BERTRAND RUSSELL

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Analytic Realism [1911]

THIS LECTURE WAS published in French, under the title "Le Réalisme analytique", in the *Bulletin de la société française de philosophie*, 11 (March 1911): 282–91. It is published here for the first time in English in a translation made by André Vellino. The French text is reprinted in Appendix v.

Russell lectured to the Société on 23 March 1911. His statement of his philosophical position, a transcript of his talk and the ensuing discussion comprise the paper. The printed version begins with the sentence: "Mr. B. Russell proposes the following for the consideration of the Society". Judging by the length of the contributions of some of his auditors, it seems certain that his statement was distributed some time prior to the meeting. Four French philosophers participated in the discussion; abstracts of the parts of their comments which are relevant to Russell's replies are included in the translation. In every case where a contribution is abstracted or excerpted the translator has indicated that fact. The full text is available in French in Appendix v. René Berthelot (1872–1960) was a Professor of Philosophy in the University of Brussels from 1897 to 1907; after that time he lived in Paris and had no academic position. His philosophical and literary interests were broad; he wrote on Platonism, evolution, Shelley, Shakespeare, Goethe, and William James. No biographical information about H. Dufumier has been discovered; he may have been a student. Gaston Milhaud (1858–1918) came to philosophy by way of mathematics. In 1909 he was appointed to a professorship in the University of Paris which required him to relate the history of philosophy to the sciences. He is best known for his work on Greek science and Greek mathematics. André Lalande (1867–1964) was Professor of Philosophy in the University of Paris until his retirement. His most notable contribution to the subject is *Vocabulaire technique et critique de la philosophie*, whose aim was to standardize philosophical terminology. Russell commented upon some of the proposed definitions when they were first circulated.

The copy-text is the printed version as translated.

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The position stated whole, both theses at once.

THE PHILOSOPHY WHICH seems to me closest to the truth can be called "analytic realism". It is realist, because it claims that there are non-mental entities and that cognitive relations are external relations, which establish a direct link between the subject and a possibly non-mental object. It is analytic, because it claims that the existence of the complex depends on the existence of the simple, and not vice versa, and that the constituent of a complex, taken as a constituent, is absolutely identical with itself as it is when we do not consider its relations. This philosophy is therefore an atomic philosophy. The atoms are of two kinds: universals, which are similar to Platonic ideas, and particulars, which, in logic, are similar to substances, since they can never appear as predicates or relations in propositions. (In metaphysics, however, particulars hardly resemble substances, since they have no need for permanent existence.)

Concepts and sense-data, and what isn't in the mind.

Known universals are called *concepts*; known particulars are called *sense-data* (including those of inner sense). Neither concepts nor sense-data are *in* the mind which knows them. There is no general reason to suppose that what is known depends in any way on knowledge. There are, however, reasons of detail for believing that sense-data exist only when they are perceived. The physical world studied by science is therefore in no way identical with the sensible world, and we believe there is a physical world only for inductive reasons, which are more or less probable. Universals, on the other hand, do not exist in the same sense as particulars do; one should rather say that they *subsist*. Their subsistence depends in no way on the minds which know them; the abstract sciences have, therefore, as their object something completely independent of any mental element.

Why adopt it: the case from mathematics.

This philosophy recommends itself partly for reasons of a general kind, and partly for reasons derived from the principles of mathematics. Most philosophies arrive at the conclusion that mathematical propositions cannot be completely true, and that they are more or less tainted with contradictions or inaccuracies. The philosophy I call analytic realism, on the other hand, yields the conclusion that there is no reason to doubt the absolute truth of mathematical propositions. It resolves all the contradictions, both ancient and modern, which have been found in mathematics, and it shows that the exactitude of mathematics depends on its being concerned with an abstract world, a world of essences or Platonic ideas, which is not subject to the inaccuracies of sensory knowledge, and which is not constrained by the subjective variations one would have to fear in accepting a psychological theory such as that of Kant. The transition from the world of abstractions to the world of particulars is the same as the transition from pure mathematics to applied mathematics; it is made by finding, in the actual world, something which verifies an hypothesis of pure mathematics.

Besides the completely general problems that analytic realism claims to solve, I should add that (to my mind) it provides the most satisfactory analysis of the infinite, the continuum, space, time and motion. The problem of relating the sensible flux to the abstract world of mathematical physics is, if I am not mistaken, completely solved by a mixture of modern mathematics and the philosophy to which it has led me. As with all philosophies, however, this one recommends itself not so much by its detailed and precise arguments, as by providing a harmonious picture of the universe and the sciences.

