CHAPTER VIII

TYPES IN LOGIC - THEIR IMPACT ON

UNIVERSALS AND PARTICULARS
In the preceding chapter, the nature of logical structure was investigated. The expectation of the logical structure minimally, is the maximum of 'compactness' of the individual. To put it differently, the ordered systems must be so constructed that they may be considered even as an individual of any other system. Now, such an understanding of individual has to be a postulation ultimately, since there is a limit to carrying out even logical analysis, and both, the highest limit (of considering individuals) and the lowest limit (of considering individuals) must not complicate the very basic notion of individual as a unit.

1 Goodman says that every individual is exhaustively divisible into abstract parts, but abstract individuals are those that have no concrete parts. Cf. 'Structure of Appearance'. (7-14)
In the present chapter, the very phrase 'types of logic' may be questioned from the point of view of a general (and the most sound) understanding of logic. We do not argue for or against the systems of logic, but shall contend for the purpose of the thesis that consistency alone should form the guiding principle of any logic, any analysis.

Different types of analysis may lead us to assume that there are different types of logic. For instance, deep level analysis may tend to suggest a logical system which is formal; whereas surface level analysis may tend to suggest a system which is rather less formal or informal. Of course, these are the broad headings under which many systems find their places.

We could have used the word 'analysis' in any of its various meanings, instead of only depth level and surface level analysis. R. Robinson, in his book 'Definitions' brings out the nature of analysis at some length. However, the two important and interesting senses, (from the point of view of this discussion) in which the word is used are

i. reduction of propositions to reference

ii. or reduction of propositions to experience.

Both these views have been taken note of in this chapter. Our understanding of the individual as a unit of a system incorporates both, pure reference and experience; we have incorporated experience already, by admitting that universals
and particulars may be so labelled by the standards of the principles of classification of various nature.

1. Types of Logic

Types of logic are thought of because there are different criteria by which we measure an argument. Waismann opines that each system has a logical structure of its own, and it is this logic which determines the meaning of some words to some extent.

The same point has been made by Stephen Körner in his book, 'Categorical Frameworks'. He holds that there is, as has been noted by previous thinkers, a close connection between men's classificatory schemes, their standards of intelligibility and their metaphysical convictions. There is an interconnection between 'the logical and categorical structure of factual and practical thinking'.

Following our terminology, it may be asked if logical structure is independent of linguistic structure. Yes, logical structure is independent of linguistic structure. As we have seen earlier, linguistic structure does not stand deep level analysis. Equating linguistic framework and logical framework, or subjecting logical framework to language convention will definitely dilute the force of any logical argument. There is then, always the room for satisfactory but inadequate answers.

2 Of 'How I see Philosophy'. The article 'Language Strata'.

2 Cf. 'How I see Philosophy'. The article 'Language Strata'.
No problems will then be solved finally. All problems need not suffer suspension; some of them could be easily understood as concluded for once, if logical method is applied. One such problem of which I am reminded, is the problem of individuals.

We have accepted that it is not logically impossible for two things to be exactly similar. Hence, no universally acceptable definition of individuals need be given. This may be the case even with those words which have too many deviations. True, that even deciding that a genetic definition cannot be worded, is an achievement, which is surely due to logical method. It is the case because there may be a definition which does not but fit the logical framework. There may be for instance, a definition of an individual which may have nothing to do with logic. For instance, an individual in occultism may be the subject of experiment, and an individual in sociology may be the unit of a social system.

But a linguistic framework would be able to give various definitions. This is because the linguistic framework is more context-dependent than logic-dependent.

There is a sensation that at times, an attempt has been made to subject logical structure to context. This has been tried by taking the help of metalanguage. And that will mark the beginning of the never-ending trait of multiplying entities. Moreover, it defeats the entire purpose of seeking application of logical framework, by shifting grounds, from this world to
the 'other world'; the metaworld, where again, our logical framework may not be applied.

However, accepting consistency as the principle of logic, will eliminate the concept of 'types of logic'. There may be degrees of applying the principle of consistency. Sometimes, consistency will have to be only internal, or only between few individuals, or even between individuals that lie external to a system. The sole concentration is on the interpretation of the individuals. They may vary right from being the logical symbols and material entities to pure abstractions.

There may be 'types in logic' in the sense that the principle of consistency may be accompanied by other more or less specific principles of logic. The more is the accompaniment of such other principles of logic apart from that of consistency, the higher is the degree of precision but lower is the degree of application.

The first principle of consistency is bound to be present in any system whatsoever. And language is a system; more social and psychic, than logical. However, it is logically possible to keep 'logical framework' linguistically dependent, but it is trivially true that 'linguistic framework' cannot be logically independent.

Hence it should be evident that the 'types' or 'kinds'
of logic are due to the nature of the principles which may accompany the constant factor of consistency. They are responsible for the place of a system in the logical hierarchy.

Universals and particulars will have to be comprehended by their place in a system whose position on a logical hierarchy may thus be understood. Once the meaning of the words is thus accepted, keeping in view its logico-linguistic dimensions, then, it is easy to expect its dispositional function. Obviously they cannot have a unique function, or we would be talking like most traditionalists.

So far, there has been no attempt at defining the words 'universals' and 'particulars' in this essay. Nor has it been definitely said as to what they designate or what they refer to, or what they mention, or in what sense they are used. Different thinkers like Quine, Strawson and Frege have used one of these senses of the words to make their discussion less ambiguous.

Other traditional thinkers and schools of thought, both in East and West, have attempted to discuss the subject from a particular point of view; often metaphysical. Of course, it was also discussed from the point of view of logic, but such instances are relatively few. For instance, the Buddhists and the sophists, and some medieval philosophers which later on came to be called nominalists.

We have only named some principle while talking about
universals and particulars, and we have called it the principle of classification. It has been said that this principle need not be only logical. It may be quite complex. Nevertheless, it has to be pointed out in the interest of consistency. A point of view may be criticised from another point of view but this process will not help any clarification but only hinder it. Hence, should we but keep an eye on the principle of consistency while studying a problem, it would save undue complications. At least there would be no ambiguity. We have seen that the major cause of ambiguity is the ambiguous criterion.

