PART I

CHAPTER I

THE "CATEGORICAL SYLLOGISM": ITS PRELIMINARIES

§ 1. *Our Starting Point.*

FROM a modern point of view the central core of Logic —the Doctrine of the Syllogism—may best be regarded as a set of rules for playing a certain kind of game with words, and a set of technicalities the function of which is partly to state the rules of the game and partly to explain the methods that have from time to time been invented for playing it successfully. The reader will understand, however, from what was said in the Introduction, that the conception of Logic as a mere game was far from the minds of its founders. Both the original purpose of the doctrine and its development throughout the Middle Ages were as serious as could be; it was invented in order to provide a final and indisputable criticism of arguments, a *coercive* method of settling disputes, by formulating "the ideal of true knowledge and the universal form of demonstrative reasoning[1]." It may be added that there are people living even to-day to whom the conception of Logic as a game seems little short of sacrilege. It is a curious fact however that these devotees have so far hesitated to come forward to defend the old Logic against the many attacks that have lately been made upon it. Even such a thoroughgoing indictment of it as Dr Schiller's *Formal Logic* has

[1] See Dr Schiller's *Formal Logic*, p. 190.

not yet prevailed upon them to stand to their guns. In fact the usual line taken by adverse reviewers of that and similar books is to complain that attacks on the old Logic are a slaying of the slain; which is always an easy and safe thing to say, but which can only be believed by those who mean by it that Logic is no longer openly appealed to in everyday controversial writing or speaking. As Dr Schiller well shows, its influence in philosophy and its secondary influence in ordinary thought is still regrettably strong. Those who are inclined to think Logic dead had better read his Chapters XXIV., XXV.

At the present stage of this book however, there is no need to decide whether the old Logic deserves more respect than we shall here be able to give it. At any rate its details remain the same whether it is regarded as a game or as sober doctrine, so that we may take our choice which general view of it is the more suitable. Under the former view, at least, it can be easily mastered and afterwards as easily forgotten.

The reader is not asked to believe that the game is an attractive one, like bridge or chess. If he happens to think it cumbrous and dull there are few who would now disagree with him. A generation ago there used to be a good deal of discussion as to whether Logic is properly a Science or an Art; but of late years this discussion has become less fashionable, and it is reported of Jowett that he once openly declared it to be "neither a science nor an art, but a dodge." Regarded as a dodge however—a dodge in reasoning and disputing—it is in modern times anything but effective. In everyday reasoning or disputing we all ignore its restrictions when we feel inclined to do so. Any arguer who finds that its results conflict with his own can always claim—and often justly—that Logic makes assumptions which he is not forced (in the name of Reason) to grant.

The game itself is played with *syllogisms*—that is to say, with groups of three *propositions* (statements) constructed in a manner that will presently be explained. Two of the three propositions in a syllogism are called the *premisses*, and the third is called the *conclusion*, and said to be *drawn from* or *yielded by* the premisses. And the main object of the game is to draw the *legitimate* (or *valid*) conclusion—if there is one—from any two given premisses, and to avoid drawing from them any conclusion which is illegitimate. The examiners will require you to perform this operation easily and securely. For instance, the two premisses "All men are liars" and "George Washington is a man" yield the legitimate conclusion that "George Washington is a liar"; for the legitimacy of a conclusion is not the same as its truth; and the two premisses "All bad workmen complain of their tools" and "Thomas complains of his tools" do not yield the legitimate conclusion that "Thomas is a bad workman." He may as a matter of fact be an idle bungler, but the two premisses just given do not throw any light at all on the question—from a strict Logical point of view.

Further, the examiners will require you not only to see at a glance the illegitimacy of a faulty conclusion but to give the name of the fault correctly. There are certain technical names for all the faults that any syllogism (or apparent syllogism) can have, and you may be asked to say which of these "fallacies" a given invalid syllogism illustrates. The fallacies in question are few in number and easily learnt, but in order to explain them we must first get to know certain other technicalities. It is here that we begin to make acquaintance in detail with the Rules of the Game.

§ 2. *Subject and Predicate.*

Syllogisms, we saw just now, are—from this point of view—constructions made of three "propositions," and a proposition is, roughly speaking, the same as what is generally called a statement[1]. I say roughly speaking, because only a small proportion of actual statements come before us, in real life, in the shape in which Logic can accept them as propositions ready for use in a syllogism. They often have to be first translated into *Logical Form*. This notion of a "Logical Form" of propositions arose out of the supposition that all statements are best understood as cases of *predication*[2]—a supposition which does apply naturally to a good many statements, and which by a little forcing—and a little inattention to actual meanings or purposes—can be made to seem applicable to all. Grammarians also have adopted this notion. In Grammar you are supposed to be able to look at any ordinary statement and discover in it (1) "That which is spoken about"; this you call the *Subject*; and (2) "That which is said about the Subject"; and this you call the *Predicate*. But what Grammar calls the Predicate Logic regards as a combination of Predicate and *Copula*. To take the simplest kind of example, the sentence "John is a bachelor" would be analysed by Grammar into: Subject "John," Predicate "is a bachelor." Logic would agree in regarding "John" as Subject, but would divide the rest of the sentence into: Copula "is," and Predicate "a bachelor." We need not here trouble ourselves with the enquiry how there came to be this difference between Logic and Grammar. All that matters from our present point of view is that the division into Subject, Copula and Predicate, is one of the rules we have to abide by. In order to get material for playing the game, propositions must be regarded as made up of two