DISCUSSION

MR. B. RUSSELL.—The philosophy I espouse is:

Realism stated, and the regress against idealism.

Realism, because it considers existence as independent of knowledge. There is an infinite regress in epistemological idealism, since knowledge can exist only if it is known, etc. Therefore existence does not imply being known: there could be a completely material world, and in the actual world there could be some things of which we have no knowledge. Knowledge of an object is a direct relation between the mind and the object: there is no corresponding change in the mind, but only a relation; in other words, knowing is not having an idea of what is known. Moreover knowing does not imply that the mind and what it knows have a common nature. In this sense, the philosophy in question is realist. I am not saying, however, that sensible objects, i.e. the immediate sense-data, exist independently of us in a causal sense, but I reject the à priori arguments which purport to show that nothing can exist independently of the mind, and I believe that what is known cannot be nothing, and must, therefore, subsist, whereas what subsists may very well not be known.

Atomism stated, and the marriage case.

Secondly, the philosophy I espouse is *analytic*, because it claims that one must discover the simple elements of which complexes are composed, and that complexes presuppose simples, whereas simples do not presuppose complexes. Many philosophers believe that the constituent of a complex, as such, is not exactly the same as what it is in itself, but is changed in becoming a constituent. This seems to me to rest on a confusion between the practical identity of people and things in everyday life, and logical identity. For example, a man is changed when he marries a certain woman. Does this mean that the spouses are not two people, whom we can consider without error (however incompletely) in reciprocal isolation? No; it only means that marriage causes changes such that the husband is not exactly the same man as the bachelor. But the analysis of a complex is not its biography, and hence there is no logical difficulty.

I believe there are simple beings in the universe, and that these beings have relations in virtue of which complex beings are composed. Any time a bears the relation R to b there is a complex "a in relation R to b". The

Change, and the motion example.

change consists in the fact that there are complexes belonging to a time t, and that it might happen that, if we substitute another moment t' for t, there would no longer be a complex. Take motion, for example: One can have the complex "a at point p at time t" without there being "a at point p at time t'". If we have "a at point p' at time t'" we can say that a has moved between t and t'.

The name for it: logical atomism.

You will note that this philosophy is the philosophy of logical atomism. Every simple entity is an atom. One must not suppose that atoms need persist in time, or that they need occupy space: these atoms are purely logical.

Two kinds of constituent, and the criterion.

You will also observe that in every complex there are two kinds of constituents: there are terms and the relation which relates them: or there might be (perhaps) a term qualified by a predicate. Note that the terms of a complex can themselves be relations, as, for example, in the statement that priority implies diversity. But there are some terms which appear only as terms and can never appear as predicates or relations. These terms are what I call *particulars*. The other terms found in a complex, those which can appear as predicates or relations, I call *universals*. Terms like diversity, causality, father, white, etc., are *universals*. They are in effect Platonic ideas. Only one should not suppose that universals *exist* in the same sense that particulars exist; it is better to say that they *subsist*. *Particulars* have the purely logical properties of substances, but do not have their metaphysical properties. That is to say, particulars can only be either the subjects of predicates or the terms of relations. Particulars and only particulars *exist* in the narrow sense of the word. But they need not *persist*: they may exist only for an instant. Neither does their existence need to be causally independent of other existences. (From the logical point of view, any simple existence is independent of any other, and the only dependence is that of the complex on the simple.) The old idea of substance, as one can clearly see in Leibniz for example, contained two elements: (1) a logical element, (2) a metaphysical element, namely permanent and independent existence. I accept the first element, but I do not accept the second.

Subsistence, and Leibniz's substance halved.

Concepts and sense-data defined.

Some universals are known and some are not. The same can be said of particulars. Universals which are known are called *concepts*; particulars which are known are called *sense-data* (taking this expression in its widest possible interpretation). Concepts and sense-data are equally *objects* to the mind: that is to say, they are entities with some cognitive relationship to the mind. Neither the one nor the other is *in* the mind—except, however, for the data of inner sense.

There is no *general* reason to reject naive realism, i.e. the realism which claims that sense-data are identical with physical objects and that they subsist unchanged when not perceived. There are, however, special

Naive realism gives way to the thing in itself.

reasons—the traditional reasons—for believing that sense-data do not depend (causally) only on the object, but also on the subject. In other words, one is forced to believe that sense-data are entities which exist only when there is a certain relation between the subject and the physical object—a relation partly spatial and partly psychological. The physical object is a "thing in itself" which cannot be known directly. Even its existence is doubtful, since it depends on a rather precarious induction.

