

III.—ON THE LOGICAL SUBJECT OF THE PROPOSITION.¹

BY E. C. BENECKE.

It will, I presume, be pretty generally admitted that, with the exception, perhaps, of certain impersonals,² every proposition that has a meaning (and it is of such only that I wish to speak) is about something and says something about that something. Also, that the former something is the logical subject of the proposition.

Instead of 'something,' it would no doubt be more correct to say 'some thing or things'. A proposition may, of course, be about more things than one, and it may perhaps say more than one thing about it or them. Indeed it is the object of this paper to draw attention to this very fact and to urge the desirability of a fuller discussion of it and of its relation to the logical import of the proposition or judgment than is usual in text-books of logic. But the distinction on which I wish to insist is not that between the singular and the plural subject; and when, to avoid tedious repetition of 'thing or things' and 'it or they,' I speak of the subject as a thing, I no more wish to imply that that thing must be only one than that it must of necessity be a material thing.

I have just said 'proposition or judgment' because many, if not most logicians of the present day, and the Germans almost universally, speak of Judgments and Concepts rather than of Propositions and Terms. Before I come to my subject it may be well that I should briefly explain why I prefer myself to take the other course and why I believe the ends of Logic to be better served by so doing.

(1) In the first place, every judgment may be expressed in a proposition; and it is as so expressed that it assumes its most definite form. While it is only floating in the mind

¹ Read before the Aristotelian Society,

² I do not, myself, think that these form any exception, but I put in this qualification to obviate objection.

without having been even mentally expressed, it will always be more or less vague—capable of assuming a variety of forms, in each of which its precise import may be more or less different. If we wish to consider its import—and it is, I take it, with this, and with what depends on it, that Logic is concerned—we ought therefore to have it in that form in which that import is most fixed, in that in which any change of meaning will have to show itself in an obvious change of expression; and our nearest approach to this in ordinary use is the form of the proposition. It is therefore after it has been expressed and is in the form of a proposition that the import of a judgment can best be studied.

(2) In the second place, whatever else Logic may be or do, it certainly also is, or has been held by many to be, an instrument for the detection and prevention of fallacies.¹ Now if judgments are to be explicitly used as premisses in either inference or proof, and if the criteria supplied by logic are to be applied to the argument, they (the judgments) must be expressed, if not in words, at least in some kind of symbols; and it is in the process of putting them into words or symbols and subsequently interpreting them that some of the most frequent fallacies have their origin. It behoves us, therefore, to consider the import of the judgment not only before but also after this operation of putting into symbols has been performed, so that it may become apparent if the import of the judgment has been changed in the process.

(3) In the third place, the use of the word Judgment suggests that we are ourselves judging or have judged the thing asserted to be true. But when the judgment appears as a datum or a premiss, this is not the point that concerns Logic. If I assert, *e.g.*, that 'every B is C and A is B,' then I am logically bound to admit that 'A is C'. That is a distinctively logical point and its correctness is quite

¹ Mr. Bradley and Mr. Bosanquet of course do not admit that it can be this. I may remark in passing that such dicta as the following: "The idea that Logic is a judge of scientific results, able to pass sentence, in virtue of some criterion, upon their validity or invalidity, arises from a deep-lying misconception of the nature of truth" (Bosanquet, *The Essentials of Logic*, p. 47), appear likely to lead the unwary or inexperienced reader to confuse two very different things. That a logician is a proper judge of scientific results simply *qua* logician and without special knowledge will, I presume, hardly be seriously contended by anybody: but if it is a "deep-lying misconception of the nature of truth" to believe that it is not essentially impossible to discover criteria for distinguishing between valid and invalid reasoning and that it is the business of logic to consider the distinction and to endeavour to find such criteria, then it is a misconception to which I must plead guilty.

unaffected, not only by the material truth or falsity of the premisses, but also by my reason for asserting them and by the manner in which I may have arrived at them—whether, e.g., I have judged them to be true myself or am merely repeating what I have been told by another. In such cases the question before Logic appears to be concerned with, not what we really judge or believe to be true, but what is involved in our assertions and beliefs—what we are bound to by our assertions and what we justify others in understanding or inferring when we make them—and the reference to ‘judgment’ as regards the premisses appears to be irrelevant.

(4) In the fourth place: As a process of thought Judgment is, of course, closely connected with Inference. So closely, indeed, that it is possible to argue that they are in reality the same thing or that the difference between them is a mere question of degree.¹ But the question as to the *import* of a *proposition* is an entirely distinct one from that as to the *validity* of an *inference*. To call the proposition a ‘judgment’ tends to throw these questions together and to confuse them, and this is much to be deprecated.

(5) In the fifth place: Though Logic has of course to deal with judgments, it should, I take it, deal with them, not as a *process*, not as a *movement of thought*, but as a *product*. The use of the word ‘judgment’ suggests, if it does not actually assert, the contrary; and does so, I believe, to the detriment of the science. I shall have to refer to this again later.

