more complex. Taking the analysis back to its beginning, it restores the singular proposition at the base of everything. It distinguishes predicates which have only one subject from relations which have several; and between predicates or relations of the same number of subjects, it also establishes a hierarchy of complexity. It deals with fundamental notions such as "description" and class, which traditional logic ignores, and which are the subjects of the extensive and ingenious theory of incomplete symbols. As Kant had already attempted, it brings out the logical form and category of existence. We can see that this is an initial foundation much broader than the narrow construction of scholastic logic.

Between the logic henceforth restored to its natural proportions and mathematics freed from all subject matter, a definitive identity is affirmed. Consequently, reason loses its apparent aridness. Pure mathematics, on the other hand, ceases to be a special art. It takes on the indifferent ubiquity of logic; its harmony reaches rational purity. Its beauty lies in the adornment of reason; its unforeseen and necessary unfolding testifies to the wealth of universal logic.

Mr. Russell likes reason in its most abstract form. He knows from experience that it is not poor, vain and verbal, but on the contrary it is a wide and inexhaustible world. He explores it; he strives to discern its foundations with a captivating zeal for discovery. Following him, one experiences that sense of grandeur in the aspect of logical principles of things, that lively and charming feeling of travelling in the rare air and in the light of extreme abstraction which conveys so much joy to the Platonic dialogues.

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p. 79

Russell, such fruitful logic in hand, made it the soul of his entire philosophy. Ultimately, philosophy of nature is nothing but applied logic resulting from the contact of reason with the world.

It is not the first time that logic forms the seed of a conception of

things. From Parmenides to Hegel, the most extreme rationalist philosophers believed that there is no need for metaphysical revelation, and that logic, for those who understand it well, reveals the features of reality and appearance. Mr. Russell had before his eyes a striking example of precisely this way of philosophizing in the works of Mr. Bradley, who was a leading philosopher in England.

How, then, can such fruits come from such a tree?

Logic cannot say what the world is, but only what it is impossible for it to be; it says this effectively with a detour by positing the ultimate forms of every proposition, proceeding from any truth. If philosophers who put their faith in reason are accustomed to dismissing as appearances so much of what at first seems to be, it is not that they misinterpret the spirit of classical logic. This instinct of exclusion is indeed in it. And this should come as no surprise: incomplete logic leads to profound tyranny.

Is it not by its ignorance or merely its obliviousness of relations that classical logic turns away from ultimate facts? Now, if we conceive of any relation as secondary and reducible, it is all too clear that we should stop only at the most absolute monism, that of Parmenides and Mr. Bradley. On the other hand, in a less deliberate manner, this same disposition that relations belong to the non-philosophical exterior crust has had an immense effect on speculation. How often has there not been an endeavour to seek the illusion of a predicate in every relation?

Accordingly, traditional logic bears the most considerable metaphysical consequences. But these consequences, which are negations, stem from the fact that this logic is too narrow to accommodate all the facts of the ordinary world. Most of them remain at the door, giving rise in all systems to this scandal called appearance.

p. 80

But if the metaphysical power of ancient logic is merely a reflection of its narrowness, then a wide-ranging logic is much less inclined to be exclusive. The new logic no longer rejects any naive assertion as a formal defect. It pushes back the limits of the possible beyond the horizon, and, in a simpler and more indifferent attitude, it neglects all contrasts of reality and appearance.

Against a mystical hostility towards everyday fact, which he so rightly discerns in the whole philosophical tradition, or rather against the dialectic placed at the service of this sentiment, he is not an anti-intellectualist who retaliates by condemning reason; he is a logician

who protests in the name of logic itself in its new scope. Like Kant, as well as Bergson, Mr. Russell believes that there is a common basis of erroneous metaphysics to which a persistent inclination has repeatedly carried the human mind along with it. But far from identifying this inclination with our logical faculty itself, Mr. Russell locates it in the incomplete and simplistic science which prevailed hitherto and which is expressed in traditional logic. From this imperfection alone came the spirit of narrowness which has so obstinately turned reason against the world, and which a better-grounded logic comes, not to justify, but to abolish.

For Mr. Russell, the love of reason in itself, although it attains a platonic intensity, does not lead then to rationalism, but quite the opposite. This reason, which feels so pure and at the same time so great, responds contrary to the classical way when it turns to the world of existence. It does not say: This too is my empire. It no longer puts a limit to the actual. It undoubtedly defines the possible. But this "possible", so tyrannical in a Spinoza, so firmly circumscribed in a Leibniz, now extends in all directions as far as the eye can see. The possible worlds have only logic and pure mathematics in common, not causality,¹ space, or even time; and the idea of the world no longer demands any minimum of coherence.

p. 81

Reason reaches its equilibrium only to renounce all reassuring certainty about what exists, all divinatory pretensions, all preconceived notions of the nature of things. A Stuart Mill, a William James, in refusing to give pure reason any power, does not leave the actual world any greater latitude than our author for whom reason is the supreme power. In the eyes of reason, existence, in itself and in all its relations, is peculiar, indifferent, radically accidental, without any shadow of *a priori* necessity.

On the other hand, too often, in the interpretation of the world, the heart believed itself master of what reason refrained from determining; and too often, conversely, the thought of excluding any moral consideration from the study of reality led to the affirmation of an *a priori*

¹ Without having hitherto systematically elaborated the logic of induction, Mr. Russell does not in any way take it for granted or as demonstrated that the validity of induction presupposes a principle of causality or even simply of determinism.

