CHAPTER III.

Of the Divisions of Propositions.

Section 202. The most obvious and the most important division of
propositions is into true and false, but with this we are not
concerned. Formal logic can recognise no difference between true and
false propositions. The one is represented by the same symbols as the
other.

Section 203. We may notice, however, in passing, that truth and falsehood
are attributes of propositions and of propositions only. For something
must be predicated, i.e. asserted or denied, before we can have
either truth or falsehood. Neither concepts or terms, on the one hand,
nor reasonings, on the other, can properly be said to be true or
false. In the mere notion of a Centaur or of a black swan there is
neither truth nor falsehood; it is not until we make some statement
about these things, such as that 'black swans are found in Australia,'
or 'I met a Centaur in the High Street yesterday,' that the question
of truth or falsehood comes in. In such expressions as a 'true friend'
or 'a false patriot' there is a tacit reference to propositions. We
mean persons of whom the terms 'friend' and 'patriot' are truly or
falsely predicated. Neither can we with any propriety talk of true or
false reasoning. Reasoning is either valid or invalid: it is only the
premisses of our reasonings, which are propositions, that can be true
or false. We may have a perfectly valid process of reasoning which
starts from a false assumption and lands us in a false conclusion.

Section 204. All truth and falsehood then are contained in propositions; and
propositions are divided according to the Quality of the Matter into
true and false. But the consideration of the matter is outside the
sphere of formal or deductive Logic. It is the problem of inductive
logic to establish, if possible, a criterion of evidence whereby the
truth or falsehood of propositions may be judged (Section 2).

Section 205. Another usual division of propositions is into Pure and Modal,
the latter being those in which the copula is modified by some degree
of probability. This division is excluded by the view which has just
been taken of the copula, as being always simply affirmative or simply
negative.

Section 206. We are left then with the following divisions of
propositions--

 Proposition

according to Form
  Simple

  Complex
    Conjunctive
      Disjunctive

  Universal
    Singular
      General

according to Matter
  Verbal
  Real

according to Quantity
  Universal
    Singular
      General

  Particular
    Indefinite
      (strictly) Particular

according to Quality
  Affirmative
  Negative

Simple and Complex Propositions.

Section 207. A Simple Proposition is one in which a predicate is directly affirmed or denied of a subject, e.g. 'Rain is falling.'

Section 208. A simple proposition is otherwise known as Categorical.

Section 209. A Complex Proposition is one in which a statement is made subject to some condition, e.g. 'If the wind drops, rain will fall.'

Section 210. Hence the complex proposition is also known as Conditional.

Section 211. Every complex proposition consists of two parts--

  (1) Antecedent;

(2) Consequent.

Section 212. The Antecedent is the condition on which another statement is made to depend. It precedes the other in the order of thought, but may either precede or follow it in the order of language. Thus we may say indifferently--'If the wind drops, we shall have rain' or 'We shall have rain, if the wind drops.'

Section 213. The Consequent is the statement which is made subject to some condition.

Section 214. The complex proposition assumes two forms,

  (1) If A is B, C is D.

This is known as the Conjunctive or Hypothetical proposition.

  (2) Either A is B or C is D.

This is known as the Disjunctive proposition.

Section 215. The disjunctive proposition may also appear in the form

  A is either B or C,

which is equivalent to saying

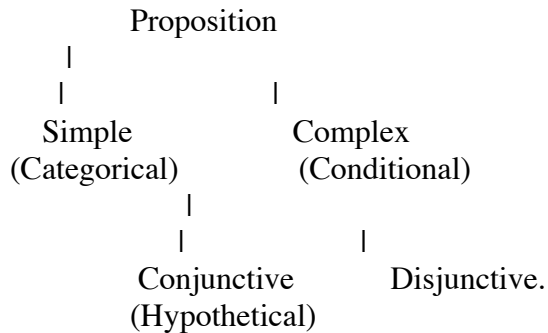 Either A is B or A is C;

or again in the form

  Either A or B is C,

which is equivalent to saying

  Either A is C or B is C.

Section 216. As the double nomenclature may cause some confusion, a scheme is appended.

```
            Proposition
      |
      |                    |
   Simple            Complex
  (Categorical)        (Conditional)
             |
             |                 |
         Conjunctive      Disjunctive.
        (Hypothetical)
```

Section 217. The first set of names is preferable. 'Categorical' properly means 'predicable' and 'hypothetical' is a mere synonym for 'conditional.'

Section 218. Let us examine now what is the real nature of the statement which is made in the complex form of proposition. When, for instance, we say 'If the sky falls, we shall catch larks,' what is it that we really mean to assert? Not that the sky will fall, and not that we shall catch larks, but a certain connection between the two, namely, that the truth of the antecedent involves the truth of the consequent. This is why this form of proposition is called 'conjunctive,' because in it the truth of the consequent is conjoined to the truth of the antecedent.