Logic, it has often been said, has nothing to do with the question whether the propositions that are submitted to it are true or false. Yet a proposition, as an assertion, professes to be true: and it is only as we assert in such a way that our assertions may naturally be understood as intending to state the truth, that we are bound to what they contain. Moreover, if Logic is concerned with the difference between true knowledge and false—or at least with the criteria for distinguishing a true conclusion from a false, a valid argument from a fallacy—it clearly has in some way to do with reality. Consequently, our propositions, so far as they enter into Logic, have a reference to reality. And by the logical subject of a proposition we mean that which the proposition is about. Is, then, the logical subject of every proposition Reality as such, or Reality as a whole? This would appear

¹ Mr. Bosanquet, e.g., often refers to the identity, and in the Preface to his *Essentials of Logic* speaks of “that single development which in some stages we call Judgment and in others Inference”. Cf. Mr. Hobhouse’s discussion in *The Theory of Knowledge*, pp. 219-24.

at first sight to follow, and, as we all know, it is held to be so by some logicians of great authority. But even if this is in a sense true, this is not the sense in which I am speaking of the subject in this paper. In that sense, and for all practical logical purposes, the subject cannot be reality as a whole. It can as a rule be at most some part of reality—reality at some particular point.¹ Reality as a whole, though it may perhaps be indirectly the subject, is not the logical subject of the proposition as this is here understood.² But is the logical subject necessarily even a part of reality?

Such propositions as

"Had Cæsar not crossed the Rubicon, the course of subsequent history would probably have been materially different," and

"A square circle would have to combine all the properties of the circle with those of the square,"

are propositions; and as they can form part of arguments it would appear that they cannot be properly excluded from logic. Yet the former refers to a state of things which, as the very expression shows, did not occur; the latter to an impossible figure and therefore pre-eminently to an unreality. If, therefore, the question of the reality of its subjects is a question for logic at all, it will have to consider the relation of such subjects as these to reality.

But what is the logical subject of such a proposition?

We must begin by distinguishing the logical from the grammatical subject, *i.e.*, from the nominative before the verb.³ In "A square circle," etc., indeed, they appear to

¹ This is pointed out by Mr. Bosanquet, who so strongly urges that the true subject is reality as a whole. See, *e.g.*, his *Logic*, vol. i., p. 80 *sqq.*, *The Essentials of Logic*, p. 108, etc.

² That is to say, it is not the subject of every proposition. Of course there are propositions of which Reality as a whole is the subject, and the one to which this is a note is one in point.

I should like to add that I do not think that what is meant is very satisfactorily expressed by saying that Reality as a whole is the *subject* of the proposition. Is not 'This is true in the world of reality' rather a general understanding as to the sense in which our assertions are to be made and taken than a part of the assertion itself? Or if it is to be taken as part of the proposition, tacitly understood, may it not be considered part of the predicate rather than of the subject? In that "continuous affirmation of consciousness" of which Mr. Bosanquet speaks on pp. 40-41 of his *Essentials of Logic* it appears to me that we do not "predicate the whole of Reality of itself," but rather predicate of the objects in question that they, together with others, make up our real world.

³ That this is what they mean by 'Subject' does not as a rule appear from the definitions of grammarians, but is very evident in their practice. *E.g.*, when Kühner says (*Gr. Gram.* § 413, 3) that the 'subject' of 'Achilles killed Hector' is Achilles, the 'subject' of 'Hector was killed

coincide. We are there perhaps speaking of 'square circles,' and if so they are the logical subject according to our definition. But what is the logical subject of 'Had Cæsar not crossed the Rubicon,' etc.? Is it 'the course of subsequent history'? If so, subsequent to what? To an event which, in that case, would not have taken place? Or if we mean subsequent to the year 49 B.C., is it the actual course of subsequent history? or an imaginary other course? or what? The logical subject would probably not be the grammatical subject of the antecedent clause, 'Cæsar'. But if we take this antecedent clause by itself as a separate proposition, what is *its* subject? It has been argued that the true subject of the proposition 'Cæsar crossed the Rubicon' is not 'Cæsar' generally, but 'Cæsar crossing the Rubicon'.¹ If so, is the subject of our antecedent proposition 'Cæsar, not crossing the Rubicon'?² And if so what does this mean? Surely not 'Cæsar at any other period of his life' (e.g., in the Senate at Rome); nor 'Cæsar during the whole of his life, except when he was crossing the Rubicon'. Is it, then, another and imagined Cæsar, precisely like the actual C. Julius Cæsar, except that this one did not cross the Rubicon? Hardly this either.³

Obviously, then, the grammatical subject, though it may be, and perhaps usually is, also the logical subject, cannot without more ado be taken to be so; and our first question would therefore be, How can we determine what is the logical subject of a proposition? The quasi-definition with

by Achilles' is Hector; when Buttmann says (*Gr. Gram.* § 129, 16) that in Demosthenes' phrase ἀναγνώσκειν ὑμῖν the 'subject' is ὁ ἀναγνώστης understood; when Zumpt says (*Lat. Gram.* § 69, 5, N. 3) that in Cic. *ad Att.* 7, 14, "Tu ipse cum Sexto scire velim quid cogites" the 'subject' is "tu ipse," they are clearly thinking only of the relation of the nominative to the verb. Demosthenes is not speaking about the reader, but about the law; Cicero is not telling Atticus about himself (Atticus), but about his own curiosity; and in Kühner's example, if, as he holds, the meaning is not changed by the change of form of the proposition, the logical subject is not necessarily changed either.

¹ Lotze, *Logik*, § 58.

² Lotze himself, indeed, says (§ 40) that the relation affirmed in the affirmative and denied in the corresponding negative proposition is the *same* relation, so that it would appear that the subjects of the two must be the same. But then, according to the theory, it would seem impossible that the negative could ever be true. If 'A is B' means 'the A that is B, is B,' its negative must on these terms always be false, for 'the A that is B, is not B' cannot possibly be true.

