

CHAPTER SEVEN

The Theory of Types:

The theory of types is another important issue of Russell's method of analysis of language. In fact Russell's work in logic is that he began and ended with a theory of types. If we carefully notice the philosophical development of Russell, it would seem clear to us that Russell at his earlier stage worked on the theory of types in his **Principles of Mathematics** and at his later stage, he again developed the same theory in his **Principia Mathematica**. However, Russell's early theory of types contains many of the basic features of the mature system given in his fundamental paper of 1908 and in **Principia Mathematica**. In fact Russell had begun writing out the derivation of mathematics from logic, employing the methods of Peano, and his school. This leads him to examine Cantor's proof that there is no greatest cardinal number. This result, however, is conflicted with the assumption that there is a universal class, having all objects as members, which ought to have the greatest cardinal number. Close analysis of the diagonal argument used in Cantor's proof leads to the discovery of the paradox of the class of all classes that are not members of themselves, now called "Russell's Paradox", but which Russell called 'the contradiction'.

Before delving into the theory of types, let us make clear the objective of this sequel. Although, Russell started his philosophical carrier with the theory of types as we have already stated, but his development of this theory particularly in his book **Principia Mathematica** is highly mathematical. So when we enter into this theory we usually set aside the mathematical implication of this theory as mostly discussed in his **Principia Mathematica**. There is no question of doubt that the latest development of Russell's theory of types is intimately associated with mathematical development, but there are some sorts of conceptual clarifications involving in ordinary language where the theory of types finds important application. So instead of dealing with mathematical side, we rather confine ourselves to the application of the theory of types in conceptual level, i.e. in its application to ordinary language. This is justified in saying that since the objective of this thesis is centered on Russell's philosophical analysis or clarification of language, we should confine ourselves only on the linguistic level instead of mathematical level. So

when we are delving into this issue, we must be very careful as far as the application of the theory of types is concerned.

Objective of the theory of types in ordinary language:

According to Russell the so-called paradoxes involving in ordinary language are the outcome of the confusion of expressions of different logical types. Russell seems to have conceived that a linguistic expression is of one logical type and an expression about a linguistic expression is of different logical type. That is why Russell proposes to develop the theory of logical types. Barring the mathematical and logical implications, Russell also propounded the theory in what one might call a generalized philosophical form and it is from that point of view we will be interested in it here. Russell's theory of types asserts that there is not 'one relation of meaning between words and what they stand for, but as many relations of meaning, each of a different logical type, as there are logical types among the objects for which there are words.'¹³⁷

Russell's theory of types actually goes against those philosophers who insist upon reducing all statements to the subject-predicate form amounts to showing that their procedure leads to contradiction. But the 'new logic' of relations, whose function it was to take account complexities of form negated by syllogistic logic, proved to be infected by the new and more puzzling contradictions of the 'mathematical and logical paradoxes.' Russell theory of types attempts to cure such malady and the basis of Russell's cure for the malady is the observation that each paradox involves a characteristic reflexive application of terms, i.e. a class is a member of itself. Russell goes on to say in **Principia Mathematica** that 'the theory of types' is a restriction upon the kind of symbols, which may be put into a given context. For Russell entities designated by symbols all of which may be inserted into some one context are said to belong to the same type. Accordingly, it can be said that there are many kinds of types as well as hierarchy of types. This fact, Russell holds, is a very potent source of error and confusion in philosophy. According to Russell the words belonging to ordinary language, such as, attribute, relation, complex, fact, truth, falsehood, not liar, omniscience, etc., will generate innumerable confusions due to the very nature of these words. Thus, for instance, to assert that 'attributes are or are not relation' or 'facts are or are not simples',

¹³⁷ Russell, Bertrand, Logical Atomism, in *Logic and Knowledge*, op. cit. p. 370.

or 'facts cannot be blamed', etc. offends against the theory of types and these sentences are, strictly speaking, as meaningless as 'Socrates is identical'. Russell says that relations qua relations exercise the function of relating; attributes qua attributes exercise the function of attribution, so that we cannot meaningfully use the two and say 'attributes are or are not relations'. However, since words of the same logical types, we can significantly assert that attribute words and relation words have different uses.

