

When I speak of a common character of a class of objects, I must, for the purposes of the inference in Barbara, mean a general rule true of all that class. Now, if I say, you can take what rule you please applicable to all sinners, and it will be found applicable to men, I am not guaranteeing that there is any general rule true of all sinners. But when I say, I could find you a rule true of all sinners that does not hold good of all women (not, for instance, of the Blessed Virgin), I have committed myself to the proposition that there is such a rule. This is the distinction between *Affirmative* and *Negative* propositions. An affirmative proposition speaks of any general rule there may be, no matter what, while a negative says there is a rule and says that such a one can be elected so as to break down if applied to a certain subject (outside the class to which the rule refers).

454. We thus see how syllogistic theory calls for precisely the formal distinctions of propositions that Aristotle draws, and needs no others.

§3. THE QUADRANT

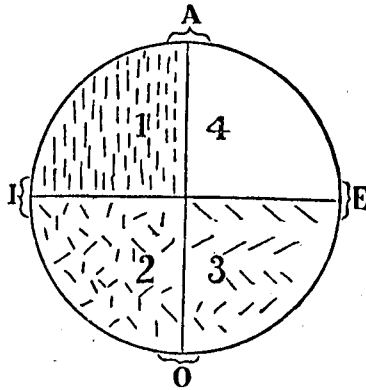
455. The distinction between Universal and Particular propositions is said to be the distinction in Quantity; that between Affirmative and Negative propositions the distinction in *Quality*. Such is the traditional terminology.¹ But this is a terrible abuse of the important words *quantity* and *quality*, the inconvenience of which is felt in studying the *Critic of the Pure Reason*. Therefore, notwithstanding their having a generation of occupancy for every card in the whist-pack, and one for the joker too, I for one shall vote to eject them. Let us say Universals and Particulars differ in *Lexis*, Affirmatives and "extra-logical"; but that only means it is outside the scope of their own studies. If a mathematician should choose to characterize the differential calculus as "extra-mathematical," he would exhibit the same determination to keep his science small and simple that animates many of the logicians.

But although the limited universe of marks is not for me extra-logical, I think it is proper to exclude it from elementary syllogistic, for the reason that it is one of the simplest conceivable instances of the logic of relatives, and when that is treated this problem is virtually solved, even if it be not directly attended.

¹ It dates from Apuleius, and is more assiduated than golden. *Universal* and *Particular* have the same origin. *Affirmative* and *Negative* are words manufactured by Boethius. [See Prantl *op. cit.*, I, 691.]

Negatives in *Phasis*.¹ Lexis and Phasis are tell-way and say-way. Lexis is from λέγειν, to pick out, and also to tell; it is the mode of picking out, or of reckoning. Phasis is saying, in the sense of: "What do you say? Yes or No?"; being the base of *κατάφασις*, affirmation, and *ἀπόφασις*, negation. I really see no objection to them, except their novelty. For reversal of Lexis I shall use *metalexis*; for reversal of Phasis, *metaphasis*, though the meaning is nearly that of the Greek *ἀντίφασις*.

456. . . . Having taken the Diodoran, in opposition to the Philonian view of validity, Aristotle must for consistency hold the universal Affirmative implies the existence of its subject. . . . He must understand: "Some philosopher's stones are red" as not asserting the existence of any philosopher's stone. . . . As the distinction between Universal and Particular propositions concerns the subject, so the distinction between Affirmative and Negative ought, for the sake of symmetry, concern the predicate; so that the difference between asserting and not-asserting the existence of the subject ought to be the distinction between Universals and Particulars, not between Affirmatives and Negatives. Universal propositions do not, while particular propositions do, imply the existence of their subjects. The following figure illustrates the precise sense here assigned to the four forms A, E, I, O.



In the quadrant marked 1 there are lines which are all vertical; in the quadrant marked 2 some lines are vertical and some not; in quadrant 3 there are lines none of which are

¹ From *φημί*, not *φαίνω*; therefore nothing to do with phase.

vertical; and in quadrant 4 there are no lines. Now, taking *line* as subject and *vertical* as predicate,

A is true of quadrants 1 and 4 and false of 2 and 3.

E is true of quadrants 3 and 4 and false of 1 and 2.

I is true of quadrants 1 and 2 and false of 3 and 4.