³ I need hardly say that I do not mean that the logical subject of the proposition, "Had Cæsar not crossed the Rubicon," etc., is really any of the various subjects just suggested. I suppose it is probably the gravity or the momentous consequences of Cæsar's act, though without the context it is impossible to say.

which we began has already furnished us with an answer. We must consider what the proposition is really about—what it is about which the assertion contained in the proposition is made. This will be its subject.

For simplicity let us for the present put on one side our question of the possibility of unreality in the subject and the examples introduced to illustrate it, and let us take some propositions with manifestly real subjects; *e.g.* :—

‘A horse is a mammal.’

‘Socrates died in the year 399 B.C.’

‘A diameter of a circle is a straight line drawn through the centre and terminated both ways by the circumference.’

In such cases as these the grammatical is probably also the logical subject of the proposition. We are making assertions about ‘horses,’ ‘Socrates’ and ‘diameters of circles’ respectively. In the following, *e.g.* :—

‘Two straight lines cannot enclose a space’;

‘A circle may be described from any centre at any distance from that centre’;

‘Hull lies due north of London,’

the matter becomes more doubtful. Is our assertion, *e.g.*, about two straight lines? or about the relation of any two straight lines to the enclosure of space? or about the nature of the space we have to deal with?—about a circle? or about our assumed right to suppose any circle described which we may require?—about Hull? or about the relative positions of Hull and London? or about the position of either one of these cities (that of the other being supposed known)? or about the direction in which you must travel from London in order to reach Hull? or about what?

In such propositions as :—

‘You do not meet a man but frowns’;

‘Every schoolboy knows that Julius Cæsar was murdered on the Ides of March, 44 B.C.,’ etc.,

the logical and the grammatical subjects appear to have altogether parted company. The propounder of the former assertion is not speaking about ‘you,’ but about something entirely different: the proposition, ‘Every schoolboy knows,’ etc., is not intended to give us information about schoolboys and would manifestly be absurdly untrue if it were taken as supplying it.

Yet it is obvious that the assessor of the proposition, ‘You do not meet a man but frowns,’ *might* have intended ‘you’ to be understood to be the subject of the proposition. He might have intended to say that you have the unfortunate peculi-

arity that no one meets you without a frown. Indeed it is only by inference, either from the context or from intrinsic probability or from the speaker's known or presumed sentiments or from some other premisses, that we can in such a case tell what such a proposition is really about, i.e., what its logical subject is.

It would seem then that, as indeed we all know, the meaning of a proposition may vary according to its context or according to the intention of the speaker in uttering it, and that, if so, my first reason for preferring the use of the word Proposition to that of Judgment is not so valid as it at first appeared.

To this it may be replied :—

(1) In the first place, that it is at least relatively valid, for that it is only after the assertion *has been made* that any hearer or reader can draw inferences from it or consider what you mean by it at all; only after it has at least been mentally made or suggested (i.e., when it is at least a mental proposition, no longer a judgment in process of formation) that the thinker can himself consider all that it will bind him to, and whether therefore he can and will assert and abide by it or not.

(2) In the second place, that though the context has to show in what sense we mean our proposition to be understood and to guide the reader or hearer as to the inference he ought to draw from our assertion, nevertheless we are formally bound by all that it really implies. The assertor of 'Every schoolboy knows that Julius Cæsar was murdered in 44 B.C.' could not, formally, complain if I draw from it the inference 'Therefore A. B., being a schoolboy, knows it,' and ask him whether he will stand to this conclusion. Yet he will not unjustly be annoyed at a frivolous objection of this kind; and clearly the logical mind is the one that does not bring forward such quibbles but draws from any such assertion the inferences appropriate to the matter in hand.

This, however, leads to two considerations of some importance to the logician :—

1. If many propositions require a reference to context to determine their meaning and the inferences properly to be drawn from them, and if the examples to be found in the text-books are, as of course they must be, given without any context, these latter ought surely to be so chosen that they show their meaning without context as clearly as possible.

The older logicians for the most part endeavoured to secure this by putting their examples into the Subject-Copula-Predicate form (A, E, I, O). Recent logicians are often disposed

to ridicule this practice; and some (Mr. Bradley, for instance) studiously choose their examples in the slipshod style of ordinary conversation and thought (but of course without the correcting context).¹ I confess that to me this appears to be the reverse of an improvement.

2. The second consideration referred to, naturally presents itself in the form of a question. I said that the logical mind is the mind which draws from assertions the inferences appropriate to the matter in hand (which therefore understands what is said to it in the right sense); and by calling it "logical" we certainly imply that the inferences will be correctly drawn. But if so, what is really the meaning of the adjective "logical"? In other words, What is Logic? If in his investigations a logician considers thought generally, is he acting solely as a logician? If not, in what part of his investigations is he acting as a logician proper, and in what part in some other capacity, *e.g.*, as a psychologist?