Section 219. Again, when we say 'Jones is either a knave or a fool,' what is really meant to be asserted is--'If you do not find Jones to be a knave, you may be sure that he is a fool.' Here it is the falsity of the antecedent which involves the truth of the consequent; and the proposition is known as 'disjunctive,' because the truth of the consequent is disjoined from the truth of the antecedent.

Section 220. Complex propositions then turn out to be propositions about propositions, that is, of which the subject and predicate are themselves propositions. But the nature of a proposition never varies in thought. Ultimately every proposition must assume the form 'A is, or is not, B.' 'If the sky falls, we shall catch larks' may be compressed into 'Sky-falling is lark-catching.'

Section 221. Hence this division turns upon the form of expression, and may be said to be founded on the simplicity or complexity of the terms employed in a proposition.

Section 222. In the complex proposition there appears to be more than one subject or predicate or both, but in reality there is only a single statement; and this statement refers, as we have Seen, to a certain connection between two propositions.

Section 223. If there were logically, and not merely grammatically, more than one subject or predicate, there would be more than one proposition. Thus when we say 'The Jews and Carthaginians were Semitic peoples and spoke a Semitic language,' we have four propositions compressed into a single sentence for the sake of brevity.

Section 224. On the other hand when we say 'Either the Carthaginians were of Semitic origin or argument from language is of no value in ethnology,' we have two propositions only in appearance.

Section 225. The complex proposition then must be distinguished from those contrivances of language for abbreviating expression in which several distinct statements are combined into a single sentence.

Verbal and Real Propositions.

Section 226. A Verbal Proposition is one which states nothing more about the subject than is contained in its definition, e.g. 'Man is an animal'; 'Men are rational beings.'

Section 227. A Real Proposition states some fact not contained in the definition of the subject, e.g. 'Some animals have four feet.'

Section 228. It will be seen that the distinction between verbal and real propositions assumes a knowledge of the precise meaning of terms, that is to say, a knowledge of definitions.

Section 229. To a person who does not know the meaning of terms a verbal proposition will convey as much information as a real one. To say 'The sun is in mid-heaven at noon,' though a merely verbal proposition, will convey information to a person who is being taught to attach a meaning to the word 'noon.' We use so many terms without knowing their meaning, that a merely verbal proposition appears a revelation to many minds. Thus there are people who are surprised to hear that the lion is a cat, though in its definition 'lion' is referred to the class 'cat.' The reason of this is that we know material objects far better in their extension than in their intension, that is to say, we know what things a name applies to without knowing the attributes which those things possess in common.

Section 230. There is nothing in the mere look of a proposition to inform us whether it is verbal or real; the difference is wholly relative to, and constituted by, the definition of the subject. When we have

accepted as the definition of a triangle that it is 'a figure
contained by three sides,' the statement of the further fact that it
has three angles becomes a real proposition. Again the proposition
'Man is progressive' is a real proposition. For though his
progressiveness is a consequence of his rationality, still there is no
actual reference to progressiveness contained in the usually accepted
definition, 'Man is a rational animal.'

Section 231. If we were to admit, under the term 'verbal proposition,' all
statements which, though not actually contained in the definition of
the subject, are implied by it, the whole body of necessary truth
would have to be pronounced merely verbal, and the most penetrating
conclusions of mathematicians set down as only another way of stating
the simplest axioms from which they started. For the propositions of
which necessary truth is composed are so linked together that, given
one, the rest can always follow. But necessary truth, which is arrived
at 'a priori,' that is, by the mind's own working, is quite as real as
contingent truth, which is arrived at 'a posteriori,' or by the
teachings of experience, in other words, through our own senses or
those of others.

Section 232. The process by which real truth, which is other than deductive,
is arrived at 'a priori' is known as Intuition. E.g. The mind sees
that what has three sides cannot but have three angles.

Section 233. Only such propositions then must be considered verbal as state
facts expressly mentioned in the definition.

Section 234. Strictly speaking, the division of propositions into verbal and
real is extraneous to our subject: since it is not the province of
logic to acquaint us with the content of definitions.

Section 235, The same distinction as between verbal and real proposition, is
conveyed by the expressions 'Analytical' and 'Synthetical,' or
'Explicative' and 'Ampliative' judgements.

Section 236. A verbal proposition is called analytical, as breaking up the
subject into its component notions.

Section 237. A real proposition is called synthetical, as attaching some new
notion to the subject.

Section 238. Among the scholastic logicians verbal propositions were known
as 'Essential,' because what was stated in the definition was
considered to be of the essence of the subject, while real
propositions were known as 'Accidental.

Universal AND PARTICULAR Propositions.