How much of the thing in itself is knowable.

In saying that a physical object—i.e. that which subsists independently of the observer—is a "thing in itself", I do not mean to say that the categories do not apply to the physical object, nor that it is unknowable in an absolute sense. It can be described; the nature of its relations with other things can be known—in a word, one can know all that physics has to say on this subject. That it is not known directly, is, one might say, purely an accident; it may even be possible to know it directly, in some cases, where it is given. For the specific reasons which show the "subjectivity" of sense-data are not demonstrable in all cases. However, it is easier and more plausible to suppose that the physical world and the sensible world have no point in common, and that there is merely a more or less exact correspondence between the two. In the case of dreams, for example, the correspondence is lacking. The particulars which we know are subjective in so far as their existence depends partly on us—from the causal point of view, of course, not from the logical point of view.

Universals depend on us in no way at all.

Universals, on the contrary, do not depend on us in any way. In the case of particulars, we have a causal dependence, but there could not be a causal dependence in the case of universals, since they do not exist in time. A logical dependence is equally impossible, since simple things do not logically depend on anything, and complex things logically depend only on their constituents. Therefore, universals are completely independent of the mind, as is everything else which exists, in the narrow sense. The laws of logic, for example, while they are customarily called "laws of thought", are just as objective, and depend as little on the mind, as the law of gravity. Abstract truths express relations which hold between universals; the mind can recognize these relations, but it cannot create them.

The faults of idealism and of empiricism.

It is obviously impossible, on this occasion, to give even a general survey of the reasons which led me to adopt analytic realism. I will, however, say a few words on the contrary faults to be found in idealism, on the one hand, and in empiricism, on the other. Idealism, taken seriously, leads to the conclusion that what is called "à priori truth" is nothing but an illusion; one cannot help but believe it, but it is not what is the case. On the other hand, empiricism, by which we mean the theory that all evidence rests on sense-experience, leads to the conclusion that one cannot know anything except sense-data. Every law, every prediction, is not only rash,

Each rival refutes itself.

but completely devoid of probability. For to say: "this data makes this other event probable", is to employ a principle of probability which cannot be proved by evidence derived from the senses: one will always have to resort to a *general* principle. Therefore, neither idealism nor empiricism provides a theory of knowledge consistent with the facts. Moreover, both theories refute themselves: idealism, because it leads to a vicious regress, since, if existence depends on knowledge, the existence of knowledge depends on the knowledge of knowledge and so on; empiricism, because its principle that nothing is known except through the senses, cannot itself be known by the senses. It is therefore imperative to find a theory of knowledge which is neither idealist nor empiricist.

The test case: 2+2=4 against the idealist.

Mathematical knowledge is singularly well-suited to support this conclusion. From time immemorial it has been agreed that mathematics is as certain as any body of knowledge can be, and yet every philosopher has come to the conclusion that mathematics is either completely erroneous or tainted by the inaccuracies of sensory knowledge. Take, for example, the proposition that $2+2=4$. According to idealists, this proposition expresses a law of thought: that is to say, one will always be forced to believe that two things and two other things together make four things, while in fact there might be five things or three things, or rather that, apart from the mind, things have no number at all. Now it is obvious that the content of the belief that $2+2=4$ is not that the mind has a certain property: therefore, if $2+2=4$ is a law of thought, then it is a law which forces us to believe something which might be false. For $2+2=4$ to be *true*, *numbers* or rather *things* must have a certain property, whereas properties of the mind do not bear on the truth or falsehood of the proposition. Idealism, therefore, if it does not retreat from the consequences of its doctrines, must destroy every reason to believe in the truth of mathematics.

The empiricist's missing unit.

Empiricism, like idealism, seeks to find something actual to be the subject of $2+2=4$, and whereas idealism adheres to the actuality of thought, empiricism adheres to the actuality of sense-data. Now it turns out that sense-data do not have exact boundaries, that one cannot find a precise unit, and hence that one cannot say: "Here are two things and here are two other things", when the "things" are sense-data. Herein lies the opposition between the sensible flux and the discreteness of mathematical concepts. But this point of view aims only at *applied* mathematics; *pure* mathematics is completely indifferent to actual things and is found to be independent of the nature of what exists. It can therefore be exact, whatever the nature of the sensible flux.

