IMPORT OF PROPOSITIONS AND INFERENCE.

ON page 190 of the fourth edition of his *Formal Logic* Dr. Keynes observes in a note that while "practically borrowing" my account of the import of affirmative categorical propositions¹ he is "unable to agree with my general treatment of the import of categorical propositions as I do not appear to allow that before we can regard a proposition as asserting identity of application we must implicitly; if not explicitly, have quantified the predicate".

At the same time in note (c) on page 244, he objects to my argument that "if *some* carries with it an implication of existence, when used with a subject-term, it must do so equally when used with a predicate-term; but the predicate of an A proposition being undistributed is practically qualified by *some*; hence, if *Some S is P* implies the existence of S and therefore of P, *All S is P* must imply the existence of P and therefore of S. In reply to this argument it may be pointed out, first, that a distinction may fairly be drawn without any risk of confusion between a term explicitly quantified by the word *some* and a term which we can show to be undistributed but which is not explicitly quantified at all; and, secondly, that the position which we have taken is based upon a consideration of the import of propositions as a whole, not upon the force of signs of quantity considered in the abstract."

In answer to this I should like to ask: (1) Does not identity of denotation or application involve implicit quantification, seeing that it must involve determination of the Quantity of the Predicate, i.e., must regard the Predicate as either distributed or undistributed (i.e., either definitely distributed, or not definitely distributed)? Unless this were so, the Predicate would be considered only in intension. (2) Does not the assertion that "the predicate of an A proposition being undistributed is practically qualified by *some*" involve recognition of the implicit quantification of the predicate? Thus Dr. Keynes's second criticism would appear to cancel his first.² And when Dr. Keynes proceeds to object to my account of

¹ This account is to the effect that affirmative categorical propositions assert "identity of application in diversity of signification"—or, as I would now prefer to say, "in intensional diversity".

² I would refer also to Dr. Keynes, p. 422, and e.g., section vii. ("Quantification and Conversion," etc.), especially p. 65, top, in my *General Logic*, and the statement on p. 24, section iii. (on "Categorical

Propositions as Wholes"), that "S is P (SP) and S is not P (S
(P) represent every possible Categorical Proposition".

categoricals because "the position which we (Dr. Keynes) have taken is based upon a consideration of the import of propositions as a whole, and not upon the force of signs of quantity considered in the abstract," I would remark that it is my analysis of the import of propositions which I regard as the central point of my whole view, and that this analysis (identity of application in intensional diversity) to my mind absolutely involves that "the import of propositions *as a whole*" should be considered. It is also I may observe inseparably bound up with the whole theory of Inference, Mediate and Immediate, and is, I believe, the only theory of the import of propositions which can be made really coherent with Deductive (and Eductive) Inference. Thus in affirmative Immediate Inference (Eduction) it is on identity of denotation that all possibility of inference hinges, and in Mediate Inference (Deduction) the only condition necessary to make possible *some* valid inference from two premisses is identity (whole or partial) of denotation of the Middle Term.

As regards Inference, Dr. Keynes would, I believe, agree with the view to which I adhere, that for Inference expressed in propositions :

- (1) There can be no difference or newness of *fact* as between Inference and Inferend.
- (2) There must be some difference of expression, corresponding to
- (3) Some thought-difference, *i.e.*, in Inference we must pass from *one* assertion (or judgment) to *another*.

The difficulty in determining what is and what is not inference is just the difficulty in determining what exactly is meant by *thought-difference*, by 'another' judgment or proposition.

Dr. Keynes considers that in cases of contra-position there is thought-difference (with difference of verbal expression and without difference of 'fact') and seems to make obviousness the test. But what is obvious to one thinker may not be obvious to another. Any concrete inference however complicated may be obvious to a person sufficiently familiar with the assertion inferred from. And no doubt every 'inference' (usually so called) from *Only S is P*, including its contra-positive *No not-S is P*, would be perfectly obvious to a person who has grasped the form of the proposition and has carefully thought of what it (1) asserts and (2) logically involves, while to a beginner, otherwise intelligent, not only are they not obvious, but they may be right-down puzzling at first and take some time and pains to make sure of.