To those who themselves possess sufficient knowledge it is, no doubt, very tempting to regard Logic as treating of the entire process of "the mental construction of reality"—to let it embrace the entire theory of general knowledge, including that of all the processes by which it is arrived at on the one hand, and the complete methodology of the sciences on the other. We have high authority for so defining Logic, and certainly I have no quarrel with, but much gratitude to, the authors of the great works with which we are all more or less familiar on that very extensive and fascinating subject. But I cannot help regarding it as

¹ The resulting vagueness is sometimes so great as to render the correctness of the conclusion quite doubtful. Take, for example, "A is due north of B, B due west of C, therefore A is north-west of C" (Bradley, *Logic*, p. 226). This is really one of the more carefully worded of the examples, since by saying "due north," etc., in the premisses Mr. Bradley shows that by "north-west" he does not mean due "north-west" in the conclusion. But what does he mean by it? If anything at all near that point of the compass, the inference is clearly not at all valid. A might just as well be north-by-west or west-by-north, or still nearer either north or west of C. The inference will be valid only if by "north-west" we mean "anywhere west of due north and north of due west". Indeed, in the inexact way in which we usually speak, and in which Mr. Bradley takes every opportunity of showing that he wishes his examples to be understood, we cannot say that even this follows unless we know something of the relative distances of A and C from B. *E.g.*, suppose Grimsby to be, in ordinary parlance, due north of London, and London due west of Greenwich; it would be absurd to say, "Therefore Grimsby is north-west of Greenwich". The course of a conversation would probably leave no doubt as to such points, and we should not be wrong in admitting or rejecting the conclusion; but in an example thus standing by itself there is nothing to show whether it is right or not.

unfortunate that they should have chosen the word *Logic* as the name of the entire branch of knowledge of which those works treat. I think it unfortunate not only because it is manifestly undesirable that quite different subjects should be called by the same name, so that that name should always require the addition of some explanatory words to inform us what is really meant by it, but also because if *Logic* is understood in the extremely wide sense just spoken of it seems to me very difficult if not impossible to draw any clear line between it and some other sciences, particularly *Psychology*. I may add that the way in which the adjective "logical" is often used by the authors of those of the works above referred to which treat the subject with a view rather to the body of the sciences than to general speculation and metaphysics, appears to me to show that they also usually regard the word "*Logic*" as really meaning something much narrower than their definitions would lead one to expect, and that such discrepancy is in itself undesirable. It is, of course, impossible that I should adequately discuss the question of the most convenient definition of *Logic* in the small space here at my disposal. Nevertheless I must say a few words at least on the sense in which I use the word in this paper, since the position occupied in *Logic* by the proposition and its logical subject will of course depend greatly on the view we take of what *Logic* is and of what it should attempt to achieve. The object of the following few remarks is, therefore, not to determine where the limits of the science ought to be drawn, and much less to say that logicians have generally agreed in drawing them where I suggest (this would indeed be a hopeless attempt, since there are probably few things as to which logicians are less in accord), but simply to point out where I draw them for the purposes of this paper and to explain why I do so.

What shall be the subject and the limits of a science of course depends on those who frame and develop that science. But it is obviously very desirable that it should have clearly defined limits, and that those limits should be so drawn that the science does not clash with its neighbours. For two distinct sciences, or even two distinct parts of the same science, to endeavour to answer precisely the same question would clearly be not only a waste of time and labour, but also in other ways undesirable. Now it will, I presume, be generally admitted that the consideration of the laws according to which thought naturally proceeds and according to which we find ourselves as a matter of fact thinking now about one thing, now about another—such laws as

the Laws of Association, the laws by which we expect such phenomena, such conjunctions and sequences as we have once experienced to occur again, etc., etc.—belongs in the first instance to *Psychology*. What, then, is their relation to Logic? The question for Logic with regard to them is, whether they lead to a right or a wrong result. But the laws, as psychological laws, are the same in the one case as in the other. The difference must lie in the conditions. Consequently it would appear that, accepting these laws from Psychology, Logic must have as its own subject the consideration of the conditions, or of the difference between the conditions, which lead respectively to true and false results, and of the grounds on which they are to be taken to do so.

This, however, would still be too wide for a definition. One of the main conditions of the truth of the result is, of course, that the facts with which we start be real facts—that the premisses from which we reason be true. This, however, does not, I conceive, come under the consideration of Logic (or does so only if it becomes a question of the validity of the mental processes by which they were arrived at, in which case we have a preliminary inquiry, in which these premisses are conclusions). It does not come under the consideration of Logic, but belongs either to our ordinary experience or to some one of the special sciences, according to the class of subject considered and the kind of conclusion (its degree of accuracy, etc.) desired.

The question of the truth of the premisses being excluded, the subject of Logic would thus appear to be confined to the *conditions under which the mental processes by which conclusions from given premisses¹ are reached, are valid and the grounds of such validity.*

Logic, I take it, is not an art—not, for instance, the art of correct thinking or the art of proof—but a science.² Nevertheless, like all other sciences, it aims at practical results; and the end of the logician when he draws up rules—his rules of conversion, of syllogistic reasoning, etc.—is, that they should help us in arriving at true conclusions and in avoiding the false.³ Now if we consider it first in this

¹ Understanding this in a wide sense, to include data of all kinds.

² Of course it has often been described as an art. Even Mill sometimes so describes it (e.g. *Exam. of Hamilton's Philos.*, pp. 462, 464, etc.), and no less a recent authority than Prof. Sigwart declares it to be essentially "*Kunstlehre des Denkens*" (*Logik*, §§ 1 sqq.). If it is so, the following remarks apply with still greater force.

