

The Triviality of the Existential Import Doctrine

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A term is, nowadays, said to have ‘existential import’ if it is considered to have existing referents; otherwise, it is said to be ‘empty’ or a ‘null class’. For examples, ‘men’ has existential import, whereas ‘dragons’ does not. This concept is considered original and important, if not revolutionary, in modern symbolic logic; and it is often touted as proof of the superiority of that school over that of classical formal logic. We shall here examine and assess this claim. As we shall see, although the concept has some formal basis, it is in the last analysis logically trivial and cognitively not innocuous.

The founder of formal logic, Aristotle, apparently did not reflect on the issue of existential import and therefore built a logical system which did not address it. The issue began to be raised in the middle ages, but it was not till the latter half of the nineteenth century that it acquired the importance attached to it today by modern logicians.

a. Based on Aristotle’s teaching, classical formal logic recognizes six basic categorical forms of proposition: the general affirmative, “All S are P” (A), which means that each and every S is P; the general negative, “No S is P” (E), which means that each and every S is not-P; the particular affirmative, “Some S are P” (I), which means that each of an indefinite number (one or more) of S is P; the particular negative, “Some S are not P” (O), which means that each of an indefinite number (one or more) of S is not-P; and the singular affirmative, “This S is P” (R), and the singular negative, “This S is not P” (G), which refer to a specifically pointed-to or at least thought-of individual instance. Note that general (also called universal) propositions and particular propositions are called plural, in contradistinction to singular ones¹. The labels A, E, I, O, R and G come from the Latin words *AffIRmo* and *nEGO*; the first four are traditional, the last two (R and G) were introduced by me years ago².

The symbols S and P stand for the subject and predicate. The verb relating them is called the copula, and may have positive (is or are) or negative (is not or are not) polarity³. In the present context, the copula should be understood very broadly, in a *timeless* sense⁴. When we say ‘is’ (or ‘is not’) we do not mean merely “is (or is not) *now*, at this precise time,” but more broadly “is (or is not) *at some time*, in the past and/or present and/or future.” The expressions ‘all’, ‘some’ and ‘this’ are called quantities. Obviously, the general ‘all’ covers every single instance, including necessarily ‘this’ specific instance; and ‘all’ and ‘this’ both imply the particular ‘some’, since it indefinitely includes ‘at least one’ instance. The ‘oppositions’ between the six forms, i.e. their logical interrelationships, are traditionally illustrated by means of the following ‘rectangle of oppositions’:

¹ Singular propositions are often called particular, but this usage is inaccurate, since they refer to an indicated individual.

² One can remember these six labels by means of the phrase ARIEGO.

³ What I have called ‘polarity’ is traditionally called ‘quality’, but the latter term is inaccurate and confusing and should be avoided.

⁴ This approach allows us to momentarily ignore the issue of modality, and reflects common usage in many contexts. A fuller treatment of categorical propositions must of course deal with modality; I do that in my earlier work, *Future Logic*.

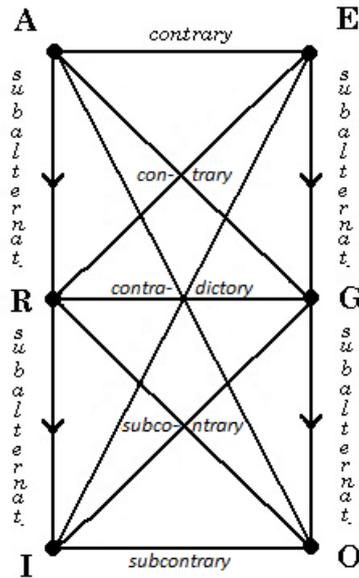


Diagram 7.1 – Aristotelian oppositions

Although Aristotle did not, to our knowledge, represent the oppositions by means of such a diagram, we can refer to it as a summary his views. It is taken for granted that, on the positive side A implies R and R implies I (so, A implies I), and on the negative side E implies G and G implies O (so, E implies O), although these implications cannot be reversed, i.e. I does not imply R or A, and R does not imply A, and so forth. This is called subalternation⁵. The core opposition in this diagram is the contradiction between R and G; from this assumption, and the said subalternations, all else logically follows⁶. A and O are contradictory, and so are E and I; A and E, A and G, E and R, are pairs of contraries; I and O, I and G, O and R, are pairs of subcontraries. Two propositions are contradictory if they cannot be both true and cannot be both false; they are contrary if they cannot be both true but may be both false; they are subcontrary if they may be both true but cannot be both false.

b. Shockingly, the above traditional interpretation of the basic categorical forms (Diagram 7.1) has in modern times been found to be problematic. The above listed propositions are not as simple as they appear. The form “Some S are P” (I) means “Something is both S and P,” while the form “All S are P” (A) means “Something is both S and P, and nothing is both S and not-P;” similarly, the form “Some S are not P” (O) means “Something is both S and not-P,” while the form “No S is P” (E) means “Something is both S and not-P, and nothing is both S and P.” Seeing the forms I, A, O, E, in this more detailed manner, we can understand that A implies I since I is part of A (and likewise for E and O), but then we realize that A and O are not truly contradictories (and likewise for E and I).