[1] The difference between a "proposition," an "assertion," a "statement" and a "judgment" are here of no importance. But see p. 226.

[2] Some beginners may need to be warned that predication has nothing to do with prediction. The fact that is asserted in a predication may be either past, present, or future.

"terms" (Subject term and Predicate term) *connected by a copula.* It is assumed that there are in existence a large number of words unattached, whether ranged in order as in a dictionary or floating about casually in our minds. You can take any two of them and join them together with a copula—i.e. you insert between them the word "is" (or "is not" or "are" or "are not") and then you have got a proposition, whether true or not. Out of propositions so obtained you can then proceed to construct syllogisms by following certain further rules to be presently explained. To analyse an ordinary sentence and express it so as to show its two terms and its copula is called "putting it into Logical Form" or "showing its Logical character," and in § 4 we shall have to consider this operation a little more closely.

Here again it may be well to notice that this conception of "Logical Form" was not consciously invented as part of a game. That is only our modern way of regarding it now that we can see its defects when considered as part of a theory of reasoning. But historically it dates from a time when men's view of the nature of *classes* was much more rigid and simple than is now generally possible. Perhaps there never was a time when it was believed strictly and universally that if a thing belongs to a class A, then A it must be called in every context and for every purpose. But the further back we look within the last few centuries the greater tendency we find to regard accepted classes as beyond the reach of criticism. Not only was Mathematics, with its clear and sharp and permanent divisions, regarded as the type of knowledge, but classes of all kinds—even the obviously artificial classes of society—were habitually thought of as unalterable facts of Nature; indeed, within the memory of the present generation it used to be taken almost as an axiom that a thing could not be in a class A and also outside it. The notion that a thing can be A *for* *one purpose* and not-A for another has won its way only slowly and partially into general acceptance, and would still shock and displease those of us who are incurably Logical. Classes, it used to be supposed, exist in Nature ready made, and individual things are either inside or outside them, either belong to them or do not, and there is an end of the matter. That classes are only our human way of grouping things, to suit our own purposes, which are liable to change and vary, is one of the troublesome modern notions that are still resented by the kind of thought that only asks to be let alone. The active thought of the present day is far more concerned with causes than with classes; we are more interested in knowing how things behave and work than in knowing how they have been traditionally named and classified.

This subject will occupy us at greater length in Part II, and here it is only referred to for the sake of noting that Logic is in this respect extremely simple-minded and inactive. That is why it takes as its most general type of proposition statements about the relation of an individual case to a class (e.g. "John is a bachelor"), or of a smaller class to a larger one (e.g. "Bats are not birds"). Both these kinds of statement are still often made, and there will always be a use for them. Only they are much less representative than they formerly were of thought as a whole; and to a great extent they are now used with a clear remembrance that the justification of a class is convenience merely, and that the notion of a class must take into account a possible *variety of purposes*, which is ignored by Logic. One of the fundamental rules of the Logical game is that if a thing is inside the class A it cannot also be outside it. And another fundamental rule is that it must be either inside or outside. In the material with which the game is to be played Logic allows no sitting on the fence, and no speculation about doubtful margins.

§ 3. *The Laws of Thought.*

In many text books of Elementary Logic the fundamental rules just mentioned are set out in the form of three "Laws of Thought," and at first sight they seem to be a harmless formulation of truths which everybody admits and of which we hardly need to be reminded. In Part II we shall have to criticise this view of them, but for the present we may take them simply as rules of the game.

The first is called the *Law of Identity*, and says that "A is A"; or that if we have admitted that a particular thing or class (S)[1] deserves the predicate A, then in drawing inferences from that statement we are bound by that admission. In other words "What I have said, I have said."

The second is called the *Law of Contradiction*[2], and says that "A is not not-A," or that S cannot both be and not be A. In other words "Two negatives make an affirmative," or "If you contradict yourself you save me the trouble of contradicting you." A statement that S is both A and not-A is called "a contradiction in terms."

The third is called the *Law of Excluded Middle*, and says that "Everything must be either A or not-A," or that S must either be or not be A. In other words, every question whether S is A, if answered at all, must be answered either "yes" or "no." We all know how freely this principle is appealed to by cross-examining Counsel in the Law Courts.