³ I presume that neither Mr. Bradley nor Mr. Bosanquet would deny that such hopes have inspired many who have attempted to improve

practical aspect, how can Logic set about achieving this object? By pointing out the course which our thoughts should take and supplying the impulse that will carry them along it? No doubt this would be the most effective manner if it were possible; but it very obviously is not so. Before the logician could direct the discoverer's thoughts in this positive manner he would have to know the end to be arrived at himself:¹ and the impulse and mental force, and the laws according to which our thoughts proceed, now in this direction now in that, are phenomena which Psychology has to discover and to describe, but which neither Psychology nor Logic can prescribe. No man ever thought consciously by rule any more than anybody ever made music by considering, while performing, the mathematical relations of the intervals; and the rules furnished by Logic should be looked on, not as injunctions how a man ought to think or as instructions as to the channels into which he should direct his thoughts, but rather as an aid to *controlling* the thoughts when made, or as they rise before the mind, eliminating errors of conception and reasoning (as distinguished from errors of datum), and thus assuring, so far as in him lies, the correctness of the result.

If understood in this manner, what Logic can supply is a restraining rather than a driving force, a drag rather than a spur. It is comparable to the governor rather than to the boiler of the engine, to the signalman and the switchman rather than to the engine-driver on the railway. The free course of our thoughts is constantly being modified, and the thoughts carried in one direction rather than another by collision with other thoughts, and with previously determined results with which they have to be brought into harmony. It is Logic—the logic of practical good sense aided by the logic of science in those who are masters of the latter—which brings about such harmony, and tells us in how far any result arrived at may be trusted, or warns us if something is still wanting without which such trust should not be reposed. This it achieves by means of its great Principles, the Laws of Contradiction and Identity, the Principle of Excluded Middle, the Postulates of the Con-

or to teach logical procedure, including probably the authors of the mnemonic lines, etc., though they hold that such hopes were necessarily doomed to disappointment.

¹ The teacher may be able to direct his pupil's thoughts in this way; but it is only because he knows the result at which he desires him to arrive. In the case of original thought, discovery, etc., any rules to effect this are of course out of the question.

sistency of things and the Intelligibility of Nature, the Principle of Sufficient Reason, etc., etc.¹ The laws and the rules based thereon, which good sense practically follows of its own accord, are, or should be, drawn up and consolidated by scientific Logic in its great Inductive and Deductive Methods.

The establishment of any belief falls into two parts, which are as a rule closely intertwined but which can be distinguished in theory, *viz.*: (1) the actual *acquisition* of the belief—the movement from suggestion to suggestion, from judgment to judgment, from thought to thought—including the process of search when the belief refers to any matter investigated of set purpose; and (2) its *substantiation* when found. If the line between Logic and other sciences were so drawn that the theory of the former part, which we may here briefly call the *Inference*, should fall wholly outside of Logic, while the theory of the *Proof*—of the establishment or rejection of the belief thus arrived at, or of the suggestion made—should fall, as regards its formal elements, wholly within it, and should form the centre of the subject-matter of the science, Logic would rightly be described as a *science of Proof*—a body of doctrine referring to the validity of mental processes, to the true dependence of one set of propositions or judgments on another or of any mental product on its grounds, and, with a view to this, to the full import of propositions and of their constituent parts. In this way the spheres of Logic and of other sciences, and of Psychology in particular, would be quite distinct. The phenomena presented by Nature (including Mind) and Art are considered generally by our common philosophy of experience and of everyday life and, from the scientific point of view, by the special sciences. Through their means are supplied both the material data and the inferences, which it belongs to and is the business of Philosophy to endeavour to weld into a consistent whole. To Psychology belongs, among other matters, the consideration of the laws according to which the mind does as a matter of fact proceed, both in science and in ordinary thought, from data to inference, from antecedent to consequent. But it does not fall within the province of Psychology to consider either whether the several inferences thus arrived at *are valid*, or how they may be made so. Each science (and psychology among the number) is, no doubt,

¹ How it is possible for any principles or any conceptions to affect the course of our thoughts and the resulting beliefs at all, it is of course for Psychology to consider.

bound to do this as regards *its own inferences*, but not as regards the general principles on which such validity rests ; and, apart from other inconveniences, there would manifestly be a great loss of time and trouble if each science were obliged either to seek such principles for itself or to grope in the dark without them.¹ Here, then, is a place which one would *a priori* expect to see occupied by some independent science, and which, indeed, must necessarily be so occupied in any complete system of sciences. And though a large proportion of those who have taught the science may, no doubt, have desired that it should also do a great deal more, this, if I mistake not, is the place which Logic has always endeavoured to fill, and in which, with all its shortcomings, it has always done good service.

So far as the present paper is concerned the point of the above remarks on the functions of Logic is, that Logic, as here conceived, has nothing to do either with the psychological laws according to which the mind is carried forward and impelled to produce ever fresh results, nor with the relation to reality of the data from which any particular mental process starts, whether these be physical or metaphysical, but deals only with *results*—the validity of the processes by which they have been arrived at, their dependence on the grounds given or mentally to be supplied for them, their compatibility or incompatibility with other results previously arrived at and held to be true, etc. I need hardly add that of course I do not mean by this that the whole of the process which Psychology has to explain must be completed first and then submitted to Logic for verification. On the contrary, Logic, natural or scientific, accompanies, or ought to accompany, the process and should exercise its restraining and correcting influence from the very beginning, and in the thoroughly logical or logically trained mind acts so automatically that the very suggestion of inferences that offend against its canons, of conceptions which contain contradictions, etc., is immediately checked and such suggestions do not come consciously before the mind at all.