Likewise, although we cannot meaningfully say that facts are simples, for a fact qua fact is what is asserted by a proposition and so is not of such a logical type that it can meaningfully be used as the subject of a sentence, we can say that 'the symbol for a fact must not replace the symbol for a simple, or vice versa, if significance is to be preserved.' Similarly, although 'Facts cannot be named' is meaningless, but 'The symbol for a fact is not a name' is significant. These translations of the original sentences into formal sentences about the use of linguistic symbols exemplify the real logical form of those sentences. Here we can foresee a doctrinal difference between Russell, Wittgenstein and Carnap. Wittgenstein would conclude from this that it is strictly possible to speak about the real logical form of sentences and Carnap maintains that all philosophical sentences may be translated into sentences of the formal mode. That is to say that they are simply sentences about the use of linguistic expressions with no reference to the facts at all. Both Carnap and Wittgenstein do not think that such type of logical translation is a methodological device. However, unlike Wittgenstein and Carnap, Russell seems to conceive that the translation demanded by the theory of types is a methodological type, which tends to 'prevent inferences from the nature of language to the nature of the world, which are fallacious, because they depend upon the logical defects of language.'¹³⁸

According to Russell in all contradictions there is a common characteristic such as self-reference or reflexiveness. If all classes are members of w , this must also apply to w ; and similarly for the analogous relational contradiction. In the cases of names and descriptions, the paradoxes result from considering non-nameability and indefinability as elements in names and descriptions. Russell seems to have conceived that in any contradiction whether it is revealed in Epimendies or Richard's paradox, something is said about all cases of some kind, and from what is said a new case seems to be

¹³⁸ Ibid. , p.373.

generated, which both is and is not of the same kind as the cases of which all were conceived in what was said.

On the basis of the above observation, let us explain a few paradoxes in which something is said about all cases of some kind. When a man says, for example, 'I am lying', it actually mean 'There is a proposition which I am affirming and which is false'. According to Russell all statements that 'there is so-and-so' may be regarded as denying that the opposite is always true. This is all about the principle of contradiction, which states that if p is true; its negation is false all without exception and vice-versa. Accordingly, the statement 'I am lying' becomes 'It is not true of all propositions that either I am not affirming them or they are true.' More specifically, it can be said that 'it is not true for all propositions p that if I affirm p , p is true.' In fact this paradox, Russell opines, results from resulting this statement as affirming proposition, which must therefore come within the scope of the statement. This, however, makes it clear that the notion of 'all propositions' is illegitimate; for otherwise, there must be propositions, which are about all propositions; and yet cannot, without contradiction, be included among the propositions they are about. That means to say that whatever we propose or suppose to the totality of propositions, statements about this totality generate new propositions, which, on pain of contradiction, must lie outside the totality: That is why; Russell suggests that it is useless to enlarge the totality as it actually leads to further enlarge the scope of statements about the totality. So Russell concludes that there must be no totality of propositions and all propositions must be meaningless phrase. Accordingly, when the class w is defined with reference to 'all class', then w becomes the class of all classes, which in fact is not a class. This is only possible if there is no such thing as the class of all classes in the sense required by the paradox. There is no class, in fact, results from the fact that, if we suppose there is, the proposition immediately gives rise to new classes lying outside the supposed totality of all classes. Russell tells us that the same thing is also prevailing in every other paradox.

What we learn from the above is that all our supposed paradoxes or contradictions have in common the assumption of a totality such that, if we were legitimate, it would at once be enlarged by new members defined in terms of itself. Russell says, "Whatever involves all of a collection must be one of the collection' or conversely: 'If, provided a certain