The exact contradictory of “Something is both S and not-P” (O) is “Nothing is both S and not-P” (i.e. only part of A, with no mention of its I component) and the exact contradictory of “Something is both S and P, and nothing is both S and not-P” (A) is “Nothing is both S and P, and/or something is both S and not-P” (i.e. a disjunction including O, but also E). Note this well⁷.

It should be pointed out that “All S are P” (A) can be defined more briefly as: “Something is S, and nothing is both S and not-P;” for given this information, it follows logically that the things that are S are P (for if this was denied, it would follow that some things are both S and not-P). Similarly, “No S is P” (E) can be defined more briefly as: “Something is S, and nothing is both S and P,” without need to specify explicitly that “Some things

⁵ The implying proposition being called the subalternant and the implied one the subaltern, and the two being called subalternatives.

⁶ If A is true, then R is true, then G is false, then E is false; whence, the contrarities shown on the diagram. If I is false, then R is false, then G is true, then O is true; whence, thus the subcontrarities shown. Since R and G are incompatible (cannot both be true) and exhaustive (cannot both be false), it follows that A and O, and likewise E and I, whose instances overlap somewhat, must be contradictory, since, if they were both true or both false, R and G would in at least one case be accordingly both true or both false (this is proof by exposition).

⁷ The Kneales propose a similar analysis of the problem in *The Development of Logic* (Oxford, London: Clarendon, 1962), chapter II, section 5. Further on (on p. 211), they say that Peter Abelard “should have the credit of being the first to worry about the traditional square of opposition, though he did not work out all the consequences of the change he advocated.”

are both S and not-P.” Thus, all four forms A, E, I, O, imply, or presuppose (which is logically the same), that “some S exist(s).” Also, the positive forms, A and I, imply that “some P exist(s).” On the other hand, the negative forms, E and O, do not imply that “some P exist(s),” since the negation of a term is not informative regarding its affirmation⁸.

Thus, in the above diagram, the diagonal links between the corners A and O, and between E and I, should not be contradiction but contrariety. For, while to affirm one proposition implies denial of its opposite, to deny one proposition does not imply affirmation of the other. To remedy this real problem of consistency, modern logicians have proposed to *redefine* the general propositions A and E as the exact contradictories of O and I, respectively. That is to say, the new meaning of A is only “Nothing is both S and not-P” and the new meaning of E is only “Nothing is both S and P.” It follows from this measure that A (in its new, slimmer sense) no longer implies I, and likewise E (in its new, slimmer sense) no longer implies O. This redefinition of symbols A and E can, to my mind, lead to much confusion. In my view, it would be better to *re-label* the forms involved as follows:

- Keep the traditional (old) labels A and E without change of meaning; i.e. old A = A, old E = E.
- Label the modern (new) senses of A and E as respectively not-O and not-I.
- That is, new ‘A’ = not-O \neq old A. Whereas, old A = new ‘A’ plus I = I and not-O.
- Likewise, new ‘E’ = not-I \neq old E. Whereas, old E = new ‘E’ plus I = O and not-I.

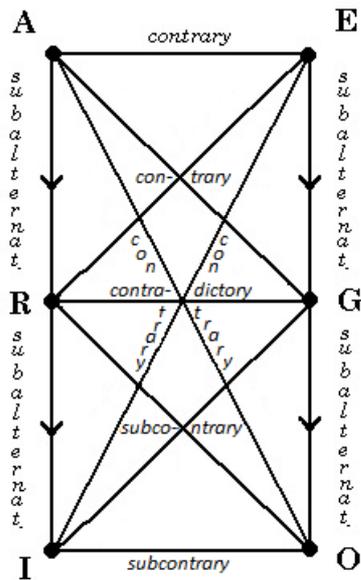
Thus, when we say A or E in the present paper, we mean exclusively the traditional A and E; and when we wish to speak of the modern ‘A’ and ‘E’ we simply say not-O and not-I, respectively. Note this convention well⁹. Actually, such propositional symbols are effectively abandoned in modern logic and the propositions are expressed by means of a symbolic notation, including the existential and universal quantifiers, \exists (there exists) and \forall (for all), respectively; but we do not need to get into the intricate details of that approach here, because we can readily discuss the issues of interest to us in plain English. Now, let us consider the formal consequences of the above findings in pictorial terms.