This view of Logic is, of course, very much narrower than that which is very extensively held at present, and I confess that it is very much less attractive. I cannot attempt

¹ Of course if no such principles are possible, Logic cannot find or supply them. But if so, it would be well that this should be settled once for all, so that no one should lose valuable time by looking for them in the future. Even so, therefore, the labours of Logic in looking for them would not have been wholly lost, though it would of course incur a considerable responsibility by teaching this negative result.

further to justify it here, but must ask those who are doing me the honour of listening to this paper to bear in mind that, whether rightly or wrongly, it is from this point of view that it is written. And according to this view it is for Logic to consider the material of proof, to insist that this be given to it in a form in which its import can be tested (*i.e.*, in the form of propositions or of something equivalent to them) and to endeavour to determine the general import of propositions in their various forms.

The above digression appeared to be necessary, but has taken up so much of my space that comparatively little remains for my main subject, to which I now return.

How, then, is Logic, as here conceived, which has to deal with the import of propositions, concerned in the determination of their subject? And first, What, in general, is the import of a proposition? The answer is, The complete assertion or assertions which it contains. But then, What is that assertion, or those assertions? This obviously depends partly on the import of the terms, partly on the form of the proposition. Take, *e.g.*, the A form so familiar to the logician, "Every X is Y". If X and Y are concrete terms (each therefore having both a denotation and a connotation) this makes at least the following assertions:—

1. 'Every thing to which the name X is applicable is also a thing to which the name Y is applicable.' (This might be called the *Denotative-denotative* meaning.)

2. 'Every thing to which the name X is applicable has all the attributes connoted by the name Y.' (The *Denotative-connotative* meaning.)

3. 'Wherever (within the universe¹ in question) we have the whole of the attributes connoted by the name X, we have one of the things to which the name Y is applicable.' (The *Connotative-denotative* meaning.)

4. 'Wherever (within the universe in question) we have the whole of the attributes connoted by the name X, we have also (or as a part of them) the whole and each one of the attributes connoted by the name Y.' (The *Connotative-connotative* meaning.)

¹ Here, and elsewhere, I use the word "universe" in the sense in which that term was introduced into Logic by De Morgan—the sense in which I believe it is usually understood by English logicians, *e.g.*, by Jevons (*Pr. of Sc.*, p. 43, and elsewhere), Dr. Venn (see his *Symbolic Logic*, chap. viii., etc.), etc.—not in the sense explained by Mr. Stout in his *Analytic Psychology*, vol. ii., p. 212, where it is equivalent to "what in ordinary language is called a subject or topic". I may mention that I had not seen Mr. Stout's work when this paper was written.

5. 'Within the universe in question there exists nothing to which the name X is applicable (or which has the whole of the attributes connoted by X) which has not the attributes connoted by Y.' (The Existential meaning.)

And others.¹ Now when we say 'Every X is Y,' we have probably only one such meaning in our mind, and, if we are arguing, it is only in that particular sense that we intend the assertion to enter into the argument. Yet by making the assertion we have really asserted the proposition in *every one* of the above meanings (and also in every other meaning which the proposition may have) and are therefore logically bound to all that follows from it in any one of those meanings. This of course complicates the problem before Logic, which has to consider generally what our assertions bind us to and the conditions under which we are, or are not, justified in making them or in drawing this or that conclusion from them. This complication, however, causes practically little inconvenience, because it is easily seen that everything that follows from the above proposition in any one of the above senses, follows from it also in any of the others, so that it is logically immaterial whether the logician in drawing up his formulæ and in formulating his laws has the proposition before his mind in the one sense or in the other. But observe, it is here taken for granted that *we know what is the subject* (and consequently also what is the predicate) of the proposition. We have taken X to be the subject, Y the predicate; and it is *with this presupposition* that Logic introduces propositions of this form (and similarly of the forms E, I and O) into its formulæ. So soon as there is any doubt on this point, the matter assumes a complication which renders the formulation of any general laws of mutual implication and the drawing up of any kind of reliable formulæ very difficult, if not impossible, and in any case makes the application of them so troublesome that it requires the introduction, say, of a special set of symbols and of processes of calculation which have to be set out on paper (as is the case in Symbolic Logic), and it thus becomes useless for the guidance of thought even in the negative manner already referred to.

¹ Of course there are other meanings; e.g., the familiar ones: 'Possession of the whole of the attributes connoted by X is a mark of possession of the attributes connoted by Y'. 'Non-possession of any of the attributes connoted by Y is a mark of non-possession of some, at least, of the attributes connoted by X.' 'The X's that are Y are all the X's.' 'That every X is Y is true,' or 'is a fact in the universe,' etc. It is not necessary for my present purpose that I should attempt to make a complete list of such meanings.

Perhaps a simple general example will bring this out more clearly. Suppose that A connotes the group of attributes α , B the group of attributes β , that not-D connotes absence of at least a part of the group of attributes δ , that ABC not-D¹ connotes the group of attributes $\alpha + \beta + \gamma$ and absence of at least a part of group δ , and so on. Then it is clear that (provided that I know that there are any ABC not-D's in the universe in question) if I assert 'Every ABC not-D is K not-LMN'² I am thereby asserting, among other things,—

'Some³ A's are K' (or 'have the attributes κ ');

'Some A's are not-LN' (or 'have the attributes ν , but not all the attributes λ ');

'Some B's are not L';

'Some BC's are KM not-L';

'Some B's that have not the attribute δ are M,' etc., etc., etc.