It would not be beside the point to discuss the topic from the point of 'systems of logic', since in some systems of logic, the words universals and particulars have each found a definite place.

However, for the sake of convenience, we may take up the words as they occur in what is roughly called the formal and the informal logic. Yet, it should be remembered that the primary interest of the discussion does not lie in thus bifurcating the subject, but far from it, in seeking an undercurrent of thought that runs through them. If we can notice this, then we may find some justification in using the same words for a 'unit' in 'formal logic' and for using it in 'informal logic' - and for calling it a universal. Same may be said about the particular, that some reason may be legitimately given for calling a word 'particular' in one system and 'particular' in the other; and
where units are words, the same word may also be called a
'universal' in some other systems. And hence for proper an
understanding, we have taken recourse to our suggestive phrase,
the principle of classification.

Before we proceed with the formal and informal systems,
an interesting observation must be mentioned.

Even when a primary school student solves an exercise
in grammar, he is expected to be perceptive to some extent.

The exercise may run thus:

"Smita plays chess".

Form two questions of the nature,

i. 'Who plays chess?'

ii. 'What does Smita play?'

On the same pattern, work out the following sentence:

'Ashok goes to the market'.

(Form two questions on the above pattern).

Now, the student is expected to form two questions not
mechanically, but intelligently.

Hence, the questions should be,

1) 'Who goes to the market?'

ii) 'Where does Ashok go?'
The student naturally changes the interrogation because 'market' (in the second example) does not correspond to 'chess' (in the first example), 'semantically', though it may correspond to its counterpart in another sentence, grammatically, syntactically; and if symbols are used, then even logically.

But a school-student is expected to understand the exercise only with respect to the meanings of the grammatical positions such as the subject and the object. Thus, the words 'Jinita' and 'Ashok', 'chess' and 'market' are not only meaningful names, but definite positions in the grammatical contexts. But an acquaintance with rules of grammar alone will not help; there is the presupposition accompanied, that the student is also familiar with their meanings. Here technical knowledge of grammar will not give a complete picture. And hence the example; it suggests that if proper communication is expected, then the words will have to occur in a certain style which also needs grammar.

An elaborate discussion of this kind is carried out by Wittgenstein especially in 'Philosophical Investigations'. This observation has some bearing on the discussion here. It has its index pointed to various dimensions of the words.

We shall be confronted with some dimensions of universals and particulars while dealing with different systems of formal and informal logic.
While dealing with the contexts in which the words were used, it has been pointed out that the context and the word affect each other reciprocally. Moreover, there was an attempt to make precise, the comprehensive meaning of the word, by analysing the context.

2. Place of Words in Formal Systems

In the book 'Ontology and the Logistic Analysis of language' by Guido König, a systematic study of the above topic has been made from the point of view of logistic. The author has discussed the problem of universals as the problem of interpreting predicates. He has made a study of the outstanding philosophers of the contemporary thought and presented their individual views and methods of what they mean by predicates and how they are to be interpreted.

But I think that the problem of universals and particulars is basically, a problem which occurs in the world of existents. However, one may argue for the case that the problem of universals (not so much the problem of particulars as studied in relation to universals) is the problem of (i) abstract entities, (ii) general names (iii) designation (iv) predication, and so on. These positions, or even their combinations, may be noticed in the opinions of different philosophers.

Nevertheless, some aspect of the set-theory, for instance, the class-member and part-whole relationship comes nearer to the
relation between universals and particulars. After all, the problem of relation between them is also an aspect of the problem of universals and particulars.

But such a relation has never been mathematical, spatial, physical or even strictly logical. Though it has been considered along these lines.

Ultimately, the so-called relation has been more conceptual, more informal, and more arbitrary. This point may be evident if the context in which the words occur, is understood.

By formal system, it is understood that the system has its decided form; this form is governed by rules which may be the fundamentals or axiomatic or accepted by convention. And hence, they differ in the degree of rigidity; e.g. a mathematical system may be more rigid than a scientific system or a strictly logical system. It is quite possible that the set of rules specific to a system may combine with other set of rules specific to other systems.3

Some set of rules may be common to all systems, e.g., the so-called laws of thought. We may say that at least the rules of consistency and hence non-contradiction are those which must be accepted, the moment we accept anything as a system.

a) **In Mathematics**

Though the words universals and particulars are not used,  

3 Cf. Strawson's views on 'System' (?56) in his book 'Logical Theory'.
we may trace some of the ideas that have universality or particularity. By universality, we mean the range of application to its members, concepts or instances. By particularity, we mean the member, concept or an instant. What differentiates the two is definitely the numerical identity of particularity from the non-numerical identity of the universality. It is worth noticing that as yet, no definite criterion of distinguishing the universal from the particular is forthcoming. And it would be futile to expect one; the inherent difficulty lies in the meanings of these words. And often, meaning and criterion are so interwoven that it is not easy to separate them even conceptually. The more non-empirical the context, more difficult is the task. In empirical contexts, the criteria like quantity, quality and relation may be available simultaneously. It is the criteria or their combination which gives the meaning to the principle of classification, sufficient enough to understand the various opinions on the problem of universals and particulars.

In mathematics, numerical identity is a well-known concept. It is the idea of a unit, e.g., number five; this pen, this knot, this tone, etc. may also be considered as units, even if some of them might not appear strictly mathematical. (However, there is an opinion of interpreting music on mathematical model). The edges of all identities are not equally sharp, as may be seen from above examples. Number five is a distinct unit with well-carved edges. Not so with this tone of music. This
difference is inevitable. It has its roots in the initial difference of the field of study.