collection had a total, it would have members only definable in terms of that total, then the said collection has no total.”¹³⁹ The above remarks of Russell clearly suggest that many theories are wrong, but we are yet to know how we rectify the mistake involving into these theories. Russell, of course, tries to block the hierarchical upliftment of types whose members are individuals, functions of individuals, functions of functions of individuals, etc. Specification of the types of the entities involved is sufficient to reveal as invalid the arguments used in deriving some of the paradox. We think, following Russell, that refutation of hierarchy of types is required within logic itself. In fact rejecting the further subdivisions within the types what is called ‘balancing theory of types’ is in fact the basis of Russell’s contribution to the solution of the remaining paradoxes. Ramsey and many others in fact have also supported this principle. Even philosophers would agree with Ramsey that the so-called logical paradoxes are called by ‘faulty ideas concerning thought and language’. Ramsey says, “... (paradoxes) are not purely logical and cannot be stated in logical terms alone, for they all contain some reference to thought, language or symbolism, which are not formal but empirical terms.”¹⁴⁰ By claiming that ‘the fault must lie in the linguistic elements’ they achieve a radical simplification of the original forms of Russell’s theory. Going forward, this is no doubt satisfactory for those engaged in constructing a formal logic of maximum manipulative simplicity. Quine, for example, says, “... the contradiction against which the part of type theory was directed are no business of logic anyway... the whole ramification, with the axiom of reducibility calls simply for amputation.”¹⁴¹ However, it still leaves to be unraveled an imputed and endemic ‘ambiguity’ of ‘ordinary language’. We think Russell’s discussion of this important radical problem deserves more critical attention than it has hitherto received.

On the basis of the above consideration, we can say that there are many different types of categories of the theory of types. In fact the so-called types belonging to ideal or artificial language are completely different in nature from those types belonging to ordinary (everyday) language. Unlike artificial language the so-called types belonging or associating with ordinary language depend on the facts that in such cases modification is

¹³⁹ Ibid. , P. 63.

¹⁴⁰ Ramsey, F.P. : Foundations of Mathematics, p. 21.

¹⁴¹ Quine, W.V. : The Philosophy of North Whitehead, p.151.

introduced into a system of vocabulary and syntax already in use. Therefore, there can be no question of attaching unambiguous indication of type to symbols introduced by definitions. So the prime task is to set up a principle, which will serve to reveal ambiguities of type within the system of grammatical rules already current.

According to Russell as far as the ordinary language is concerned, the theory of types consists in the assertion that grammatically impeccable sentences often misleads us and therefore prove to be crypto-nonsense generated by the propensity for substituting in the same context words which agree in grammatical while differing in logical form. This means to say that the grammatical form of sentences often misleads us as it does not reflect all without exception the true logical form. It would be the case that two or more sentences having the same grammatical form may have different logical form. This is mainly because of the fact that the 'to be' verb, i.e., 'am', 'is', 'are' as used in ordinary language function differently in different languages. For example, in the sentence 'The morning star is the evening star', the verb 'is' functions in the sense of identity; but in the sentence 'Elizabeth II is a woman', the verb 'is' functions in the sense of 'belongs to'. It seems that Elizabeth II belongs to the class of women. Thus, it can be said that a word or a symbol may form part of the significant proposition and in this sense have meaning, without being always able to be substituted for another word or symbol in the same or some other proposition without producing non-sense.

So the philosophical significance of introducing the concept of the theory of types is praiseworthy. In fact the application of the theory of types in ordinary language will, therefore, consist in a set of criteria specifying which substitutions of words are legitimate. If the substitution of one word belonging to one type will bring a word belonging to another type, then it would not be a legitimate substitution of one word in place of other. Accordingly, it can be said that the replacement of one word in place of another maintains the same type of both words. Since words, which may so replace one another in all contexts, are said to belong to the same type, the notion of logical type will be of crucial importance.

We are yet to define what does Russell actually mean by the definition of logical type? So long we have outlined the objective and philosophical significance of the theory of logical types. So far we have noticed that the objective of the theory of logical types is to

overcome the conceptual and logical muddles involving in ordinary language. As far as the definition of logical types, Russell says, “ A and B are of the same logical type if and only if, given any fact of which A is a constituent, there is a corresponding fact which has B as a constituent, which either results by substituting B for A or is the negation of what so results. To take an illustration, Socrates and Aristotle are of the same type, because ‘Socrates was a philosopher’ and ‘Aristotle was a philosopher’ are both facts; Socrates and Caligula are of the same type, because ‘Socrates was a philosopher’ and ‘Caligula was not a philosopher’ are both facts. To love and to kill are of the same type, because ‘Plato loves Socrates’ and ‘Plato did not kill Socrates’ are both facts.” ¹⁴²

One would, however, like to say that if we adhere to the above definition of a logical type given by Russell, the definition could be made to generate a new and instructive paradox. Let us consider the following example in this regard. Suppose K and L are the same type and K and M are different types. According to Russell, one word may be substituted by another, if they or both of them belong to the same type. Accordingly, we have the following two true statements such as:

- (i) ‘L is of the same type as K’ is a fact..
- (ii) ‘M is not of the same type as K’ is a fact.