One way for us to solve the stated problem is to merely modify the traditional rectangle of oppositions, by showing the diagonal relationships between A and O and between E and I to be contrariety instead of contradiction; this restores the traditional diagram’s consistency, even if it somewhat dilutes its force (Diagram 7.2). Another possibility, which is the usual modern reaction, is to change the top two corners of the rectangle to not-O and not-I, instead of A and E respectively; this allows us to retain the contradiction between diagonally opposed corners, although now the lateral relation between the top corners is unconnectedness instead of contrariety, and the vertical relations in the upper square are unconnectedness instead of subalternation (Diagram 7.3).¹⁰

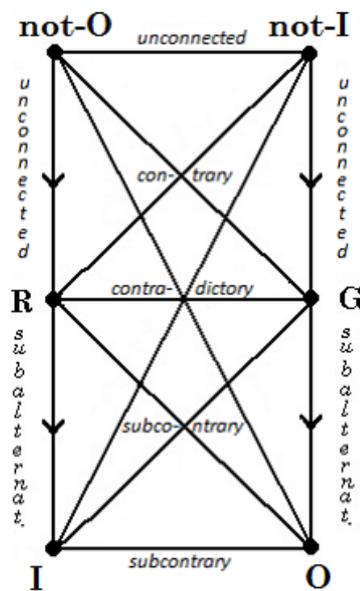
⁸ We could say that nothing in the world is conceivably P, without affecting the truth of “Some S are not P” or “No S is P.” Clearly, in the special case where “nothing is P,” the latter propositions are true for any and every value of S.

⁹ Of course, we could introduce modified symbols for the new A and E, such as A' and E', but I prefer to stress their underlying meanings, viz. not-O and not-I. In my view, it is dishonest and misleading to redefine the symbols A and E *themselves* as meaning only not-O and not-I. This is like a hostile takeover, permanently blocking further reflection and debate.

¹⁰ A third possible approach is, of course, to draw a rectangle with A and E in the top two corners, and not-E and not-A (instead of I and O) in the bottom two corners. In that case, it is the lower square that would suffer changes, with not-E and not-A as unconnected to each other and to R and G respectively. This possibility is however not very interesting, as the forms not-E and not-A are disjunctive. That is, not-E = not-(O and not-I) = not-O and/or I; and not-A = not-(I and not-O) = not-I and/or O. Note that this position is historically found in Peter Abelard, who insisted on distinguishing between “Not all S are P” (not-A) and “Some S are not P” (O), and who apparently denied that “No S is P” (E) implies anything to be S let alone P (even while regarding “All S are P” (A) as implying that something is S); see Kneales, p. 210.



7.2 – modified traditional



7.3 – modern version

Notice that the lower square of the modern version is unchanged. This is due to the judgment that the forms I and O, i.e. “Something is both S and P” and “Something is both S and not-P,” both imply that “some S exist” (or “some things are S” or “there are things which are S”) meaning that if they are true, their subject ‘some S’ has existential import. Moreover, in the case of I, the predicate P is also implied to have existential import, since it is affirmed; but in the case of O, the predicate P is not implied to have existential import, since it is merely denied. Until now, note well, we have not mentioned the issue of existential import in our formal treatment. Now, it comes into play, with this interpretation of particular propositions.

The same applies to R and G – their subject ‘this S’ has existential import, whereas the predicate P has it if affirmed but lacks it if denied. On the other hand, since not-O (as distinct from A) is a negative statement, i.e. means “Nothing is both S and not-P,” it has no implication of existential import. Similarly, since not-I (as distinct from E) is a negative statement, i.e. means “Nothing is both S and P,” it has no implication of existential import. Clearly, if not-O was thought to be contrary to not-I, then if not-O were true, it would imply the negation of not-I, i.e. it would imply I; but this being erroneous, not-O and not-I cannot be contrary, i.e. they must be unconnected. Similarly, if not-O was assumed to imply R, it would then imply I, since R still implies I; therefore, not-O must also be unconnected to R; and similarly for not-I and G. On the other hand, not-O remains contrary to G, since if not-O is true, then O is false, in which case G must be false; similarly as regards not-I and R.