Again, if contra-position is inference, what is to be said about obversion and conversion, into which every case of contra-position may be analysed? Is Obversion inference? If not, is Conversion inference? If not, either (1) inference results from putting together two processes neither of which is inference, or (2) contra-position is not inference. We must accept (1) or (2), or allow Obversion or Conversion or both to be inference.

Let us pass to some "limiting case" and take first a concrete example suggested by Jevons which Dr. Keynes discusses, namely, Is there inference when we pass from: Victoria is Queen of England to Victoria is England's Queen? Dr. Keynes observes that there is here no inference because there are not two "different judgments" (p. 416).

Of course the whole question is: What constitutes difference of judgment (or assertion)? We have agreed that in an inference there can be no 'objective' newness, also that there must be *some* difference of expression. There is here some difference of expression—and no 'objective' newness, no factual or 'real' difference. Is there any thought-difference?

A difference may indeed be something very slight indeed, but if there is the slightest possible difference, then, it must be admitted, a difference there is. And it seems to me quite hopeless ever to draw a line between what is and what is not inference, if the point of distinction is to be a *more or less* of difference. There is either something changed, or there is not, and the something may be ever so insignificant—a cloud like a man's hand—but if it is there it makes all the difference.

Now where there is a difference of expression it is allowed that there may be, and there *frequently* (I believe *always*) is, some corresponding difference of thought. I am not alarmed by Mr. Bosanquet's pronouncement (quoted by Dr. Keynes, p. 422) that the question Whether there is inference in conversion is "a point of little interest". In a given case, no doubt, it may be of little interest, and as much ingenuity may be needed to exhibit its importance as is expended by Carlyle in order to account for the extraordinary, and apparently exaggerated interest which we feel in any "squalling impotency at the font". The baby-inference, like the helpless little human baby, holds vast possibilities, and hence both deserve not only tender treatment due to their feebleness but also consideration in view of contingent developments. If we choked off conversion we should have (theoretically) no inference—as if we strangled the human babies we should (actually) have no one to live the life and think the thoughts of men.

It will be allowed that without definite information to the contrary, we may assume, in Logic as in common life,—

(1) That S has the same intension and application as S.

(2) That S is P has the same meaning as S is P.

But it cannot be similarly assumed—

(3) That S and S², or S and Z have the same intension and application, or

(4) That S is P and S is P², or S is P and S is Q have the same meaning.

On this view it can be only as a matter of grammatical or linguistic convention that

England's Queen
and Queen of England

are equivalent in meaning and therefore in application; and as a matter of fact whoever knows this, knows it only because he has heard it or read it. In some phrases similarly formed there is not this clear equivalence. *Chicken's dish*, e.g., does not mean the same as *Dish of Chicken*. In (1) *Dick's Friend*, (2) *Friend of Dick*, (1) may be conventionally understood to emphasize Dick's share in the relation, while (2) would often be understood to lay stress upon the kind feeling entertained by the friend. Again, a man's or horse's master may not be master of that man or horse, and A Captain of Horse does not mean any horse's Captain. Compare Church of England, England's Church, Boys' school and School of boys, etc.

Where two words or phrases have exactly similar *connotation*, *intension* cannot be wholly similar because the words or phrases are two—the whole qualitative content of the one case is different from the whole qualitative content of the other, and it is part of the history of the connotation (or of that of which it is the connotation) that in a given language it has two (or more) verbal forms—or that e.g., what is called *Tapferkeit* in one language is called *Valour* in another. The whole surplusage of intension over connotation, which includes, of course, much more than verbal connotation, is overlooked by Mill in his account of the Import of Propositions, and also in his contemptuous and even absurd treatment of Proper Names. He seems to think that such names ought more justly to be called Improper Names, as not being fit or worthy to be mentioned in a treatise on Logic, and ruthlessly shoulders them aside. Mill did not seem able to allow for the historic aspect which is indispensable and even fundamental in Logic as in life. Connotative names are for him the only names of importance in Logic, propositions of which both S and P are connotative, the only categorical propositions worthy of analysis. Consider his whole treatment of import of propositions, and the most general analysis of propositions which he gives: "Whatever has the attributes connoted by the subject, has also those connoted by the predicate"— (§ 4, chap. v., book i. of Mill's *Logic*). Compare end of § 2 of same chapter: "Wherever we find certain attributes, there will be found a certain other attribute". This account seems precisely appropriate only to cases where the subject-terms are names for "important results of abstraction" as distinct from (1) descriptive terminology, (2) Nomenclature (Mill's *Logic*, ch. vi. of bk. iv.).