It would seem clear that fact (ii) is the negation of what results from substituting M for L in the first fact. This situation is formally analogous to that used for illustrative purposes by Russell with L, M, and being of the same type as K corresponding respectively to Socrates, Caligula, and being a philosopher. Since L and M can replace each other in the definition, it therefore follows that both L and M belong to the same type. But this clearly contradicts the initial assumption that M belongs to a type other than that to which both K and L belong. This actually hinges on the principle that if there are at least three entities in the world, it is impossible that they should not belong to the same type. This view clearly violates the principle of Russell as it may be granted that since there are at least three entities, it would be permissible to substitute any symbol for another in all contexts, and the application of the theory to ordinary language would achieve precisely nothing.

It is further noted that the ‘fact’ as defined by Russell is not sound enough. In fact it would be in the spirit of Russell’s own exposition to retort that the word ‘fact’ occurs in

¹⁴² Russell, Bertrand. : Principia Mathematica, op. cit. pp.369-70.

the sentences (i) and (ii) above, in a sense other than was intended in the definition of logical type. To say that K and L, the two facts, are of the same type shall be of an order of complexity other than that of the empirical fact in which K and L are constituents. If this is supposed to maintain, then Russell's definition of the type becomes itself ambiguous and of indefinite application. To say that 'x is a fact' ordinarily means to say that 'it is true that x'. This definition of fact is intelligible. In this sense every true sentence must be admitted to express a fact and the paradox is unassailable. However, if the fact under consideration occurs in the definition is to be restricted in meaning that only some true sentences shall be permitted to express facts in the usual sense, then it becomes imperative to indicate how such facts are to be identified. Unless such information is not provided the so-called definition of fact would seem to be useless. So the definition of fact should be revised in such a way so that it would be consistent enough with the theory of types. But this again begs the question as there would be no guarantee that the restricted theory of types resulting would not allow paradoxes to proliferate in the area over which it exercised no jurisdiction. Thus, the so-called theory of types as advocated by Russell is indefinite and possibly self-contradictory. Thus, it is criticized by saying that Russell's theory leads to formidable difficulties and it fails to resolve the so-called paradoxes as it is supposed to do.

Reinterpretation of Russell's theory of types:

So a proposal of reinterpretation of Russell's theory is proposed. It has been claimed that the so-called difficulty mentioned above actually hinges on the assertion that the same type can be constituted on the basis of the relationship between entities. It is suggested by saying that instead of entities, if we assume a parallel relation holding between words, then the logical paradox as cited above can be overcome. Thus, instead of saying that the entities 'K and L are of the same type; we rather favour the expression 'the words K and L are syntactically similar'. Here K and L equally belong to the same type. On the basis of the new interpretation, the sentences (i) and (ii) can be written in the following manner:

- (iii) 'A is of the same syntactical type as K' is a fact.
- (iv) 'B is not of the same syntactical type as K' is a fact.

Here L, and K are considered to be words instead of entities. It will therefore follow that the names of all three words will be syntactically similar. As the name of a word is not identical with itself, no contradiction will crop up. This proposal is, of course, in the line with Russell's own proposal when he goes on to say that 'the theory of types is really a theory of symbols, but not things.'¹⁴³ Thus, the new proposal theory enables to provide a satisfactory resolution of the paradox. However, the problem that would crop up in this new proposal is that owing to overcome the paradox, it actually increases the complexity as it leads to an infinite hierarchy of senses of syntactically similar expression corresponding to the different syntactical levels of the words it relates. There will need to be one relation of syntactical similarity between words, another between names of words, still another between names of names and so on. However, it has been claimed such hierarchy has the advantage of being generated by definition. This is due to the fact that since the expression 'syntactically similar' is specifically introduced into the language of definition, there will be no objection to the supplementary definition of several senses. Accordingly, the character of hierarchy involves makes the identification of the level involved in any particular instance immediate and unmistakable.