It is now easier to see why the traditional rectangle of oppositions (7.1) seemed right for centuries although it was strictly-speaking wrong. It was tacitly assumed when drawing it that the subjects of general propositions *always* have existential import, i.e. imply that “some S exist (s).” *When this condition is granted*, then in combination with it not-O becomes A and not-I becomes E, and A implies I and E implies O, and A exactly contradicts O and E exactly contradicts I – in other words we happily return to the original rectangle of oppositions (7.1). The problem is that this condition is *not* always satisfied in practice. That is, not-O or not-I can occur without their subject S having existential import.

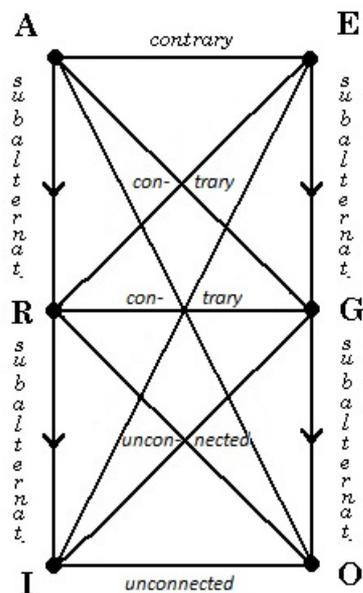
Effectively, the forms “Nothing is both S and not-P” (not-O) and “nothing is both S and P” (not-I) signify conditional propositions (“Whatever is S, is P” and “Whatever is S, is not P”) which, without the minor premise “this is S,” cannot be made to conclude “this is P” or “this is not P” (respectively). In other words, they record a ‘connection’ between an antecedent and a consequent, but they have no ‘basis’, i.e. they contain no information affirming the antecedent, and thence the consequent. Obviously, if that information is provided, the condition is fulfilled and the result follows. Once we realize that *the traditional rectangle remains true in the framework of a certain simple condition (viz. that some S exist)*, we see that its hidden ‘inconsistency’ is not such a big problem for formal logic.

It is interesting to also consider the significance of the above revisions in the field of education (i.e. immediate inference). Whereas A, which implies I (“Some S are P”), is convertible to “Some P are S” – not-O, which does not imply I, is *not* so convertible. Also, whereas not-I is convertible to “No P is S,” since “Nothing is S and P” and “Nothing is P and S” are equivalent and have no implication of existential import for S or P – E is *not* likewise unconditionally convertible, since in its case even if we are given that “some S exist” we cannot be sure that “some P exist” (but only that “some not-P exist”). Note well, just as O does not imply predicate P to have

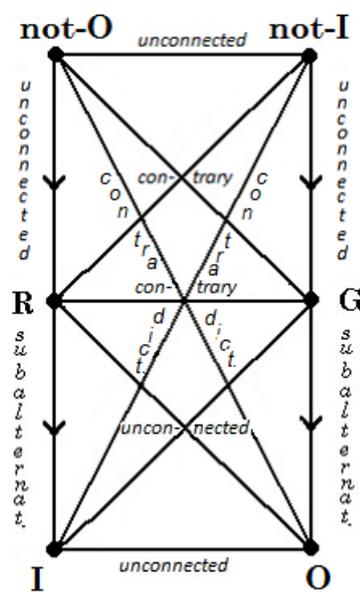
existential import, since it merely negates it, so is it true for E; therefore, the traditional conversion of E is really only valid conditionally. We can also look into the consequences of the above revisions in the field of syllogistic reasoning; the main ones are pointed out further on.

c. Let us now go a step further in the possible critique of Aristotelian oppositions, and suggest that *all* terms may be denied to have existential import, whatever the forms they occur in, and whatever their positions therein. That is to say, not only the subjects of general propositions, but even the subjects of singular or particular propositions might conceivably lack existential import. Although R and G, and I and O, do formally imply that some S exist(s), it is still possible to deny them in pairs without self-contradiction. That is, R and G cannot be claimed strictly-speaking contradictory, because if “this S exists” is false then they are both false; this means that their traditional relation of contradiction is valid only conditionally (i.e. provided “this S exists” is true) and their absolute relation is in truth only contrariety. Similarly, I and O are only relatively subcontrary and their unconditional relation is really unconnectedness.