Pure mathematics, if I am not mistaken, is concerned exclusively with propositions which can be expressed by means of universals. Instead of having constants as terms in relations, we have *variables*, i.e. we only have the concept of an entity of a certain kind instead of a particular entity of

this kind. Thus to know the universal which defines a kind is to know what is necessary for pure mathematics. It follows that pure mathematics is composed of propositions which contain no actual constituents, neither psychological as idealists believe, nor physical as empiricists believe. There are two worlds, the world of existence and the world of essence; pure mathematics belongs to the world of essence. The crucial mistake in idealism lies in wanting to imbed the world of essence inside the world of existence, namely the mind. This mistake, until now, has made impossible a satisfactory philosophy of mathematics or of other à priori knowledge.

Two worlds, and idealism's crucial mistake.

The objection put to himself: applied mathematics.

But I could be asked the following question: If you assert such a divorce between essence and existence, and if you put pure mathematics on the side of essence, how do you explain applied mathematics, which clearly deals with existence? To answer this question, I would have to give a whole theory of the variable and of the syllogism in Barbara. I will content myself with the following observation. The proposition, "All men are mortal", is composed exclusively of concepts: actual men are not its constituents. This is obvious, since the proposition can be understood without knowledge of all men. Yet the moment you know that Socrates is a man, you can deduce that Socrates is mortal. Therefore, the conceptual proposition can be applied to existences when it contains a variable which expresses a formal implication (as is the case with the proposition, "All men are mortal"). One need only find an existence which verifies the antecedent, and one will also know that it verifies the consequent. This is the case in applied mathematics.

Why the bridge is only approximate.

It must be admitted that, when seeking existents which would verify the hypotheses of pure mathematics, success can be only approximate. The circles and the straight lines given to us in the sensible world are not exact; consequently, applied geometry is not an exact science. The mathematician who deigns consider the actual world will have to submit to this limitation which sacrifices the beauty and the exactness of his science. For him it will be a return to Plato's cave, a return justified only by its social utility.

We know that philosophers of all times have found contradictions in mathematics. In general, they have not had the patience to search in detail for the source of contradiction—which is possible, moreover, only for those with sufficient training in mathematics—but they have made grand reconstructions of the world and of science, all the while claiming that no change more modest than theirs would avoid the difficulties posed by the contradictions. We know now that all the past difficulties in the notions of the infinite and the continuum disappear when the methods of Weierstrass and Cantor are used. Curiously enough, however, the kinds of paradoxes already known to the Greeks, and named *Insolubilia*, and which were believed to be nothing but trivial amusements, have abruptly sur-

faced in mathematical logic. If logicians had been a little less lazy, they would have found the solution to these paradoxes long ago. But as long as the paradoxes had not manifested themselves in mathematics, they were not given serious attention. Since then the enemies of novelty have contented themselves in saying that it would be better to think about something else, whereas mathematicians did not, in general, possess the knowledge of philosophy and logic needed to solve such problems. However, I believe I have solved this difficulty by recognizing the existence of a hierarchy of different logical types. I will not now attempt to explain the theory of types. Suffice it to say that it is contrary to the philosophical spirit as well as the scientific spirit to divert a train of thought in a certain field because the solutions to its problems are not immediately forthcoming. I, for one, do not believe that there are any "antinomies". Contradictions are not mistakes, and to solve them requires only patience and analytic ingenuity. Heroic solutions have been abused in philosophy, detailed work has been neglected, and there has been too little patience. As with physics in the past, a hypothesis is invented, and on this hypothesis a bizarre world is built which is never compared to the real world. The true method, in philosophy as in science, should be inductive, meticulous, respectful of detail, and should reject the belief that it is the duty of each philosopher to solve all problems by himself. It is this method which has inspired analytic realism, and it is the only method, if I am not mistaken, with which philosophy will succeed in obtaining results as solid as those obtained in science.

M. RENE BERTHELOT.⟨*abstract*⟩—While Mr. Russell's discoveries in formal logic and philosophy of mathematics are indisputable, the philosophical claims he derives from them are controversial. My objections fall into two broad classes:

(A) The alternative solutions envisaged by Russell are too restricted: certain forms of idealism are acceptable.

(B) Difficulties in logic and philosophy of mathematics discovered by the Greeks continue to haunt us today: Russell has done nothing else but transpose them to our time.

Concerning the truths of mathematics:

1. It is true that the nature of mathematical knowledge cannot be explained by a psychological theory (although Kant's theory should not be called psychologistic) and that some form of Platonism is correct. But Platonism is not a realist view, it is idealist.

2. Nor is a Platonist view necessarily atomistic. Mathematical ideas are relations of a certain kind and mathematical reasoning determines these relations to be of implication or exclusion.

a. Mathematical existence is inseparable from these relations. Platonism is the view that mathematical ideas derive their meaning from these