All this is very obvious; *i.e.*, it is obvious that in making even so simple an assertion as this we are, in effect, making a great number of different assertions with different subjects and different predicates. But it is as obvious that a formula which should take cognisance of all this—which should show exactly what propositions of this or other kinds are involved in a combination of such propositions as even 'Every ABC is XYZ'—would necessarily be very complicated, and that Logic, which, as practical, aims, not at following thought in all its short cuts, but at giving *simple* formulæ, capable of easy application, is justified in saying, as in effect the older logicians do: 'If you wish Logic to assist you in deciding whether you are justified in drawing a certain conclusion from certain premisses, you must present that conclusion in a form in which there can be no doubt as to what is its subject and what its predicate. If you will then also so state your premisses that that subject, wherever it occurs, is clearly separated (either as subject or as predicate) from the rest of the content of the respective propositions, and similarly the predicate of the desired conclusion wherever it occurs, then,

¹ Or, A not-DBC, or in any other order.

² *E.g.*, 'Every rectilinear figure whose internal angles are together equal to two right angles and two, but not all, of whose angles are equal to one another, is a plane, not equilateral but isosceles triangle'. But there is no need to take so complicated an example; for as most concrete names connote a number of positive and negative attributes, 'X is Y' can nearly always be put into many such forms. *E.g.*, 'Every man is mortal' may be read 'Every animal that has human form and reason but not infallibility, is a something that lives for a time, but not for ever'.

³ Of course in such cases 'Some' means 'Some at least,' not 'Some only'.

if Logic were perfect, its formulæ ought to be able to tell you whether you are right in drawing your conclusion or not, and in the latter case what is still wanting to enable you to do so. They are at fault if they cannot do this. But if you will not take this trouble, but present your premisses with the subject and predicate of your conclusion all mixed up in them, then you are asking too much in requiring Logic to provide you with a formula which can answer your question.'

It is, perhaps, hardly necessary to say that the thinker does not, as a matter of fact, come to the logician with any such question as is here suggested. The practical difficulties with which the thinker or the discoverer is confronted are seldom, if ever, such as the logician as such could solve; and if he is guilty of a fallacy, which of course is not impossible, he will not be aware of it and therefore will not appeal to the logician to help him out of it. But this no more proves that Logic has been of no use to him and that the labours of the long line of eminent thinkers who have devoted their energies to the theory of Logic, pure and applied, have been of no effect on the thought of the present day, than the fact that the musician does not go for advice to the physicist proves that the mathematical theory of harmony has been without effect on the theory and practice of music. The reproach that theory lags behind and does not assist practice, is not peculiar to Logic. It is the charge so commonly brought against abstract thought of whatever kind that Schiller's "philosopher" really seems to be but little exaggerating the common view when he describes the great achievement of the abstract thinker, be he a Locke or a Descartes, as consisting in showing, after a thing has been successfully accomplished without his aid, that it was not impossible to do it.

To return to our subject: In such a proposition as 'Every X is Y,' X and Y are marked out by the form as subject and predicate respectively, and it is but a small thing for Logic to ask that these only should be treated as subject and predicate and that no change should be made in this respect without a corresponding change in the proposition itself.¹ This, indeed, is so natural a demand that it is usually taken for granted and nothing is said about it. But, as we have already seen, in some other forms the distinction is not so

¹That if, e.g., X is ABCD, the proposition "Every X is Y" is not, without more ado, to be taken as a proposition about A, or about Y, or about any attribute (*k*) of Y—though of course it may be convenient to *thought* so to take it.

clear and may be open to question.¹ Logic is right in demanding that in the propositions submitted to it the distinction should be clearly made, even if it should be necessary to *alter the form of the proposition* for this purpose.

This altering of the form of the proposition is, of course, a delicate operation, since the import (so far as the argument is concerned) must not be affected thereby; and if it is by a happy instinct that logicians, from Aristotle onwards, have for the most part considered the concatenation of propositions in the Subject-Copula-Predicate forms (A, E, I and O) only, or in these together with hypothetical propositions in such forms as—

If A is B, it is C;

If A is B, C is D, etc.,

which have for logic special advantages of their own, it is certainly a grave omission on their part not to have given more attention to the relation of these to the precise import of propositions in the various other forms in which they frequently occur and not to have shown how the transformation can be safely effected. My paper is already too long. It is of course out of the question that I should discuss this here. I believe that, though it may probably require what Prof. Wundt calls "the Shifting of the Categories,"² any proposition whatever may be put into the Subject-Copula-Predicate form 'A is (or is not) B'³—probably with the loss of the greater part if not all of its rhetorical force but without any alteration of its actual import as a link in the chain of the argument in which it occurs, and this is all that Logic need concern itself about. Logic is not Rhetoric, and their ends are not the same.

Before closing I should like still to refer very briefly to two points:—

1. The assertion of the possibility of the transformation of any proposition to the Subject-Copula-Predicate form of

¹ I am very glad to find a reference to this possible uncertainty as to the logical subject in Mr. Hobbhouse's *Theory of Knowledge* (p. 156)—the first reference to this that I remember to have met with in any work on Logic. Mr. Stout's interesting remarks (*Analytic Psychology*, vol. ii., pp. 213-14) are of course from a different point of view—the point of view of the psychologist.