Indeed, it happens in practice that we reject a singular subject altogether, when we find that some predicate can be both affirmed and denied of it. This is dilemmatic argument: finding both that ‘this S’ is P and that it is not P, we must conclude that either one of these predications is wrong, or both are wrong because ‘this S’ does not exist. Particulars, of course, do not necessarily overlap; but if we can show by other means that “no S exists,” we can be sure that neither the set of S referred to by I nor that referred to by O exist, and thus deny both propositions at once. Granting all this, the above diagrams (7.2 and 7.3) can be *further* modified as follows:



7.4 – re-modified traditional



7.5 – modified modern version

In both these diagrams (7.4 and 7.5), all relations are the same as before, except the one between R and G (contrariety), and those between R and O, G and I, and I and O (which are now unconnected pairs). Notice that in the second diagram (7.5), although R and G are no longer contradictory, the pairs not-O and O, and not-I and I, remain contradictory, since if we deny that “Something is both S and P” (I) on the basis that “No S exists,” we can all the more be sure that “Nothing is both S and P” (not-I), and likewise regarding O and not-O.

d. We have thus proposed two successive dilutions (weakening revisions) of the traditional rectangle of oppositions. In the first, we followed modern logic in no longer assuming with Aristotle that the subjects of universal propositions have existential import. In the second, we went further and additionally denied that singular and particular propositions may well lack existential import. Clearly, if our goal is to formulate an absolute logic, one applicable equally to propositions with existential import and those without, the successive dilutions of the Aristotelian diagram are justified and important. But are such logics of anything more than academic interest – are they of practical interest? The answer must clearly be no, as I will now explain.

A difficulty with the ideas of existential import and emptiness is immediately apparent: these are characterizations that may be true or false. Different people at the same time, or the same person at different times, may have different opinions as to the existential import or emptiness of a certain term. Some people used to think that dragons exist, and maybe some people still do, yet most people today think dragons never existed. So, these characterizations are not obvious or fixed. Yet modern logicians present the question of existence or non-existence as one which has a ready answer, which can be formally enshrined. They fail to see that the issue

is not formal but contentual, and thus in every given material case subject to ordinary processes of testing and eventual confirmation or disconfirmation.

It follows that the issue of existential import is not as binary as it is made out to be. The issue is not simply existence or non-existence, as modern logicians present it. The issue is whether at a given time we know or not that existence or non-existence is applicable to the case at hand. A term with existential import may be said to be 'realistic', in that it refers (or is believed to refer) to some existing thing(s). An empty term, i.e. one without existential import, may be said to be 'unrealistic', in that it refers (or is believed to refer) to a non-existent thing. In between these two possibilities lies a third, namely that of 'hypothetical' terms, for which we have *not yet* settled the issue as to whether they are (in our opinion) realistic or unrealistic. Moreover, this third possibility is not monolithic like the other two, but comprises a host of different degrees.

Our knowledge is mostly based on experience of physical and mental phenomena, though also on logical insights relating to such experience. Roughly put, we would regard a term as realistic, if we have plentiful empirical evidence as to the existence of what it refers to, and little reason to doubt it. We would regard a term as unrealistic, if we have little empirical evidence as to the existence of what it refers to, and much reason to doubt it. And we would regard a term as hypothetical if we are thus far unable to decide whether it should be characterized this way or that. In any case, the decision is usually and mostly inductive rather than purely deductive as modern logicians effectively imagine it.

How are terms formed? Very often, a term is formed by giving a name to a circumscribed phenomenon or set of phenomena that we wish to think about. Here, the definition is fixed. More often, a term is applied *tentatively* to a phenomenon or set of phenomena, which we are not yet able to precisely and definitively circumscribe. In such case, we may tentatively define it and affirm it, but such a term is still vague as well as uncertain. Over time we may succeed in clarifying it and making it more credible. Here, the definition is variable. Thus, the formation of terms is usually not a simple matter, but *an inductive process* that takes time and whose success depends on the logical skills of the thinker(s) concerned.

Of course, as individuals we mostly, since our childhood, learn words from the people around us. This is effectively fixed-definition terminology for the individual, even if the term may have been developed originally as a variable-definition one. In this context, if we come across an obscure ready-made term, we cannot understand it till we find some dictionary definition of it or someone somehow points out for us the referent(s) intended by it. But even then, inductive acts are needed to understand the definition or the intent of the pointing. When you point at something, I cannot immediately be sure exactly what it is you are pointing at; I may have to ask you: 'do you mean including this, excluding that?' and thus gradually zero in on your true intent.

Each of us, at all times, retains the responsibility to judge the status of the terms he or she uses. The judgment as to whether a term is realistic, or unrealistic is not always easy. *In practice, therefore, most terms are effectively hypothetical*, whether classed as more probably realistic or more probably unrealistic. Even so, some terms are certainly realistic or unrealistic. All terms that are truly based exclusively on empirical evidence or whose denial is self-contradictory are certainly realistic, and all manifestly counterfactual or self-contradictory terms are certainly unrealistic. So, all three of these characterizations are needed and effective.