This is perhaps to be explained (though not justified) by the consideration that for Mill all Logic centred round 'Induction,' and that for getting any 'new' knowledge some fresh connexion of connotations is essential. Jevons in his attack on Mill's doctrine of Proper Names seeks to supply the obvious shortcomings of that doctrine, and a similar aim underlies the more recent efforts of

some modern Oxford logicians to assign 'intension' to 'Proper' as well as General names. But both efforts have suffered for want of a clear distinction between Intension (= the whole qualitative aspect of names) and Connotation (= the conventional intension).

We must observe that Mill tends to drop out of account in his treatment of names and propositions not only all surplusage of intension beyond connotation, but also all explicit reference to the extension aspect. But this—the application of names—is in the very forefront of importance. For Mill connotation swells and grows till it almost fills the picture, whether we are dealing with Terms or with Import of Propositions. Connotation (where there is Connotation) may *determine* application. But without application *somehow* determined, all use of names and terms is impossible. Mill himself seems to admit this when he says of Hobbes' definition of Categorical Affirmative Propositions ("In every proposition what is signified is the belief of the speaker that the predicate is a name of the same thing of which the subject is a name"), that it is true of all propositions and is the *only* account of import which is "rigorously true of all propositions without exception". (That it is the *only* account of Import that is quite general, I do not of course admit.) It is odd that Mill, while setting aside and belittling Hobbes' analysis, should have been content to furnish, as his own contribution to the theory, nothing better than an analysis (and an exceedingly unsystematic one) of the imports of *different classes* of propositions.

Hobbes we see lays all the stress on application of names—on the denotation, not the connotation aspect—and this carried on into Syllogism would justify the fundamental importance of identity of application of the middle term (however this identity may be determined). The same would hold of Immediate Inference. And it may be observed that Jevons' doctrine of Substitution of Similars does really lay like emphasis on the supreme part played by application—for the substitution referred to by the "great rule of inference" which Jevons gives, is Substitution not of 'Similars' but of terms having identical application. The rule runs as follows:—

"The one supreme rule of inference consists . . . in the direction to affirm of anything whatever is known of its like, equal or equivalent. The Substitution of Similars is a phrase which seems aptly to express the capacity of mutual replacement existing in any two objects which are *like or equivalent* (=?) to a sufficient (=?) degree" (*Principles of Science*, p. 17). That the substitution here referred to is substitution of terms having identical application is obvious on the most cursory examination and is apparent at first sight from Jevons' own examples in illustration, *e.g.*—

- (a) Snowdon (1)
 Highest mountain in England or Wales (2)
 (Something) 3,590 feet in height (3)

- (b) The Lord Chancellor (1)
The Speaker of the House of Lords (2)
- (c) God's image (1)
Man (2)
Some reasonable creature (3)

It hardly needs pointing out that in (a) and (c) (1), (2) and (3), and in (b) (1) and (2), respectively, are not qualitative 'similars' but numerical, historical, or extensional, identicals—intension is in each case *different*, but extension (and therefore application) *the same*. On the other hand, taking things that are so 'similar' as to be intrinsically indistinguishable, we see at once that they cannot be thus 'substituted' the one for the other. 'That house,' *e.g.*, may be similar in the highest degree to another standing next it, but the one is *not* the other, and in inference could not be 'substituted' for it. This copy of Giorgione's "*Richiesta*" may be an 'exact' copy yet could not be 'substituted' for it, as The highest mountain in England or Wales could be 'substituted' for Snowdon. One of a pair of twins may be so 'like' the other as to be almost invariably mistaken for him—yet owing to the one having come into the world a brief space of time before the other, he may be the heir to a dukedom and inheritor of an immense fortune while the other is neither the one nor the other—and to 'substitute' the one for the other would be inadmissible and even felonious.