But there are other kinds of identities which may be called non-numerical identities; A non-numerical identity of the concept, is a member or an instance of any general class, set or group. But it is not on par with the numerical identity. Non-numerical identity has existence or instances or 'a circulation' in life - like coins which have circulation in market, but not the value (in terms of gold). Similarly, universality cannot be in circulation by its very character, and hence it may be non-numerical. Nevertheless, it has instances. It also has types. For example, universality of cow is not the same as the universality of number-system, or the universality of music, or even the universality of the laws of thought. The difference between one universality and the other is made explicit by its instances, just as the difference between one particular and the other particular is made explicit only when we relate it to its corresponding universal. Otherwise, a cow is as much particular as the shadow of the cow, or pegasus. Needless to repeat the obvious that even if such units are treated as particulars by thinkers like Strawson, (for he calls them all particulars in his book 'Individuals'), they differ constitutively. Sometimes, the labelling is only conventional, and often misleading and confusing, as is the case in above example. Russell too has not finally decided the nature of particular, despite his mathematical
approach. He says that whenever appears as a particular is in fact a class or a complex of some kind, after all. If this is the case he says, then the axiom of infinity must of course be true. Otherwise, it must be theoretically possible for analysis to reach ultimate subjects and it is these that give the meaning of 'particulars' or 'individuals' (Cf. 'Introduction to Mathematical Philosophy'; The article on 'The axiom of infinity and logical Types').

Thus, numerical systems have for their instances numbers, and cowness has for its instances, the cows, and music has for its instances seven tones and their combinations.

But universality of one kind differs from the other just on this point. There is no question of the one being more pronounced and well-formed than the other. This concept of non-numerical universality is nothing else but what has been called in our essay, the principle of classification.

We were lead to discuss the above point because we said that in mathematics, universals and particulars are decided by looking at their numerical and non-numerical identity. Obviously our concern with mathematics is incidental; yet, we take a note of its influence on our subject because logistic includes it; so does mathematical logic; and we are concerned with formal systems which use the words universals and particulars or their analogues.
It is my strong contention, that the one singular 'universal' (if at all this word is needed to convey the idea), is the concept of infinity; of course, the concept is non-numerical, and hence the universality. The formulation of different systems is made possible due to such a concept. I shall presently make the point clear.

Even if one argues that there is nothing even to be conceptualised as infinity, our purpose is served. Whether this concept is named positively, or whether it is negated, the discussion remains unaffected. Truly speaking, denying a concept, or not admitting a concept, is to deny it a meaning, and render it non-significant. That is alright, since it is easily agreed that there is nothing like infinity, no place to be reached, no climax to be attained, no height to be scaled or no depth to be fathomed. It is neither probability about any system or an event. Nor is it probability within the events of a system. It is not even an hypothesis, because hypothesis has a personal element since it is we who choose. This is not the case with infinity. We have no choice as regards its acceptability or non-acceptability.

If at all there has been a fair recognition of the concept of infinity, it is only incidental; some traces of its meaning are available when there is an attempt at defining the concepts of logical possibility, or a logical hypothesis. Such concepts are sufficiently closer to the meaning conveyed by the concept.
of infinity. I may explain it thus: it is not logically impossible for two things to be exactly similar; nor is it logically impossible for them to vary in an infinite number of dimensions. Thus, logical possibilities are the suggestions that other possibilities or impossibilities are the result of determination of an area; mostly arbitrary. An instance of logical hypothesis would be this; it is not logically impossible for there being other universes like ours — and they may be infinite. Thus, logical hypothesis renders a theory probable and saves it from being false. In fact, there cannot be one percent certainty of a theory. Karl Popper's famous principle of falsification is a limiting agent. It sets limit to a theory's being permanently acceptable. The moment it is falsified its authority may be challenged. Definitions of infinity have been attempted, and successfully, but within the system concerned.

Thus, by accepting that there may be other possibilities in defining, describing, utilising or employing anything, we have already accepted different criteria. In other words, (to put it rather vaguely for the purpose of discussion), we may accept the possibility of infinite criteria. They may be looked upon as the 'instances' of infinity, in the sense of being fragmentary. It is possible to conceive of an abstract system wherein 'infinity' may be called universal and the different disciplines may be called particulars.

Thus, every system, with its first principle at large is
particular in this sense. We may drop the word 'infinity' if we like, but then we will also be entitled to drop the word universal. And then we are left with particulars and particulars. We cannot get away with these, because they are in 'circulation' all the time. As far as practical approach is concerned, we may ignore the 'gold' that the currency reserves but this does not mean that the currency has no value; it is backed by its value in gold, whether we are aware of it or not. Analogically, the particularity of the first principles of various disciplines and their interrelationship is owing to the numerous logical possibilities in which the system could have been formulated. Hence an element of arbitrariness in the first principles of the systems. It is due to infinity. Whether we recognise it when the system has been consolidated and successfully applied, whether we make provision for it while making the first principles or not, does not affect the position that the only single universal, if we recognise it with the help of analogy - is infinity.

Or, we should drop it and say that there are only particulars and particulars.

Or that we may call one unit particular and the other universal by the standards of some internally accepted classification; that is to say, we may talk relatively. We may talk of types of universals. By the standards of some principle alone the discussion on universals and particulars can be meaningful.
or, a universal is a misnomer. It is then a mere postulation which is assumed in order to communicate effectively, the variety of thought and existence.

It is possible to argue that the concept of infinity in mathematics is not very different than the one we have talked about. In brief, it is the expectation of the 'nextness' both, in philosophy (metaphysics) and in mathematics. For, even before we are able to decide the disposition of a symbol, it is necessary to have first a theory of numbers. And it is presupposed as 1, 2, 3, ...n or as a, b, c, etc. (specialisations in mathematical fields will have their specific mode of supposing the fundamentals).

However, in relation to universals and particulars, the argument on infinity boiled down to this: eliminate the concept of universal, or accept the concept of infinity. By accepting the former suggestion, particulars alone will have their sole play. By accepting the latter, we will accept universals too, but carrying the argument at full logical length, we can accept infinity itself as universal, that is, accept the position that universal and infinity are not distinguishable, and that universals are relative. Avoiding relativism would only lead to the view that universal is a postulation.

A Note on 'Infinity'

It is interesting to note that though infinity in
mathematics claims explanation of the structure, it has an origin which is worth pointing out. This is because the origin is comparable to the concept of infinity in metaphysics which claims a structural explanation of the world. Both the origins arise out of a common expectation of the 'nextness'.