Let us suppose the formation of realistic terms is obvious enough, and ask how imaginary ones are formed. Imaginary terms are not formed *ex nihilo*; they are formed by combining old terms together in new ways. A new term T is imagined by means of two or more existing terms T1, T2.... We would call term T realistic, if all the terms (T1, T2...) constituting it are realistic and their combination is credible. But if all the terms on which T is based are realistic, but their combination is not credible (e.g. we know that no T1 is T2, so the conjunction T1 + T2 is contrary to fact), we would call T unrealistic; and of course, if one or more of the terms constituting T is/are unrealistic, we would call T unrealistic. If T is made up of hypothetical elements or if its elements are realistic but their combination is of uncertain status, we would call T hypothetical.

Now, our thinking in practice is aimed at knowledge of reality. That is to say, when we come across a term without existential import, i.e. when we decide that a term is unrealistic, whether because it goes against our empirical observations or because it is in some way illogical—we *normally lose interest in it and drop it*. We certainly do not waste our time wondering whether such a subject has or lacks some predicate, since obviously if the subject is non-existent it *has no* predicates anyway. If we regard a term as empty, the oppositions of its various quantities and polarities in relation to whatever predicate are henceforth totally irrelevant. An empty term, once established as such, or at least considered to be such, plays no further role in the pursuit of knowledge. This attitude is plain common sense, except perhaps for lunatics of various sorts. For this reason, the oppositions between propositions involving empty terms are *trivial*. That is, the above detailed non-Aristotelian models of opposition are insignificant.

The net effect of the successive 'dilutions' is to make the strong, Aristotelian rectangle of oppositions (concerning propositions with existential import) seem like a special case of little importance, and to give the weaker, non-Aristotelian rectangles (concerning variously empty propositions) a disproportional appearance of importance. The reason why this occurs is that the weaker oppositions represent the lowest common denominator between the Aristotelian and non-Aristotelian oppositions, which we need if we want to

simultaneously discuss propositions with and without existential import. But the result is silly, for the Aristotelian diagram (7.1) is the important one, teaching us to think straight, whereas the non-Aristotelian ones are really of very minimal and tangential academic interest.

Practical logic is focused on terms that are believed to be realistic or at least hypothetical – it is not essentially concerned with empty terms. Contrary to the accusations made by modern logicians, Aristotelian logic is not only concerned with realistic terms. It is in fact mainly used with hypothetical terms, since (as already pointed out) most of the terms which furnish our thoughts are hypothetical – tentative constructs in an ongoing inductive enterprise. We do not think hypothetical thoughts by means of some special logic – we use the same old Aristotelian logic for them. That is to say, *in accord with the principle of induction, we treat a hypothetical term as a realistic term until and unless we have reason to believe otherwise.*

The reason we do so is that a hypothetical term, i.e. one not yet proved to be realistic or unrealistic, is a candidate for the status of realism. This being the case, we treat it as we would any realistic term, subjecting it to the strong, Aristotelian model of oppositions, rather than to any watered-down model with wider aspirations, in the way of an inductive test. If the hypothetical term is indeed deserving of realistic status, it will survive the trial; if, on the other hand, it does not deserve such status, it will hopefully eventually be found to lead to contradiction of some sort. In that event, we would decide that the hypothetical term should rather be classed as an unrealistic term, and we would naturally soon lose interest in it. Thus, there is only one significant and useful model for oppositions between propositions, namely the Aristotelian one.

Indeed, we sometimes use Aristotelian logic even for unrealistic terms. Very often, we remove the stigma of unrealism by rephrasing our statement more precisely¹¹. Alternatively, we might just keep the imaginary intent in mind: say a novelist wishes to write about fictional people, or even science-fiction creatures, he would not logically treat his subjects as empty terms – but rather subject them to the logic applicable to realistic terms, so as to enhance the illusion of realism in his novel. Thus, the logic applicable to empty terms which we have above investigated is in practice never used.

Whatever the alleged existential import of the terms involved, our thoughts remain guided by the demanding model of Aristotelian oppositions. The rational pursuit of knowledge still indubitably *requires* the clear-cut logic of Aristotle enshrined in the traditional rectangle of oppositions (diagram 7.1). The reason why Aristotle took the existential import of the subjects of categorical propositions for granted is, I suggest, because *naturally, if there is nothing (i.e. no subject) to talk about (i.e. to predicate something of) we will not talk about it; and if we are talking, then that presumably means we do have something to talk about, i.e. a subject as well as a (positive or negative) predicate.* This is manifest common sense.