It is from the point of view that inference depends upon identity of *denotation*, that I would justify the position that the passage from *Victoria is Queen of England* to *Victoria is England's Queen* is "not indeed a formal immediate inference but a syllogism in which an understood premiss has to be supplied: thus, *Victoria is Queen of England, The Queen of England is England's Queen, therefore Victoria is England's Queen*" (Keynes, *op. cit.*, p. 416 note).

I would interpret the 'syllogism' not connotationally (as Dr. Keynes suggests) but denotationally, thus:—

Victoria is applicable to what Queen of England is applicable to: What Queen of England is applicable to is what England's Queen is applicable to: Therefore Victoria is applicable to what England's Queen is applicable to.

Or the 'syllogism' suggested might take either of the two following forms:—

(1) If the meaning of *England's Queen* is the meaning of *Queen of England*, then what *England's Queen* applies to is what *Queen of England* applies to: But the meaning of *England's Queen* is the meaning of *Queen of England*: Therefore What *England's Queen* applies to is what *Queen of England* applies to.

Or (2) Terms having the same meaning are terms having the same application: *Queen of England* and *England's Queen* are terms having the same meaning: Therefore *Queen of England*

and England's Queen are terms having the same application.

As thus set out the 'syllogism' in question does not appear to involve any confusion between "two different points of view".

When Dr. Keynes says that "Where one complex term is substituted for another (for example, *England's Queen* for *Queen of England*) there may no doubt be involved some change in the order of thought; but this does not necessitate any change of meaning in the thought considered as a whole" (*op. cit.*, p. 416), I should reply that this seems true of *all* inference—in no case of inference I think can there be "change of meaning in the thought considered as a whole". This follows if we allow that inference is to a large extent a process of discursive (selective and constructive) thought as well as intuitive or perceptive thought, while yet the element of perception or intuition seems to come in, in a very important way, when we are considering how to explain and justify the manner in which hearer or reader or seeker passes from premisses or premisses to the conclusion. If we take the simplest possible case of mediate inference or syllogism, we have *S is M*, *M is P*, entitling us to the inference *S is P*. Here we have, no doubt, as the conclusion, an assertion or proposition, which (*quâ* assertion or proposition) differs in some way from either of the premisses; or from both taken together. At the same time the content of the assertion *S is P* is certainly in some way contained in and justified by *M is P* and *S is M*,—we have no "change of meaning in the thought considered as a whole". (Does not this mean merely *change of fact*, or '*objective*' *change*?) The exact connexion seems to me to be as follows: When an audience we have learnt that *M is P* and *S is M*, and grasped the contents of the two assertions and their connexion, we find that we have really produced a construction in which the connotations or intensions *S* and *M* and *P* are referred to one denotation (SMP)

Having this whole before us as an object of perceptual thought, or imagination, it is apparent that it entitles us to say not only that *S is M* and *M is P*, but also that *S is P*, and even further, if we wish, that *P is M* and *M is S* and *P is S*, *Not-P is not M*, *not-M is not S*, etc. (I am taking (1) *S*, (2) *M*, (3) *P* to signify:—

- (1) All *R* or some *R*
- (2) All *N* or some *N*
- (3) All *Q* or some *Q*.)

The same might be shown in a similar, though even simpler way, of any case of Immediate Inference.

We may, of course, syllogise and otherwise 'infer' in an unintelligent mechanical way, using the accepted laws of Formal Inference and of the 'systems' concerned as mere 'rules of thumb,' guides blindly obeyed. But if the acceptance of these rules can be justified, it must be *seen* that they are valid. It is, *e.g.*, the vision

actual or possible of a constructed whole, S that is M, M that is P, (SMP) that ultimately justifies the assertion of (among other statements) S is P as an inference from *S is M* and *M is P*.

I believe that a clear distinction between the contrasted attitudes of hearer, reader, or learner on the one hand, and speaker or teacher on the other hand, is very important for a complete and consistent theory both of Important Propositions and of Inference.

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