

Bertrand Russell
Theory of Knowledge

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Chapter IX Logical Data

IN THE PRESENT chapter, we shall be concerned with the basis of acquaintance that must underlie our knowledge of logic. It should be said, to begin with, that "acquaintance" has, perhaps, a somewhat different meaning, where logical objects are concerned, from that which it has when particulars are concerned. Whether this is the case or not, it is impossible to decide without more knowledge concerning the nature of logical objects than I possess. It would seem that logical objects cannot be regarded as "entities", and that, therefore, what we shall call "acquaintance" with them cannot really be a dual relation. The difficulties which result are very formidable, but their solution must be sought in logic. For the present, I am content to point out that there certainly is such a thing as "logical experience", by which I mean that kind of immediate knowledge, other than judgment, which is what enables us to understand logical terms. Many such terms have occurred in the last two chapters, for instance, particulars, universals, relations, dual complexes, predicates. Such words are, no doubt, somewhat difficult, and are only understood by people who have reached a certain level of mental development. Still, they are understood, and this shows that those who understand them possess something which seems fitly described as "acquaintance with logical objects". It is this that I now wish to investigate.

In spite of the antiquity of logic, the peculiarity of the objects with which it deals has not been adequately realized; it has not been realized, for example, what a much higher degree and kind of abstraction is involved in understanding the word "relation" than in understanding the name of this or that relation. A given dual relation is still one of a class of more or less similar entities, namely dual relations; but "dual relation" itself, although it might seem to be one of a class whose other members would be "triple relation", etc., is really, in a very important sense, unique, and not a member of any class containing any terms other than itself. Every logical notion, in a very important sense, is or involves a *summum genus*, and results from a process of generalization which has been carried to its utmost limit. This is a peculiarity of logic, and a touchstone by which logical propositions may be distinguished from all others. A proposition which mentions any definite entity, whether universal or particular, is not logical: no one definite

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entity, of any sort or kind, is ever a constituent of any truly logical proposition. "Logical constants", which might seem to be entities occurring in logical propositions, are really concerned with pure form, and are not actually constituents of the propositions in the verbal expression of which their names occur. The way in which this comes about must be briefly explained.

The proposition "if Socrates is human, and whatever is human is mortal, then Socrates is mortal" might be thought, at first, to be a proposition of logic. But it is obvious that its truth is in no way dependent on any peculiarity of Socrates or humanity or mortality, but only on the form of the proposition; that is to say, Socrates, humanity, and mortality may be varied as we please without the proposition ceasing to be true. Thus we arrive at the pure logical proposition: "Whatever x and α and β may be, if x is α and whatever is α is β , then x is β ". Here there is no longer any constituent corresponding to Socrates and humanity and mortality: the only thing that has been preserved is the pure form of the proposition, and the form is not a "thing", not another constituent along with the objects that were previously related in that form. Take, for example, " x is α ", which is a constituent phrase in the above proposition. It might be thought that "is", here, is a constant constituent. But this would be a mistake: " x is α " is obtained by generalization from "Socrates is human", which is to be regarded as a subject-predicate proposition, and such propositions, we said, have only two constituents. Thus "is" represents merely the way in which the constituents are put together. This cannot be a new constituent, for if it were, there would have to be a new way in which it and the two other constituents are put together, and if we take this way as again a constituent, we find ourselves embarked on an endless regress.

It is obvious, in fact, that when all the constituents of a complex have been enumerated, there remains something which may be called the "form" of the complex, which is the way in which the constituents are combined in the complex. It is such pure "forms" that occur in logic. The natural way to symbolize a form is to take some phrase in which actual entities are put together in that form, and replace all these entities by "variables", i.e. by letters having no meaning. Take, for example, the proposition "Socrates precedes Plato". This has the form of a dual complex: we may naturally symbolize the form by " xRy ", where we use a different sort of letter for the relation, because the difference between a relation and its terms is a logical difference. When we have reached the form " xRy ", we have effected the utmost generalization which is possible starting from "Socrates precedes Plato". In order to understand the phrase "dual complex" or the phrase "dual relation", we must be capable of the degree of abstraction involved in reaching the pure form. It is not at all clear what is the right logical account of "form", but whatever this account may be, it is clear that we have

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acquaintance (possibly in an extended sense of the word "acquaintance") with something as abstract as the pure form, since otherwise we could not use intelligently such a word as "relation".