Due to this common expectation, the understanding of the word infinity, whenever used, is suggestive; only its function differs.

An expectation of such a kind cannot be brushed aside as mere psychological. It has a definite justification. However, it is more pronounced in metaphysics than logic and mathematics. That is because of the initial distinction that we make in the disciplines. Metaphysics presupposes a structure - no matter what distinctions we make in types of metaphysics. And structure has parts. Hence, the talk of infinity is often termed as the talk of whole and part. Now, this part-whole relationship entered mathematics too. Mathematics also accepted the series, the continuity, after the metaphysical vein to expect 'Otherness'. Otherness becomes more precise and is called, 'nextness'. The idea of infinity perhaps arose through contemplation of physical universe.

Mathematics will not entertain the real problems that remain unanswered, after the infinity about primes 1, 2, 3, 5, 7, 11, 13, is established. That there is no largest prime was proved by
Euclid in 3rd century B.C. His argument is as fresh and clear today as ever. Some such fundamental conclusions of mathematics, and the vague itching of the metaphysics that the world is infinite, has a parallel reasoning. Quite understandable that metaphysics has not given a technical garb to infinity, as in mathematics. However, it is not necessary to be more precise than the discipline demands.

There is yet another common approach to infinity. It is the discussion on whole and part. The following argument will show how the mathematicians and metaphysicians joined hands to concede to infinity.

Until recently, mathematicians were operating on infinity indiscriminately without a clear understanding of its nature. The result was that they obtained a bundle of contradictions and absurdities. In spite of this, Cantor and Dedkind could give a definition of infinity.

But our interest lies in the concept of whole and part incidently and in infinity, basically; Cantor took a pair of contradictory propositions in which both sides of the contradiction would be usually regarded as demonstrable, and he strictly examined the supposed proofs. He found that all proofs, adverse to infinity, involved some principle.

On the other hand, as was pointed by Russell who strongly resisted the use of part and whole in mathematics, that the proofs
favourable to infinity involved no such principle. We can understand Russell's advocacy for infinity, since, he believed in it as metaphysician and only subsequently, as a mathematician or logician. His constant request was to minimise distinctions as far as possible.

We understand his position; even though any logician of his rigour would admit in common sense, day-to-day experience that the whole is greater than the part, it can be said that the whole is not greater than the part, if we drop the spatioue maxim.

Whole part maxim was hence seen as 'destructive to mathematics'; there is no need to stop at 'whole'. In fact, whole-part maxim is true of finite numbers; for instance, we can say that Maharashtrians are 'only some people among Indians'; herein both the terms are finite. But when we come to think of infinite number, this is no longer true. This breakdown of maxim gives us the precise definition of infinity. 'Any collection of terms is infinite when it contains as part other collections which have just as many terms as it has'. Infinity was seen to be so dominant a concept in mathematics that Hermann Weyl remarks, 'mathematics is the science of the infinite'.

Thus, where the question of part-whole arose, mathematics and metaphysics have argued similarly. For, where mathematics tries to enlighten us on infinity by making such statements as
there are more points in space, more moments in time, than there are finite numbers, metaphysicians clarify further by giving such an example; we may mention any day. Now, it will be sooner or later written and hence no part of the biography of a person is unwritten. This paradoxical but perfectly true proposition depends upon the fact the number of days in all time is no greater than the number of years.

Having thus examined the grounds for infinity in mathematics (and metaphysics), which is the home discipline of the word, I will state in brief my thesis about infinity in language.

Certainly, to ask what infinity is, is not to ask for the character of any object or even number. In modern philosophy it can only be a request for definition of infinity. But, no definition of any word would even be possible if we are constantly reminded of infinity. As Max Black said, "We do not take into account the freaks while we decide the definition." Why should we be bothered about them later? There is no provision for them in a regular, well planned - definition.

But infinity would leave all possibilities open. Impossibility has no place in infinity. Logical impossibility has a place in the universe of discourse, not infinity. Mathematics and logic and philosophy are all universe of discourses; their summation does not aid up to infinity. Infinity is not the summation of the known and the unknown universe of discourses.
It is no summation at all, for if it is the result of any summation then it too becomes determined and limited, like any universe of discourse. Thus it is not possible to define infinity in language, unless we want to reduce it to a functional concept as in mathematics.

And yet, no definition could be possible in language, without an implicit assumption of infinity.

The idea is this; if we are able to give technical definitions and definite meanings to everything, it is due to segmentation of some portion, or concentration on some sector. This has been called the context, or more technically the framework of reference or the universe of discourse.

Now, the relation between the universe of discourse and infinity would be arbitrarily understood as follows; from the point of view of infinity, nothing seems to have any meaning. From the point of view of the sector, which we will call the universe of discourse, everything can have meaning. To give meaning, is to determine the disposition and also the relations and interrelations. Thus, words have more or less steady meanings in the universe of discourse. This is about the words. They are indirectly affected by the concept of infinity.

Where words do stand for things, it becomes an interesting observation. There things can be described in many ways, but they become vaguer and vaguer, as we extend their universe of discourses.
Again, the idea of infinity is due to the presence of things in the world. Had there been countable things, measurable time and accountable space, then perhaps the concept of infinity would have been useless. But this is not the case precisely because space-time and things have posed us a problem age long. We do not claim to have solved, though we accept some explanations and conventions functionally.

The meaning of 'thing' is the concentration of everything. If things are fundamental, then their understanding is definitely affected directly, by their specific context, and indirectly by infinity.

We have seen in what it is so. Of course, it is a well-known thesis that names do not exhaustively describe the things. But exhaustive description of anything is not possible. Because then, we will have to take a viewpoint from infinity. And when nothing can have exact description then we need be satisfied with adequate description, which is necessarily from a definite stand; a definite context.

In order to have meaningful discourse, we, as it were, carve out a portion of infinity. We may succeed in giving theories about the internal relations, and even external relations, but how are they ultimately posited is still a standing question.