O is true of quadrants 2 and 3 and false of 1 and 4.

Hence, A and O precisely deny each other, and so do E and I. But any other pair of propositions may be both true, or both false, or either true while the other is false.

457. Quadrant 1 includes the case in which the predicate covers the whole *universe* of discourse;¹ so that there is this intrinsic distinction between Affirmatives and Negatives, that the latter deny their predicates to be necessary, which the former permit; just as there is this intrinsic distinction between Universals and Particulars, that the latter assert the existence of their subjects, which the former do not insist upon.

458. There are some languages which take the negative particle in such a sense that a repetition of it is intensive; but I shall understand the negating of a proposition to be a reversal of the above diagram across its sinister diagonal, interchanging quadrants 3 and 1, so that All S is not-not-P shall mean, All S is P. And in like manner, I shall use the word *some*, in such a sense that a repetition of it is not sinister, but to signify a reversal of the diagram across the dexter diagonal, interchanging quadrants 2 and 4, so that Some-some-S is P shall mean All S is P. This I do for the sake of symmetry; at the same time, it is easy to give an intelligible sense to it. To say: "Every S is P" is to say: "An S, even if one of the worst cases is selected, will be identical with a P, favorably chosen." To say: "Some S is P" is to say: "An S, if not one of the worst is chosen, will be identical with a P favorably chosen." But to say: "An S, if not other than one of the worst is chosen, will be identical with a P favorably chosen," reproduces the universal. By "favorably" is to be understood, favorably to the identity, but by the "worst cases" are to be understood those most calculated to overthrow the assertion. To say: "An S, if no one of the worst is selected, will be

¹ The term *universe*, now in general use, was introduced by De Morgan in 1846. *Cambridge Philosophical Transactions*, VIII, 380.

identical with a P unfavorably chosen," implies that every P is an S, just as "Any not-S is not P" implies the same thing. So to say: "An S, even if one of the worst cases is selected, is not identical with a P not favorably selected," is as much as to say that some P is not S, just as "Some not-S is P" implies the same thing. This meaning of the word "some" certainly departs very far indeed from the ordinary usage of speech. But that is nothing: it is perfectly intelligible, and is taken so as to give balance and symmetry to the logical system, which is a matter of the utmost importance, if that system is to fulfill a philosophical function. If the main object of the syllogistic forms were in actual application, to test reasonings as to whose validity or invalidity we found it difficult to decide, as some logicians seem naively to suppose, then their close connection with ordinary habits of thought might be a paramount consideration. But in reality, their main function is to give us an insight into the inward structure of reasoning in general; and for that purpose systematic perfection is indispensable. . . .

459. It is a blunder on Aristotle's part to call the propositions A and E contraries merely because they may both be false, but not both true. They ought to be called *incongruous* or *disparates*, and both these terms are somewhat in use. Subcontraries (a word of Boëthius,* imitating the *ὕπεναντία* of Ammonius) are propositions of opposite emphasis but, being particular, both can be true, though both cannot be false. It would be well to follow the usage of those writers who call any two propositions which can logically both be true but not both false, subcontraries. *Contradictories* (Aristotle's *ἀντικείμενα*, the word *contradictoria* comes from Boëthius)† are two propositions which cannot both be true nor both false, but precisely deny one another. *Subaltern* (a word found in the translation of Porphyry's *Isagoge* by Marius Victorinus in the fourth century;‡ Porphyry's word is *ὑπάλληλον*, but in the present sense first found in Boëthius)§ is a particular proposition which follows by an immediate inference from its corresponding universal to which it is said to be subaltern.

460. But in my system none of the relations shown in the

* See Prantl, *op. cit.*, I, 687ff.

† *Ibid.*, 687.

‡ *Ibid.*, 661.

§ *Ibid.*, 684, 692.

diagram of Apuleius [the square of opposition] are preserved, except the two pairs of contradictories. All other pairs of propositions may be true together or false together.

A and E, All S is P, and No S is P, are true together when no S exists, and false together when part only of the S's are P. I and O, some S is P, some S is not P, are true and false together under precisely the opposite conditions.

A and I, Any S is P, Some S is P, are true together when there are S's all of which are P, and are false together when there are S's none of which are P. E and O, No S is P, and Some S is not P, are true and false together under precisely the opposite circumstances. . . .