The latitude left to nature still manifests itself strikingly in psychology: nothing is determined *a priori* in the psychology of logical thought, and Mr. Russell himself leans towards the most radical psychological nominalism.

constraint, the philosophy of nature balancing between desire and necessity: so it is with the issue of free will. But no, neither reason nor feeling, nor anything within us, knows in advance what happens in the adventure of existence. For the philosopher who seeks to grasp it as a whole and in its sum no less than for the scientist who pursues the detail of its weave, the right attitude is a complete oblivion of self, the silence of every inner voice, an inhuman and astronomical curiosity, so to speak.

Reason itself, for Mr. Russell, derives a certain satisfaction from this radical empiricism towards all that exists. It finds there an occasion, not for authority, but for detachment. It becomes aware of its own greatness. As reason once enjoyed a close determination of nature, reason now enjoys freeing nature from all constraint, giving it a latitude of which only reason can conceive. Reason likes to travel in all directions of the infinity of all that can be, to lose sight of the actual world and then to find it again, an island lost in the ocean of the possible, with a refreshed vision for which everything is new.

* * *

Rational necessity and the contingency of nature in its entirety with regards to reason have each received full and ample measure. But it seems that there can no longer be any place for a philosophy of nature, prior in law to physics. However, this is not so. p. 82

In fact, all of science begins *in medias res*. It starts from an initial background of notions considered as clear and develops in two opposite directions. By a movement of expansion, science grows in subjects and outcomes that continually add new wings and new floors to its house. But in an inverse movement, more thoughtful and less evident, it seeks to bring back its first notions to even more fundamental concepts; it tries to probe what it first thought of as the ground and to discover a new basis. This movement, by which science returns to itself and refines what it initially gave itself, is, for Mr. Russell, the whole of philosophy, which is absolutely nothing other than this sparse mind [*esprit épars*]. Plato, who wanted us to reach the “first hypotheses” of all things, Descartes, who dug in search of the rock, would they not, in short, have accepted such a definition?

Pure mathematics, as we have seen, stands on the rock of logic. But ordinary mathematicians do not start building so low: at most these

days they start from the integer. It was therefore up to the mathematician-philosopher to recognize and analyze the logical basis of the integer itself.

Physics, on the other hand, has experience as its “rock”. But ordinary physicists, too, do not start from the rock. Indeed, they are far from doing so, since they assign to themselves primitive, clear (if not distinct), notions of matter, and of the grid of points and instants which orders the unlimited world of material events according to an all-inclusive plan. Here again, it is up to the physicist-philosopher to pierce the close and familiar shadow that veils the infrastructure by which these notions in turn rest on the grounds of sensory experience.

The problem is immense. It cannot accept vague responses, for the precision that its solution requires is the same precision that experimental verification of physics entails. In effect, it is one thing to claim by general arguments that all physics can be expressed in terms of experience, but it is quite another to provide that expression itself. In the same way, Leibniz had posited in principle that number is a logical composite: but what work remained to be done to find the formula! p. 83

The predictions of physics, in their current form, are similar to equations which would give sensory facts as a function of non-sensory entities, such as space or matter. The philosophical physicist seeks to eliminate the latter from the statement of scientific predictions. He changes unknowns: from equations giving sensory facts as a function of non-sensory entities, he derives the expression of the latter as a function of the former. This transformation, which is entirely formal, is a work of pure logic; moreover, it is extremely complicated and cannot even be carried out without a synthesis of the laws of several fundamental sciences, in particular, those of the physics and physiology of the senses.

Mr. Russell and Mr. Whitehead are simply leading the way, indicating methods of approach and proposing schemes of solutions. Let us only recall the ingenious and precise theories of what are, in terms of my experience, an instant of my time, a point of my space, and the “point of view” that this space occupies at a given moment in the whole world.

Thus, in the end, in the study of the existing universe, the spirit of philosophy has taken the place that the great rationalists of the seventeenth and eighteenth centuries claimed for it. It undoubtedly no longer provides physics with an *a priori* heterogeneous basis for this

body of science. For the philosopher no less than for the ordinary physicist, the mind proposes, and experience disposes. But the philosophy of inductive science is nevertheless well situated at its core. It does not consist in an effort to magnify disproportionately a more or less suggestive scientific result, a rather arbitrary, questionable, external effort, the kind of which is the philosophy of evolution. On the contrary, it truly grounds the universe that physics accords itself, it carries it in its entirety, just as in the days of Descartes' *Principles*.

* * *

The abstract necessity which the principles of logic contain, and which unfolds within the framework of pure mathematics, is absolutely sovereign. Logic is so vast that the whole of existence floats within it without hindrance. For reason, the actual world is infinitely particular; it is for it an object of amused curiosity. It takes within it the pleasure that the unexpected gives. But this sentiment does not reduce reason to inaction: on the contrary, it calls the eternal constructive impetus to ultimate exercise by which, surpassing any intermediate scientific theory, and playing the demiurge, it lays down the constitutive formula of a world from the first elements.

p. 84

This glory of logical and mathematical reason and, on the other hand, this perfect empiricism regarding all which exists, finally, this rise of the theory of nature which is not less daring to be devoid of certainty—is it anything other than the spirit of modern science, transported to a more fundamental level? Today, more than ever, philosophy strives to be inspired by science. However, philosophy must borrow from science not such and such a process, not such and such a pretension, but its soul. It is in this very thing which Mr. Russell seems to us most admirable.