I will sum up thus: by putting on the sun-glasses, we
only make an adjustment for some reason. The glare outside is not affected by it. And it will never be affected even if all beings with vision, wore sun-glasses for ever and claimed that there is nothing like glare.

Infinity is the glare outside.

(b) **In Logic**

Systems of logic are numerous. These days, they have become rather complicated owing to their tendency of including mathematical models and symbols. Traditional logic dealt with some general nature of argument which accept some fundamental laws of thought. Nature of argument divided the subject into inductive and deductive logic.

In one of the many senses of the word universal, the traditional laws of thought are also called universal in nature. It is because they have the widest application compared to the other principles. They are applied in all thinking whatsoever, scientific or non-scientific. We may notice that (i) the range of applicability and (ii) the internal consistency, form the principle of classification. The laws of thought have been shown to have satisfied these standards and hence they may be said to have a universal application. We need not call them as 'universals', for that would be twisting the language to the point of making it artificial unnecessarily. And hence when we
understand them and their nature, no question about its relation
to particulars arises. Nor is it necessary to ask whether laws
of thought have particularity. Such questions arise due to the
habit of thinking in terms of dichotomy only. The misleading
tendency to demand a counterpart of universal, namely particular,
and a counterpart of universality, namely particularity, must be
shed away. Hence onwards, we shall accept this point as
understood.

In any logic - call it formal-informal or deductive-
inductive, or model, deontic, mathematical - to name but a few
branches - there are principles of procedure. For instance, the
principles of formal logic are different in the sense of being
specific to it, than the principles of informal logic.

Now, as specialisation increases, there is an advancement
in the efficacy of that field. The logical system, there becomes
more precise. However, simultaneously there is a detraction in
the range of application, which is the principle of classification -
that enables the traditional logicians to call laws of thought
as universal.

We may also observe one more point: Consistency is not
affected, no matter how narrow is the range of application. 4

4 Consistency - the sole first principle of any systematic
thought. It alone is common to all systems of logic.
Should then, the laws with diminished range be called universal in application?

This question may be answered affirmatively by making the range-universal, limited to that field. Enough has been discussed about this in the chapter on 'Role of Context'.

(c) In law-statements

These statements hold the topmost position on the universality hierarchy according to Karl Popper in his book 'Logic of Scientific Discovery'. We have mentioned them in order to uphold the thesis that even law-statements have a conditional universality; it is the universality which is due to the mode of stating the law-statements. In other words, their universality is not above challenge, as is the case with the laws of thought.

Of course, it is now evident that the mode of stating the laws makes all the difference between absolute universality which is the claim, and the relative universality, which is more acceptable.

The modern emphasis on using the symbols and then applying the rules of inference has not removed the relativity of universality. Though it is true that we do not treat the quantificational expressions, as we treated them in traditional logic. The traditional universal propositions $A$ and $E$ may be expressed as $x (Fx \supset Gx)$ and $x (Fx \supset -Gx)$ respectively. We may label these as a and e respectively. Now, these do not have
existential import. Therefore, the question as regards their
universality simply does not arise. Because a-statements and
e-statements must be true even if there are no fs. For, if
there are no fs, Pₓ is false of every individual x; hence, in
accordance with the truth table for ⊨, Pₓ ⊨ vx must be true of
every individual x.

Such indisputable consequences could be expected if and
only if law-statements are expressed as logical formulas or
logical expressions.

Analytic philosophers have their strong objections to
any claim to absolute universality. Not that they use these
words. They merely analyze the statements, especially the
claim to finality.

Now, according to Popper, abstract theories are mere
instruments at understanding the world. They are not genuine
assertions about the world. However, there is another difficulty
with such explanations. They might have been the result of
repeated instances, but then it may be challenged whether the
established universality of the theory to the status of law
holds for even one single instance.

We agree with him, when he says that we theorise, even
while stating a fact, no matter how trivial. And hence, a law-
like behaviour may quite be the case.
This is so, because we cannot step out of language. The language may be strictly formal, or it may be ordinary. And at times, universals are the result of theorising, especially for those (e.g. wisdom) who treat the problem of universals, as the problem of using general names: it is merely a shift of emphasis from using singular terms to general terms, he holds. The traditional theories of conceptuation and nominalism are the attempts at theorising the problem of universals. They claim to have dispelled the realist's illusion that behind every word we call universal, there exists an entity.

But since theorising cannot be avoided as long as we expect a systematic and intelligent communication, it is obvious that an attempt at communication exhibits some degree of universality.

To some extent all statements will have some degree of universality, because of the presence of some words. Now, the presence of some words automatically suggests that the statements are about the instances which behave according to some observable law. But all instances do not behave accordingly; that is, the law behind them is not observable. The predication of such instances transcends empirical experience, says Popper, and hence, they have the highest degree of universality. In all predication some degree of universality is present. But not like law-like statements. "They are the highly disposed universals" both, according to Popper and Carnap.
In logical Calculi.

1. Propositional Calculus

When propositions are symbolised, we deal with symbols. Symbols may be constant or variables. This is true of every symbolisation.

In propositional calculus, p, q, r, s, .... which stand for propositions are variables; the copulas (connectives) and the brackets (if used) are constants.

Not that the words universals and particulars are used. But the idea of constancy, which is an ingredient of the idea of universality can be observed in constants. As the names suggest, constants and variables have their names due to this characteristic. But of course there is another factor behind their names. It is their interpretation. They are not spatio-temporal; nor do they have any immediate relation with the phenomenon that the symbols represent. (Remotely, especially when truth-values take into account their intension too, the symbols may be affected. But this would form a logical controversy).

Though of course, the symbols and the signs are rather conventional than final. And so is their universality.

The variables, p and q, the constant \( \vdash \), and their interrelationship form the value of the expression; the value
is called the truth-value, which is governed by the rules of implicative inference. The rules of implicative inference are accepted as the rules by definition; this is true of alternation conjunction, negation and equivalence. Now, the standards by which definitions are backed decide the types of definition. Two general headings under which they are discussed are synthetic and analytic. Conventional element is almost nil in highly technical definitions which are analytic. But of course, the very concept of analytic definition is not defined uniquely, and hence, no definition whatsoever can always remain above challenge.