Section 239. A Universal proposition is one in which it is evident from the form that the predicate applies to the subject in its whole extent.

Section 240. When the predicate does not apply to the subject in its whole extent, or when it is not clear that it does so, the proposition is called Particular.

Section 241. To say that a predicate applies to a subject in its whole extent, is to say that it is asserted or denied of all the things of which the subject is a name.

Section 242. 'All men are mortal' is a universal proposition.

Section 243. 'Some men are black' is a particular proposition. So also is 'Men are fallible;' for here it is not clear from the form whether 'all' or only 'some' is meant.

Section 244. The latter kind of proposition is known as Indefinite, and must be distinguished from the particular proposition strictly so called, in which the predicate applies to part only of the subject.

Section 245. The division into universal and particular is founded on the Quantity of propositions.

Section 246. The quantity of a proposition is determined by the quantity in extension of its subject.

Section 247. Very often the matter of an indefinite proposition is such as clearly to indicate to us its quantity. When, for instance, we say 'Metals are elements,' we are understood to be referring to all metals; and the same thing holds true of scientific statements in general. Formal logic, however, cannot take account of the matter of propositions; and is therefore obliged to set down all indefinite propositions as particular, since it is not evident from the form that they are universal.

Section 248. Particular propositions, therefore, are sub-divided into such as are Indefinite and such as are Particular, in the strict sense of the term.

Section 249. We must now examine the sub-division of universal propositions into Singular and General.

Section 250. A Singular proposition is one which has a singular term for its subject, e.g. 'Virtue is beautiful.'

Section 251. A General proposition is one which has for its subject a common term taken in its whole extent.

Section 252. Now when we say 'John is a man' or 'This table is oblong,' the proposition is quite as universal, in the sense of the predicate applying to the whole of the subject, as when we say 'All men are mortal.' For since a singular term applies only to one thing, we cannot avoid using it in its whole extent, if we use it at all.

Section 253. The most usual signs of generality in a proposition are the words 'all,' 'every,' 'each,' in affirmative, and the words 'no,' 'none,' 'not one,' &c. in negative propositions.

Section 254. The terminology of the division of propositions according to quantity is unsatisfactory. Not only has the indefinite proposition to be set down as particular, even when the sense manifestly declares it to be universal; but the proposition which is expressed in a particular form has also to be construed as indefinite, so that an unnatural meaning is imparted to the word 'some,' as used in logic. If in common conversation we were to say 'Some cows chew the cud,' the person whom we were addressing would doubtless imagine us to suppose that there were some cows which did not possess this attribute. But in logic the word 'some' is not held to express more than 'some at least, if not all.' Hence we find not only that an indefinite proposition may, as a matter of fact, be strictly particular, but that a proposition which appears to be strictly particular may be indefinite. So a proposition expressed in precisely the same form 'Some A is B' may be either strictly particular, if some be taken to exclude all, or indefinite, if the word 'some' does not exclude the possibility of the statement being true of all. It is evident that the term 'particular' has become distorted from its original meaning. It would naturally lead us to infer that a statement is limited to part of the subject, whereas, by its being opposed to universal, in the sense in which that term has been defined, it can only mean that we have nothing to show us whether part or the whole is spoken of.

Section 255. This awkwardness of expression is due to the indefinite proposition having been displaced from its proper position. Formerly propositions were divided under three heads--
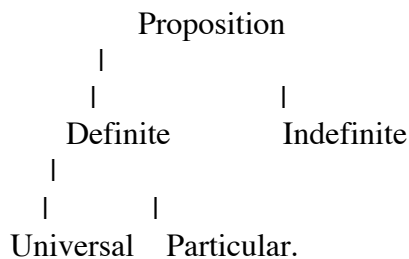
 (1) Universal,

(2) Particular,

(3) Indefinite.

But logicians anxious for simplification asked, whether a predicate in any given case must not either apply to the whole of the subject or not? And whether, therefore, the third head of indefinite propositions were not as superfluous as the so-called 'common gender' of nouns in grammar?

Section 256. It is quite true that, as a matter of fact, any given predicate must either apply to the whole of the subject or not, so that in the nature of things there is no middle course between universal and particular. But the important point is that we may not know whether the predicate applies to the whole of the subject or not. The primary division then should be into propositions whose quantity is known and propositions whose quantity is unknown. Those propositions whose quantity is known may be sub-divided into 'definitely universal' and 'definitely particular,' while all those whose quantity is unknown are classed together under the term 'indefinite.' Hence the proper division is as follows--

```
            Proposition
        |
        |               |
    Definite        Indefinite
   |
   |        |
 Universal    Particular.
```

Section 257. Another very obvious defeat of terminology is that the word 'universal' is naturally opposed to 'singular,' whereas it is here so used as to include it; while, on the other hand, there is no obvious difference between universal and general, though in the division the latter is distinguished from the former as species from genus.