If Aristotle – as far as we know, or at least as far as readers of his extant works have so far managed to discern, or so we are told by historians of logic – did not ask the question regarding the existence of the subject, it is probably simply because he quite intelligently had no interest in empty subjects. He was rightly focused on the pursuit of knowledge of the world facing him, not some non-existent domain. Modern logicians are rather, I suggest, more intent on impressing the yokels with their intellectual brilliance. With that overriding purpose in mind, they fashion systems of no practical significance whatever. They make mountains out of molehills, presenting trivia as crucial discoveries, so as to draw attention to their own persons.

e. Modern logic is a complex web of static relationships, most of them irrelevant. It ignores the dynamics of human thinking, the fact that our knowledge is constantly in flux. It is, we might say, a science of space irrespective of time. In an effort, on the surface praiseworthy, to formally acknowledge the issue of existential import, it gives undue attention to empty terms, elevating them from a very marginal problem to a central consideration. Instead of dealing with existential import parenthetically, as a side issue, it erects a logical system that effectively shunts aside some of the most important logical processes in the human cognitive arsenal.

The traditional universal propositions are cognitively of great importance. They cannot just be discarded, as modern logic has tried doing under the pretext that formal logic had to be expanded to include consideration of counterfactual terms. There are logical processes involving these propositional forms that are of great practical importance, and which logic must focus on and emphasize. It is absurd to henceforth effectively ignore these venerable and indispensable forms while making a big thing of a theoretical consideration of no practical

¹¹ For example, we might say (instead of “unicorns are horses with a horn”) “the imaginary entities called unicorns look like horses with a horn on their forehead” or (instead of “some unicorns are white, some black”) “some of the unicorn illustrations I have seen involve a white horse, but some involve a black one”. Note that *both* the initial propositions (given in brackets) have empty terms, even though one is general and the other is particular. Clearly, after such corrective rephrasing the two propositions do have existential import, although they do so with reference to imaginary (mental) entities rather than to real (physical) ones. Consequently, while the initial propositions cannot be said to be true, the more precise ones replacing them can be said to be true, and we can apply Aristotelian logic to them without qualms. Note also in passing that even a seemingly eternally imaginary entity may one day become real – for example, we might by artificial selection or by some genetic manipulation one day produce real unicorns.

significance whatever. The universals A and E cannot be retired under any pretext; they are not mere conventional conjunctions of more primitive forms.

For a start, universal propositions are essential to the crucial logical processes of *subsumption and non-subsumption*, which are enshrined in Aristotle's syllogistic. First figure syllogisms serve to include an instance in a class or a subclass in a wider class; they teach us the notion that 'all X' includes every individual 'this X' and any possible set of 'some X'. If, instead of an argument such as "All X are P and this S is X, therefore this S is P" (I/ARR) we propose the modern major premise "Nothing is X and not-P," with the same minor premise, we obviously (even though the minor premise implies the existential import of an X) *can no longer directly draw the desired conclusion!* We are forced to stop and think about it, and infer that "this S is not not-P" before concluding that "this S is P." Similarly, second figure syllogisms serve to exclude an instance from a class or a subclass from a wider class, and third figure syllogisms to identify overlaps between classes; and the moods of these figures become inhibited or greatly distorted if universal propositions are reinterpreted as modern logicians suggest.

Again, universal propositions are essential to the crucial logical processes of *generalization and particularization*. If 'this X' and 'some X' are not implied by 'all X', then we cannot generalize from the former to the latter. Of course, given 'this X' or 'some X', we do have existential import, and thus can anyway generalize to 'all X'. But the fact remains that if, in accord with modern logic, we conceive our generalization as a movement of thought from "This/Some X is/are Y" to "Nothing is X and not-Y," we miss the point entirely, even if admittedly the existential import of X is implied by the premise. For in such case, *the formal continuity between premise and conclusion is lost*, there being two inexplicable changes of polarity (from something to nothing and from Y to not-Y)! Similarly, particularization requires formal continuity. To move freely from I to A, and then possibly to IO, we need the traditional opposition (contradiction) between A and O.

Another issue that is ignored by modern logicians is *modality*. Although modern logic has developed modal logic to some extent, it has done so by means of symbolic notations based on very simplistic analyses of modality. Although it has conventionally identified the different categories of modality (necessity, impossibility, actuality, inactuality, possibility, unecessity), it has not thoroughly understood them. It has not clearly identified and assimilated the different types of modality (the logical, extensional, natural, temporal, and spatial modes), even if human discourse has included them all since time immemorial. Notably lacking in its treatment is the awareness that modality is an expression of conditioning and that the different types of modality give rise to different types of conditioning.