Thus, universality of the rules of inference is the most acceptable one, and less fallible - despite the fact that convention may be absent. Of course, where the convention is accepted, as in the case of symbols, no question of challenge arises. And hence the constancy (or relative universality) of constants is infallible too.

Now, consistency is maintained throughout; both, as regards the formation of the rules, and their interrelation within the complex. This point is present in any system, but the emphasised characteristic herein is the infallible status of the rule, the convention, and therefore the constants.

ii. Predicate Calculus

The bound and the free variables in this system of logic
are thus defined "An occurrence of a variable in a formula is
BOUND if and only if this occurrence is within the scope of a
quantifier using this variable". (Cf. Suppes 'Introduction
to Logic', Page 55).

Thus, the quantifier '\(\exists x\)' uses the variable 'x'; the
quantifier 'y' may use the variable 'y' as in this formula.

\[
(y) \{(\exists x) (x \supset y \cdot (z) (z = 2) )\}
\]

Herein, we have to understand the universality as the
'scope of the variables' bound, or free.

A free variable may be defined as Suppes does. (Cf. Ibid)

"An occurrence of a variable is FREE if and only if this
occurrence of the variable is not bound''.

e. g. in the formula

\[
\exists x \{(Fx \cdot \exists x)\} \lor \forall x
\]

the last occurrence of \(x\) is free.

iii. Class - Calculus

The logic of set-theory is lax compared to the propositional
and predicate calculus. True, that the admission of existential
proposition in predicate calculus makes it less formal, compared
to propositional calculus.
When we take notice of existents, the concepts of universals and particulars become quite clear; for example, a unity (individual) like a cow is called a particular, because it is the value of the variable which is bound to the existential quantifier 'Ex'.

The value of that variable which is bound to the universal quantifier may be called universal within the range of applicability of the universal quantifier, as in the formula

\[ \exists x \left( (Fx \land Gx) \cdot Fx \right) \cdot Gx \]

Scope of quantifier

or \[ \exists x (Fx \cdot Gx) \]

Scope of quantifier

However, if the variables stand for natural-classes then they exist (or subsist) or 'are there'.

Other classes which are not concrete, may have individuals which may not be of the nature of thing, but relation, action, property or any combination of these. That is to say, they are non-concrete.

While this above discussion is as regards the structure of proposition and its symbolisation even with regards to predicates, subjects and their quantification, the discussion in class calculus is with regards to units which have varied constitution. The units are not propositions (p, q, r...) or
subject, quantifier, predicate like $\exists x (Fx \cdot gx)$. In brief the logical relation in which the copula stands to other terms of the proposition is the component, which should be properly noted.

Traditional logicians did not point out the difference between component and copula. Component 'is' in the following examples is different every time.

i. He 'is' Ramu.
   This may be a statement of fact.

ii. Today 'is' Thursday.
    This may be the case of identity.

iii. Twice two 'is' equal to four.
    This may be an indicative mood.

It is also a matter of mathematical certainty.

These then, are some prominent relations in which the classes are related to their members.

In class-calculus, the units are the individual members of the class. Both the complexes, the class and its individuals or the set and its members, are not decided by their logical positions in the propositions, or by their being the values of the variables. They are not decided by convention or by an accepted rule of logic. The class and the set, along with their members, are 'given' distinct, no deliberations are employed
as in other systems.

It may be argued that the above contention holds only for natural classes, like men, animals, stones; but it does not hold for non-natural classes.

But this is not the case. It holds good in classification, or set-membership. Any controversy can be present only with regard to the initial stage; that is, whether we hold the distinction to be natural, or pre-suppose arbitrarily, or pragmatically. We have the mathematical number system. Once we accept the series, we do not question the occurrence of consecutive numbers or the concept of infinity. We may of course, limit the field by laying conditions like 'all prime numbers between 20 and 50; or, 'a series of real numbers'. And then, we continue to treat each number as a term on series, an individual - as normally as we consider every human as a member of a class, every animal as a member of another class, and every stone, as a member of still a different class. There is no difference of logical reasons between the treatment of the natural and non-natural class.\(^5\)

It is generally the case that the member of a class or set are called particulars in relation to their respective classes or sets.

Needless to elaborate that there will be various universals,

\(^5\) Concept of Jāti in Indian Philosophy recognizes natural class.
as there are various classes or sets. Some classes or sets like redness, cows, numerical theory, beauty, space etc. are treated as universals, since they have for their respective members, instances or objects or actions or relations. A class with only one member too may be called a universal with respect to the single instance. Of course, the instance is not intelligently satisfying. Does it not sound absurd that sun-ness and moon-ness has one member each and hence this class is universal, while sun and moon, the respective particulars? It seems that an approach to these individuals as 'singular instances' is much acceptable, and then, there may not be any demand for their classification as universal and particular. But often, a controversy is raised and settled by pointing out the linguistic and logical modes of designating some words and things as universals and particulars. Such designations give rise to the controversy. Recent logic poses to have dissolved the issue by symbolisation, and techniques of logic. But it is an over-enthusiastic claim. Differences will persist, because the symbols may be interpreted variously; in the formulae, p \lor q, and \( \exists x (Fx \cdot gx) \) and \( x \subseteq y \), there are no restrictions over the interpretation of the variables.

But, what we hold to be the solution of the issue depends on the nature of the issue. There is no unanimity of standard. An issue like 'What is the cost of four chairs, if one chair

6 Earth has one moon, there are other planets with 'many moons'.
costs rupees forty?", has to be unique. There can be no two answers, because the very ingredients of the question have their peculiar nature. Of course, there may be different methods of coming to the same solution. We may answer that the cost of four chairs is rupees one hundred and sixty, either by multiplying forty with four, or by adding up four rows of forty each. The answer is not affected. It is true that this is the privilege only of a few selected problems. Rest of the solutions have more or less, a standard solution. This is the position because the questions themselves may have ingredients which are open to various interpretations. For instance, how exactly shall we answer the questions like

i. Is democracy useful to India?

ii. Was Shakespeare the master author?

iii. At what temperature will water boil in Baroda?

iv. Or, 'How is that movie?'