When the "Laws of Thought" are regarded as rules of a game, most of the difficult questions that have from time to time been raised about them become irrelevant. From our present point of view therefore it does not matter

[1] The symbol S is commonly used in Logic to stand for any Subject that happens to be spoken of.

[2] By Krug, Hamilton, and others it is called the *Law of Non-contradiction*.

whether they give us information about Things, or about Thought, or about nothing; nor, if they do give any information, whether it is true or false. The point that here concerns us is that Logic assumes that breaches of them are possible, and that when such breaches are committed they disqualify the player. They are postulates that have to be accepted before the "reasoning" operation can begin.

Though we must reserve our fuller criticism of them we may at once notice one thing that is involved in their acceptance. What they postulate is that the terms used in a syllogism must be taken as perfectly unambiguous, and the distinction between every term and its "contradictory" (i.e. between A and not-A) as perfectly sharp and clear. That is to say, they ignore any difficulty there may be in making sure that the terms we use *are* of this extremely satisfactory type. It is true that the Laws do not altogether ignore the possibility of such difficulties arising; for, in the case of the Law of Contradiction at least, certain cautionary clauses are at times included in the statement; e.g. "S cannot be both A and not-A *at the same time*, and *the same place*, and *in the same respect*"; thus recognising (theoretically) that trouble may arise through the gradual change of A into not-A, through S being A in one part and not-A in another, and even through S being A for one purpose and not for another. But since we can only apply the Law of Contradiction on the assumption that these troubles of interpretation have been somehow removed, it cannot be taken as a *rule*, with recognisable breaches, so long as our terms are allowed to be in the smallest degree indefinite. However many qualifying clauses therefore we may add to the bare statement of the Law, the difficulties are supposed to be over and done with before the Law comes into operation; that is to say, before "reasoning" begins.

§ 4. *Quality and Quantity.*

To return now to the Logical Form of propositions. The basis of this we have seen to be Subject, Copula, Predicate; and the typical form is "*S is P.*" But since the kind of statements considered were those about *inclusion in* or *exclusion from* a class, it was natural to recognise a difference of copula as *affirmative* or *negative.* "S is P" was called an affirmative proposition, and "S is not P" a negative one. This is technically called a difference in the *quality* of propositions. Equally natural was it to notice the difference between speaking of the *whole* of a class and only an indefinite *part* of it. Our acquaintance with the members of any class—except a few specially limited ones like "the contents of my pocket" or "the books on that shelf"—is always more or less imperfect; we cannot make a personal inspection of *all* members of a kind of animal, vegetable, or mineral; and when we are clearly aware of this limitation of our knowledge we may hesitate to assert that *all* the S's are P, keeping to the safer and less definite statement that *some* are so. Hence arose a division in what was called the *quantity* of propositions; the statement about the whole of the class S being called a *universal* proposition, and that about an indefinite part ("some") being called a *particular* proposition. And, in order to guard against an obvious uncertainty of meaning, the rule was laid down that the "some" in a particular proposition should always be interpreted as "some, and possibly all" instead of as "some, but not all." For instance, a proposition like "Some truths are useful" must not be interpreted as implying that any truths are not so.

These two divisions, of quality and quantity, are independent of each other and therefore give us altogether four "Logical forms of proposition[1]":

[1] In this chapter we are concerned only with "categorical" propositions. The distinction between them and other kinds is discussed in § 15.

Universal Affirmative (e.g. *All wasps are insects*).
Universal Negative (e.g. *No women are voters*).
Particular Affirmative (e.g. *Some scholars are clergymen*).
Particular Negative (e.g. *Some roses are not scented flowers*).

For convenience in referring to these kinds of proposition shortly and distinctively it is usual to express them by means of the letters A, E, I and O, putting A for the universal affirmative, E for the universal negative, I for the particular affirmative, and O for the particular negative. These letters and their meaning have to become perfectly familiar to us; and a help in remembering them at first is that A and I are the two first vowels in the word *affirmo*, while E and O are the two vowels in the word *nego*. If we are to play the game of Logic at all, we had better get rid of any shame we may feel in "reasoning" by means of artificial aids to memory.

It should be noted also that where the Subject is an individual thing (e.g. *John, America, this pencil, the highest mountain in the world*) the proposition is called *singular*, but ranks as "universal" for Logical purposes. For instance, "John is a bachelor" would be treated as an A form, and "this pencil is not sharp" as an E form, though both would be described as singular propositions. This rule may seem strange at first, but the reason for it will be understood when we come to the syllogistic rules about "distribution" of terms (pp. 17—19).

We are not here[1] concerned with the whole subject of the difficulty of translation from ordinary language into Logical Form. The old Logic treats it lightly, and at present we must do the same. Still, some of the more obvious difficulties are usually noticed in the textbooks, and questions may be asked about them.

[1] More is said about it in § 13, and again at pp. 165—7.