Consideration of modality is manifestly absent in the doctrine of existential import. The latter (as we saw) is built around the timeless (or 'omnitemporal') forms of categorical proposition, which are non-modal. It does not apply to modal categorical propositions, *for these do not formally imply (or presuppose) the actuality of their subject but only its possibility*. Thus, a universal proposition with natural-modality, "All S can (or must) be P," does not formally imply that "Some things *are* S" but only that "Some things *can be* S;" likewise, one with temporal modality, "All S are sometimes (or always) P" does not imply that "Some things *are* S" but only that "Some things *are sometimes* S;" and so forth.

This may be called 'existential import' in a broadened sense, acknowledging that being has degrees; but it is certainly not the actual sense intended by modern logicians: they apparently imagine that use of such modal propositions implies belief that "Some things *are* S." And of course, the *modality of subsumption*, as I have called this phenomenon in my book *Future Logic* (chapter 41), is very relevant to the processes of opposition, eduction (immediate inferences), syllogistic deduction (mediate inference) and induction. Regarding the latter, see my detailed theory of factorial induction in the said work. Thus, we may well say that the proponents of the doctrine of existential import constructed an expanded system of logic based on a rather narrow vision of the scope of logic. Even if their expansion (for all it is worth—not much, I'd say) is applicable to non-modal propositions, it is not appropriate for modal ones.

f. The critique of the Aristotelian rectangle of oppositions began apparently in the middle ages, with Peter Abelard (France, 1079-1142). According to the Kneales, further input on this issue was made over time by William of Shyreswood, by Peter of Spain and St. Vincent Ferrer, and by Leibniz. They also mention Boole's interest in it, and many people attribute the modern view of the issue to this 19th century logician. However, E. D. Buckner suggests that the modern idea stems rather from Franz Brentano (Austria, 1838-1917), in a paper published in 1874¹². And of course, many big name logicians such as Frege and Russell have weighed in since then.

Even though the new logic that ensued, based on the concept of existential import, is today strongly entrenched in academia, the switchover to it was epistemologically clearly not only unnecessary but ill-advised. The

¹² For Buckner's account of the history, see: www.logicmuseum.com/cantor/Eximport.htm. Notice his pretentious characterization of "the traditional 'syllogistic'" as "a historical curiosity." Brentano's position is to be found in his *Psychologie vom empirischen Standpunkt*, II, ch. 7. The Kneales do mention the latter reference in passing, in a footnote on p. 411.

doctrine of existential import has been woefully misnamed: it is in fact *not* about existential import, but rather about *non*-existential import. It gives to empty terms undue importance, and thus greatly diminishes the real importance of non-empty terms. To be sure, this innovation fitted the anti-rational ‘spirit of the times’, and it kept many people happily busy for over a century, and thus feeling they existed and were important – but it was in truth emptiness and vanity.

Apparently, none of these people reflected on the obvious fact that once a term is identified as empty, it is simply dumped – it does not continue affecting our reasoning in any significant manner. This being so, there is no need to abandon the universal forms A and E because they imply (presuppose) the existential import of their subject. Even if the Aristotelian framework, which is built around non-empty terms, occasionally ‘fails’ due to the appearance of an empty term in discourse, such event is taken in stride and dealt with by summarily eliminating the discredited term thenceforth, and certainly *not* by switching to a non-Aristotelian framework as modern logicians recommend to do. In any case, the issue of existential import does not apply to modal logic, and so lacks generality.

Moreover, these people failed to realize that Aristotelian logical processing relates not only to realistic terms, but more significantly to hypothetical terms, i.e. *terms in process*. They viewed logic as a deductive activity; they did not realize its *essentially inductive* character. If, due to an immoderate interest in empty terms, the science of logic abandons the universal forms A and E, it deprives people of a language with which to accurately express the movements of thought inherent in the processes of syllogistic inference and of generalization and particularization. The science of logic must acknowledge the forms of actual human thinking, and not seek to impose artificial contraptions of no practical value. Otherwise, natural processes essential to human cognition cannot be credibly expressed and logic will seem obscure and arbitrary.

Modern logic has sown confusion in many people’s minds, turning the West from a culture of confident reason to one of neurotic unreason. The purpose of logic studies ought to be cognitively empower people, not incapacitate them. If logicians err in the forms of thought they describe and prescribe, they betray their mission, which is to intelligently and benevolently guide and improve human thinking. If they err, whether out of stupidity or malice, they turn logic from a responsible science and a fine art to a vain and dangerous game. They do not merely cease benefitting mankind; they positively harm people’s minds.

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