When philosophers detaste some particular answer, they put forward some such argument on the grounds that the mode of asking questions had already created an environment, and built up an expectation. And hence, the constant cry of some thinkers is not without reason. When it is asked, "Are there universals? Are there particulars? How are they related?" Or even, "What are universals? Are they words, things, concepts, actions, relations? Are they general words? Are they abstract entities?" enough has been already suggested by the manner in which the questions are formulated.
In logistic, the phrases like individual descriptions or definite descriptions are used to convey the idea behind the word 'particular'; the phrase 'predicate expression may be used for the idea behind the word 'universal'. That is, there is an attempt to convey the precise meanings of these words by reducing metaphoric adjuncts.

But such technical deliberations may inculcate clarity and precision - at the expense of impoverishing the original word of its spirit. Symbolic representation and logical formulations do not exhaust the word of its meaning and its capacity of conveying the subtleties of its context. And this is no exaggeration. Negligence of this potentiality of words had given a false pomp and pride to the well-known positivist attitude to philosophy and its problems.

But the analytic trend must be given due credit for dispelling the illusion created by the web of words, and then presenting the problems in their proper perspective. Had it but launched its endeavour on sounder and discriminative grounds rather than turning dogmatic at times, the trend would have avoided much criticism. Nevertheless, it is indisputable that ambiguity and vagueness can have no place in a respectable discipline. There is always a cold, incessant war between the pseudo-world of words, and the precise, pointed and poised thought of logic.
Once we accept the principles as consistent and without contradictions, we accept them as logical. Nothing can replace a logical solution to any problem in any field. Other solutions to this problem will be relative to the context. And yet they may be called logical for the reason that they have consistency.

But, what would be an inconsistent solution, and hence, illogical?

Now, by consistency we mean the consistency within the context, and consistency with the principle of classification. It is quite obvious that almost all account on universals and particulars will have this internal consistency. But do they have it with the principle of classification? To the extent they have it, their views will hold interest towards the solution of the problem - at least within the parameters of their discussion.

3. Types of Universals

If we have to admit types in universals, then we will have to maintain that the 'universal' in all contexts need not suggest unanimity of one singular principle. There are as many principles as there are 'types' or 'classes' or 'sets'.

There is no point in avoiding the 'types' or circumventing the issue by attempting to bring it under one principle - analytically or logically. It would oversimplify the issue without doing justice to all complexities of meaning, reference,
intension, extension, or connotation and denotation.

Why should we not call 'all types' of universals (covered by classes, sets and abstract entities) as particulars? If we have accepted the two approaches to the words universals and particulars, then there is no sound reason why we should not. The two approaches are as following:

i) of treating universals and particulars in relation to each other. That is to say, anything is universal in relation to a particular, and vice versa.

Often, instead of committing to a particular, the word non-universal is used; and instead of universal, a non-particular. Whenever this is attempted, there is an implicit recognition that

ii) universals need not have a counterpart which is particular, and vice versa. Both, universals and particulars may continue to remain, in their own right.

And I have pointed out that whichever approach is adopted, all the labelling has been carried out by some standard. I have called it the principle of classification.

Of course, the propounders of the theories on universals and particulars are not aware of it. Hence, at times, they give a naive account, or prove inefficient to explain their position, or get involved in contradictions.
Nominalist theory of universals was an attempt to eliminate as many 'types of universals and particulars' as possible and arrive at a well-formed objective explanation. But of course, it cannot satisfy all the shades of meaning in which the words are used. Enough has been said about these conventional theories in preceding chapters.

A Note on Formal Systems

More precise descriptions imply the less precise ones.

This can be said on the basis of the logic of the truth-function too; that, \( p \rightarrow q \), because \( p \) is more precise. \( p \) is more precise, because 'p is yellow', and \( q \) is less precise because it is 'non-yellow'. This point may be thus discussed further.

Herein, we have made an elementary assumption that some behaviour of colour may be called yellow, and the rest, white (or non-yellow). Also this, that the colour is the class with red, green, yellow, etc. as its members. Members of the same class have some affinity; in this case, it is of being a colour. Now, leaving aside the question of natural-class, wherein a red, yellow, green..., colour may also be called a class, we will treat 'colour' in general, as the class. While passing on, let us remark that including 'strange members' under a class on the basis, of not-too-obvious characteristic but including it merely
on the basis of some remote aspect, will only complicate the otherwise simple and useful notion of class.

The logic of set-theory and truth-functional logic however, will advocate the case stated above that a more precise description implies a less precise one.

But we will have to see if we can say the same thing about universals and particulars. In logician's language, it may be asked whether they are inferred from each other by some rules of logic, or whether they imply each other.

A particular is more precise in description than a non-particular (that is, a universal, a general name, an abstraction etc; these are some common names which are used synonymous with universals). Denying this, would involve us in reshuffling the already well-thought-out and unanimously accepted understanding of a particular.

A particular is unique. And it is this mark which is so stamped on it that it does not make it a non-particular, without sounding clumsy. A particular at least has an individuality addressed to it. And this is the distinguishing mark which draws a subtle line between universals and particulars; it may be marked only by the numerical distinctness, as would be the case with two identical billiard balls.

Having thus understood the particular, it would be
interesting to note that the logic of set theory and that of truth-function does not apply. On the contrary, the case is quite the otherwise. Instead of expecting (to infer or imply) the less general or less precise description from the more precise, it is from the less precise that we come to more precise. (In other words, inductive reasoning is employed). An example could thus be taken:

The 'colour' (in general) is less precise compared to 'Yellow colour' which is more precise. But of course, just by uttering the word 'yellow', we may not definitely say that we mean by yellow, the 'pigment yellow'; it may be anything. (let us keep aside the problem of proper names. Or, we will have to argue that by 'yellow', one may even mean a man or a mountain. At least we are not interested here in such instances, where 'yellow' is a man or a mountain).