² "Die kategoriale Verschiebung der Begriffe." See Wundt, *Logik*, vol. i., pp. 107 *sqq.*, p. 142, etc.

³ It would, indeed, probably not be correct to say that every proposition can be so changed into a single proposition of this form. It may require more than one to express it. But these are details into which I cannot enter here.

course rests on the assumption that the copula 'is' *does not assert identity in all respects*.

In some respects of course it does so. 'Socrates is mortal' asserts that 'Socrates' and 'one particular mortal being' are numerically and in every way the same object; 'All men are mortal' asserts that the objects composing the first-named class and at least some of those composing the second are numerically and in every way the same objects. Again it asserts that the attributes or properties connoted by the predicate-name are some (at least) of the attributes or properties of the objects denoted by the subject-name. The implication of these kinds of identity does not interfere with the possibility of the transformation referred to, though it may oblige us to interpret the terms 'attribute' or 'property' in a wider sense than is customary. But the possibility of the transformation does rest on the assumption that the proposition 'A (or every A) is B,' as it does not assert (though neither does it deny) that the name A denotes every object denoted by the name B, so also it does not assert (though neither does it deny) that the attributes or properties connoted by the name B are the whole of the attributes or properties of the object or objects denoted by A. That it does neither the one nor the other seems so obvious that I should not refer to this assumption at all were it not for the difficulty which the conception appears sometimes to cause.

I cannot refrain from adding that it would, I think, be by no means an advantage to thought that the connotation and denotation of the subject and predicate of propositions of the A form should always be exactly the same. To reduce all propositions of the form 'X is Y' to 'X that is Y is Y that is X,' is not at all a goal that Logic should strive to reach.

2. Whether or not our propositions assert *reality* or *existence* (in the ordinary sense of those words) depends on the logical subject and on our knowledge of it and of its relation to the particular universe in question.

That this is so comes out clearly when we attempt to convert or infer from propositions with non-existent or impossible subjects, and shows that a word of caution ought to be given with some familiar logical rules. Thus, if our universe is our actual world, we may perhaps say with truth, 'All [or some] witches are old women'. We mean, 'If there are any witches (which we believe not to be the case) they are all (or some of them are) old women'. But we cannot convert and say, 'Some old women are witches,' because in our universe there are old women in existence,

and we believe that none of them are witches. So we may perhaps say, 'Every circular cube is a plane solid'. If unmeaning, this is not necessarily untrue. But we cannot infer, 'Some cubes are plane [figures]'; 'Some circular [figures] are plane solids,' etc. These subjects exist, and the propositions are untrue. The occurrence in the premisses of a proposition with a non-existent subject may render syllogisms in the Third and Fourth Figures invalid. And so on. Now this danger, so far as it goes, is certainly an additional reason of weight from the point of view of Formal Logic for accurately determining the subject of any proposition which is to be used as a premiss, and for considering its relation to reality whenever there is any opening for doubt.

I have urged that for the purposes of Formal Logic it may be necessary to reduce propositions to the Subject-Copula-Predicate form, or to some other in which the subject is clearly separated from what is said of it by the form of the proposition itself. After what I have already said it will hardly be necessary to add that of course I do not mean that this ought to be done also in ordinary thought or conversation. Here there will probably be no need of this formal safeguard, and in any case the transformation would be impossible. But even in ordinary thought and conversation we ought, if we wish to be logical, always to make it quite clear both to ourselves and to our hearers, what our logical subject really is.

Note.—To obviate possible misconception I should like to add here (though I believe it is pretty clearly indicated in the paper itself also) that my contention is, *not* that such uncertainty as to the subject as I have referred to often leads to actual errors of reasoning—there this source of error is usually eliminated by the context or by the general course of the argument—but only that it unduly complicates the problem of Formal Logic, if it does not render its satisfactory solution actually impossible.

I may perhaps also be allowed to add a word on Dr. Hillebrand's Theory (given in his work on *Die neuen Theorien der kategorischen Schlüsse*), on which I would gladly have said something in my paper if it had not been too long even without such an additional discussion. Dr. Hillebrand holds with Brentano and others that, though it is of importance from the point of view of Psychology, for Formal Logic the distinction between the subject and the predicate is irrelevant, and he does away with it, stating his propositions (as is done in Symbolic Logic also) in the existential form, "There is A that is B," or "There is no A that is B," as the case may be. If this, or any such system, is capable of a development that will fully satisfy the requirements of thought, I am of course mistaken in my contention. I cannot of course examine Dr. Hillebrand's theory here; but greatly as I admire the ingenuity with

which he works it out and with which he develops, *e.g.*, the syllogism with its various moods, etc., and though I am ready to go a long way with him and have derived great assistance from his work, I must confess I do not think that any system which requires that every universal proposition without exception should be stated as a negative could ever assist thought even in that indirect manner which I claim for ordinary Formal Logic.

I may add, with reference to the end of my paper, that according to Dr. Hillebrand's system every particular proposition positively asserts existence. Therefore, though we can say, *e.g.*, 'All witches are women' (= 'There are no witches that are not women'), we cannot say, in his system, 'Some witches (*e.g.*, those that met Macbeth) are women'; for this would have to be put, 'There are (or exist) witches that are women,' and unless we expressly state that our "universe" is to include the realm of fancy or of superstition, this proposition is untrue.