I think it may be shown that acquaintance with logical form is involved before explicit thought about logic begins, in fact as soon as we can understand a sentence. Let us suppose that we are acquainted with Socrates and with Plato and with the relation "precedes", but not with the complex "Socrates precedes Plato". Suppose now that some one tells us that Socrates precedes Plato. How do we know what he means? It is plain that his statement does not give us acquaintance with the complex "Socrates precedes Plato". What we understand is that Socrates and Plato and "precedes" are united in a complex of the form " xRy ", where Socrates has the x -place and Plato has the y -place. It is difficult to see how we could possibly understand how Socrates and Plato and "precedes" are to be combined unless we had acquaintance with the form of the complex. As a matter of introspection, it may often be hard to detect such acquaintance; but there is no doubt that, especially where very abstract matters are concerned, we often have an acquaintance which we find it difficult to isolate or to become acquainted with. The introspective difficulty, therefore, cannot be regarded as fatal, or as outweighing a logical argument of which the data and the inference seem to allow little risk of error.

Besides the forms of atomic complexes, there are many other logical objects which are involved in the formation of non-atomic complexes. Such words as *or*, *not*, *all*, *some*, plainly involve logical notions; and since we can use such words intelligently, we must be acquainted with the logical objects involved. But the difficulty of isolation is here very great, and I do not know what the logical objects involved really are.

In the present chaotic state of our knowledge concerning the primitive ideas of logic, it is impossible to pursue this topic further. Enough has been said, I hope, to show that acquaintance with logical form, whatever its ultimate analysis may be, is a primitive constituent of our experience, and is presupposed, not only in explicit knowledge of logic, but in any understanding of a proposition otherwise than by actual acquaintance with the complex whose existence it asserts.

Before embarking on the study of judgment, it will be advisable to review our survey of acquaintance. We found, to begin with, that there is such a fact as "experiencing", and that this fact itself may be experienced. Starting from one momentary experience, which we found to be constituted by the relation of "being experienced together" which holds between any two objects belonging to one momentary experience, we found that there was reason to regard this as not all-embracing, even when extended by successive links of memory to include the whole experience of one "person". The theory that experience does not involve any special kind of entity, such as we

should naturally call "mental", was found to be unable to explain many of the obvious facts, such as memory, error, and above all "I" and "now" and "this", which involve a selectiveness not possible in a purely material world. All the facts, we found, could be explained by assuming that experiencing is a dual relation of a subject to an object, though it is not necessary to assume that we experience either the subject or the relation, but only the object and (sometimes) the complex subject-experiencing-object. Assuming that this analysis is correct, we called the dual relation in question "acquaintance".

We then considered various kinds of acquaintance. The first classification 10 is according to the logical character of the object, namely according as it is (a) particular, (b) universal, or (c) formal, i.e. purely logical. Relations to objects differing in logical character must themselves differ in logical character; hence there is a certain looseness in using the one word "acquaintance" for immediate experience of these three kinds of objects. But from the point of view of epistemology, as opposed to logic, this looseness is somewhat immaterial, since all three kinds of acquaintance fulfil the same function of providing the data for judgment and inference.

Towards particulars with which we are acquainted, three subordinate 20 dual relations were considered, namely sensation, memory, and imagination. These, we found, though their objects are usually somewhat different, are not essentially distinguished by their objects, but by the relations of subject and object. In sensation, subject and object are simultaneous; in memory, the subject is later than the object; while imagination does not essentially involve any time-relation of subject and object, though all time-relations are compatible with it. We considered also, though briefly, a fourth relation of subject and object, namely attention, which, however, does not require that the object should be particular.

Acquaintance with universals must be sub-divided according to the 30 logical character of the universals involved. We considered specially acquaintance with dual relations and with predicates. Dual relations, we decided, must, in their abstraction, be objects of acquaintance, and cannot only be known by inference from the complexes in which they occur. In order to account for the "sense" of a relation, we pointed out that two complexes are logically possible with the same relation and the same terms, and that we must be acquainted with the two different "positions" which a term may occupy in a complex having a given relating relation. As regards predicates, we found that it is logically possible to doubt whether there are such entities, and also whether, if there are, they are objects of acquaintance. But we found no reason to attach much weight to either of these 40 doubts, and we found further that, as regards consequences, no very great importance attached to the questions which were doubtful. We therefore proceeded on the assumption that there are predicates, and that we have acquaintance with them, since it seemed highly probable that this assump-

tion is true, and highly improbable that it is gravely misleading if it is false. Acquaintance with universals may be called "conception", and universals with which we are acquainted may be called "concepts".

Finally, in the present chapter, we considered acquaintance with logical form, which may perhaps be called "logical intuition". This sort of acquaintance, we found, is required to account for our understanding such words as "predicate", "relation", "dual complex", as well as for such words as "or", "not", "all", and "some". But it is also required in all cases where we understand a statement without having acquaintance with the complex 10 whose existence would insure the truth of the statement. If we are acquainted with *a* and with similarity and with *b*, we can understand the statement "*a* is similar to *b*", even if we cannot directly compare them and "see" their similarity. But this would not be possible unless we knew how they are to be put together, i.e. unless we were acquainted with the form of a dual complex. Thus all "mental synthesis", as it may be called, involves acquaintance with logical form. But this topic raises questions which will be more naturally discussed in connection with *belief*, to which we must now turn our attention.