The problem of reference is to be solved in order to understand the above argument. A particular description satisfies a precise reference. The word 'yellow'pigment' has a precise reference, but from this precise reference, we cannot 'infer' the less precise one. More appropriately, it may be said that a particular has a reference which is more or less definite, depending on the membership of the class. Reference is less precise in the class with more members, because it is not concentrated, as in the case of unique class. But it is distributed over the members. The class may have definite or
indefinite number of members.

In order to decide and accept a consistent meaning of universals or particulars, we may take only the extension, of the word, as is done customarily in formal logic; or, we may also include intension of it, as is customarily done in material mode of implication.

4. Informal System
(a) Ordinary Language

It is convenient to communicate because we understand each other. If there is no common ground, there is no understanding and hence, there is no communication. This matter of fact contention involves not only grammar, language and logic, but also psychology. And this explains the reason why a sentence sometimes is interpreted as we expect it to be interpreted, despite a contrary face value; e.g. 'so, he has gone to sleep eternally'. Or, 'between you, and me please, and the pillar of course!'

It has lead some thinkers to believe that communication is possible because of universals. Every meaningful word that we utter is a universal.

Chomsky had something novel to say? Though it is not acceptable for its obvious over-simplification. Just because one language is understood by so many, he argues that the

'structure' of human 'mind' and the structure of language has something common between them. And this is a universal.

In ordinary language, there is no well-formed principle of classification. A particular is vaguely a diminutive of a universal, in as many aspects as it is possible to understand a universal.

(b) **General Terms**

Terms like 'kindness', and 'beautiful' which are used to convey abstract ideas, are called universals no doubt; and the instances of the acts of kindness, and beautiful objects may be called particulars. But there are however, some terms which are concrete and yet are called universals (or at least they are so treated) because, they are used as 'short-hand'; they convey the sense that each single object tends to convey. They suggest that, by some standard, the general word 'cow' includes the singular word 'the cow' too. The characteristics suggested by the general word 'cow' are present in the object referred to by the singular word 'the cow', in more or less degrees. This is true of other members that may be recognised by the general word 'cow'.

Well-known theories of resemblance, similarity and repetitions are the instances wherein general terms are treated as particulars.

It is quite true that general names are often indistinguishable from some genuine instances that have a well-defined
principle of classification. Take the instance of man. It is a general word otherwise, but it is also a universal because it has a well-formed principle of classification by its standards, man may be called a universal; some thinkers would like to call such general names as concrete universals (e.g. Bosanquet). Others would call the abstract terms as abstract universals, e.g. Hegel. But such adjectives suggest different contexts and different metaphysical positions. We do not concern ourselves with the exposition of the views of the individual theory or thinker.

So, if 'man' may be called a universal, then Socrates may be called a particular by the standards of the principle of humanity.

Since some general names may satisfy such contextual analysis as I have mapped out in this essay, I think even those general terms which do not have a satisfactory principle of classification, pass for universals. Only a second thought reveals that they may not be. Some conventions are so deep-rooted that unless we are specially keen on studying their nature, they do not even pose problems. Think about the word 'kindness' who shall not be tempted to call it a universal at first thought? But here, there is no principle of classification which is forthcoming, as it did when we thought of 'man'. And, principle of classification is not to be presupposed. It has to be worked
out through the suggestions of the instances themselves. Moreover, what will form the 'particulars' if 'kindness', is taken as 'universal'? The 'quality' of being kind may be present in animals and men. Even otherwise, there is the basic difference between the quality of being kind which may be exhibited in some concrete instances, and the general idea of the 'kindness' which is not expected to be exhibited in any concrete instances.

Such deliberations will prove the point sufficiently that not all general names may be called universals. There are some technical difficulties.

(c) Collective Names

They are 'specialised' general names like 'fleet', 'crow', 'bevy', 'constellation'. They are specialised, because they have the members which are definite. The members of the above collections are the 'ships', 'sailors', 'girls' and 'stars' respectively.

Whereas a cow, though a singular noun grammatically and a general name linguistically - it may stand for one single cow, or a number of cows.

But 'fleet', does not stand for a single ship. It suggests 'a number of ships' which are basically similar members. Any variation is only accidental. These collective names, whose
range of reference is definite, is a kind of abstraction; one
name, which does not have a counterpart in reality, is used for
a collection of those members having distinct identities.

'Fleet' has no concrete counterpart, nor has 'beauty'.
But both these names are not on the same par, though both are
the result of abstraction. Now, it is only because of abstraction
that both these names may be called 'universals' and their
'referents' or 'instances' as particulars.

'Abstraction' and its 'instances' do not form the total
complex of the words universals and particulars, so that
'abstraction' alone is sufficient for them to be called universals,
or that their being instances alone is a sufficient condition for
them to be called particulars.

Yet, they are the important steps in the understanding of
the principle of classification in a particular situation.

(d) Predicates

All discussion regarding universals concerns predicates
somehow or the other. Predicates may be symbolised, or they may
just occupy a grammatical position or a logical position; in
either case, they are called predicates.

But when they are symbolised, they are examined by referring
to the rules of logic. (Quantification theory may be recalled),
for their universality of particularity. But when they are not
symbolised, they may be so examined on the grounds which are also the rules and conventions of language. Rules of language are multi-dimensional. They are given as semantical, designational, referential or conventional. Hence, approaching a problem linguistically is rather, a vague process and it involves much complication.

But generally speaking, predication is classified under those universals which hold a 'qualitative' relation to the subject. By qualitative relation, we mean that the predicate enhances the meaning suggested by the subject.

Universality and particularity of such predicates is directly related to the language in which the sentence occurs. (In metalanguage every word may be called a universal, since it has a less precise, counterpart which occurs in object language).

Only remotely it is related to the analytic principles of logic.

But, as I have said about universals and particulars before - when predicates loose linguistic content, they loose some of their meaning too. Hence, the question of labelling them as universals or particulars does not normally arise.

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