Affirmative and Negative Propositions.

Section 258. This division rests upon the Quality of propositions.

Section 259. It is the quality of the form to be affirmative or negative: the quality of the matter, as we saw before (Section 204), is to be true or false. But since formal logic takes no account of the matter of

thought, when we speak of 'quality' we are understood to mean the quality of the form.

Section 260. By combining the division of propositions according to quantity with the division according to quality, we obtain four kinds of proposition, namely--

  (1) Universal Affirmative (A).

  (2) Universal Negative (E).

  (3) Particular Affirmative (I).

  (4) Particular Negative (O).

Section 261. This is an exhaustive classification of propositions, and any proposition, no matter what its form may be, must fall under one or other of these four heads. For every proposition must be either universal or particular, in the sense that the subject must either be known to be used in its whole extent or not; and any proposition, whether universal or particular, must be either affirmative or negative, for by denying modality to the copula we have excluded everything intermediate between downright assertion and denial. This classification therefore may be regarded as a Procrustes' bed, into which every proposition is bound to fit at its proper peril.

Section 262. These four kinds of propositions are represented respectively by the symbols A, E, I, O.

Section 263. The vowels A and I, which denote the two affirmatives, occur in the Latin words 'affirmo' and 'aio;' E and O, which denote the two negatives, occur in the Latin word 'nego.'

Extensive and Intensive Propositions.

Section 264. It is important to notice the difference between Extensive and Intensive propositions; but this is not a division of propositions, but a distinction as to our way of regarding them. Propositions may be read either in extension or intension. Thus when we say 'All cows are ruminants,' we may mean that the class, cow, is contained in the larger class, ruminant. This is reading the proposition in extension. Or we may mean that the attribute of chewing the cud is contained in, or accompanies, the attributes which make up our idea of

'cow.' This is reading the proposition in intension. What, as a matter of fact, we do mean, is a mixture of the two, namely, that the class, cow, has the attribute of chewing the cud. For in the ordinary and natural form of proposition the subject is used in extension, and the predicate in intension, that is to say, when we use a subject, we are thinking of certain objects, whereas when we use a predicate, we indicate the possession of certain attributes. The predicate, however, need not always be used in intension, e.g. in the proposition 'His name is John' the predicate is not intended to convey the idea of any attributes at all. What is meant to be asserted is that the name of the person in question is that particular name, John, and not Zacharias or Abinadab or any other name that might be given him.

Section 265. Let it be noticed that when a proposition is read in extension, the predicate contains the subject, whereas, when it is read in intension, the subject contains the predicate.

Exclusive Propositions.

Section 266. An Exclusive Proposition is so called because in it all but a given subject is excluded from participation in a given predicate, e.g. 'The good alone are happy,' 'None but the brave deserve the fair,' 'No one except yourself would have done this.'

Section 267. By the above forms of expression the predicate is declared to apply to a given subject and to that subject only. Hence an exclusive proposition is really equivalent to two propositions, one affirmative and one negative. The first of the above propositions, for instance, means that some of the good are happy, and that no one else is so. It does not necessarily mean that all the good are happy, but asserts that among the good will be found all the happy. It is therefore equivalent to saying that all the happy are good, only that it puts prominently forward in addition what is otherwise a latent consequence of that assertion, namely, that some at least of the good are happy.

Section 268. Logically expressed the exclusive proposition when universal assumes the form of an E proposition, with a negative term for its subject

  No not-A is B.

Section 269. Under the head of exclusive comes the strictly particular proposition, 'Some A is B,' which implies at the same time that 'Some A is not B.' Here 'some' is understood to mean 'some only,' which is

the meaning that it usually bears in common language. When, for instance, we say 'Some of the gates into the park are closed at nightfall,' we are understood to mean 'Some are left open.'

Exceptive Propositions.

Section 270. An Exceptive Proposition is so called as affirming the predicate of the whole of the subject, with the exception of a certain part, e.g. 'All the jury, except two, condemned the prisoner.'

Section 271. This form of proposition again involves two distinct statements, one negative and one affirmative, being equivalent to 'Two of the jury did not condemn the prisoner; and all the rest did.'

Section 272. The exceptive proposition is merely an affirmative way of stating the exclusive--

  No not-A is B = All not-A is not-B.

  No one but the sage is sane = All except the sage are mad.

Tautologous or Identical Propositions

Section 273. A Tautologous or Identical proposition affirms the subject of itself, e.g. 'A man's a man,' 'What I have written, I have written,' 'Whatever is, is.' The second of these instances amounts formally to saying 'The thing that I have written is the thing that I have written,' though of course the implication is that the writing will not be altered.