Does it make sense to say that the proposed interpretation of Russell's theory actually overcome the paradox involved in the original theory? In responding to this question, we can say that although it enables to overcome the paradox in most cases, but there still remains a chance where the so-called paradox may crop up. For example, there remain certain syntactically polygamous contexts in which one can receive words of the most diverse syntactical types without degenerating into non-sense. For example, it is proper to say both ' I am thinking about Russell' and ' I am thinking about continuity' and nothing has so far been said would prevent the disintegrating and absurd inference that ' Russell' and 'continuity' are syntactically similar. So unless further step would be taken into consideration, a wholesale merging and dissolution will once again be in prospect. So it would require a supplementary provision for the transmission of type distinctions to the associates of the ambiguous word in every context. The new procedure consists in asserting that two typographically distinct words are syntactically dissimilar if there is at least one context in which one cannot be substituted for the other without generating non-

¹⁴³ Russell, Bertrand, *The Monist*. vol.29, p. 326.

sense. Accordingly, it can be said that 'Russell' and 'continuity' are syntactically dissimilar and the term 'thinking' as used in both sentences under consideration are belonging to different syntactical types. It seems now clear to us that the application of the theory of types in ordinary language is a more complex undertaking than Russell's own account would suggest. When two sentences are typographically identical, except in containing that A is syntactically not the same as B, then the corresponding symbols, in spite of typographical identity, must be considered as belonging to different types. Implicit recognition of this consequence may have been responsible for Russell's criticism of the use of such words as 'attributes', 'relation' etc. and his subsequent remark that after discriminating the type ambiguities 'we usually arrive, not at once meaning, but at an infinite series of different meaning.'¹⁴⁴

Observation:

It seems clear to us that Russell's theory of types deserves much philosophical importance not only in the case of mathematical and logical domain, which we do not spell out, but in the case of ordinary language in which conceptual clarification is important to fly the way out of the fly bottle. His theory of types has a great deal of value as it draws attention to the fact that grammatically innocent sentences may often prove to be logically vicious. However, from this it does not follow that his theory of types is free from criticisms. An obvious difficulty of his theory is that it cannot itself be stated without offending against itself. In fact, it has been claimed by many that the word 'type' cannot be used in a sentence of the kind 'Expressions are of different types' without forfeiting the theory. In this regard, we can particularly call upon the name of Black who in fact intuits very well the fundamental difficulty that lies submerged in the theory of types as proposed and developed by Russell. According to Black that the criterion Russell uses in his theory of types ultimately leads to an impossible multiplication of entities. Black says, "Any interpretation that will be faithful to his (Russell's) intention requires the impossibility of substituting two words for one another in even a single context to be regarded as sufficient cause for their segregation into mutually exclusive types.... The consistent elaboration of this leading idea involves the making of even finer distinctions of 'meaning' between words not customarily regarded as ambiguous. So stringent does

¹⁴⁴ Russell, Bertrand, *Contemporary British Philosophy*, vol. 1, 1924, p. 372.

the requirement prove that it becomes difficult, if not impossible, to state the theory itself without contradiction, such a difficulty being only a single instance, though a striking one, of a general tendency to produce a paralysis of the general statements of which philosophical discussion so largely consists.”¹⁴⁵ Black further contends that even there are cases where the criterion of substitution does not allow us to distinguish between expressions, which are evidently of different logical types. In ordinary language at times we receive words of diverse syntactical types without degenerating into non-sense. For example, the word ‘thinking’ as used in the sentences like ‘I am thinking about Russell’ and ‘I am thinking about continuity’ is syntactically similar. Russell, however, has replied to this objection by saying that ‘I do not think that ‘think’ has the same sense in these two sentences’. If Russell means by this that ‘think’ is of different logical type in each sentence, then it will surely multiply logical types in the most arbitrary way. Thus it has been claimed by many that the criterion, which Russell provided for the distinction of logical types, is not adequate as it recurs many complexities in order to overcome the so-called philosophical puzzles involving in ordinary language. However, we think that barring a few apparent problems resulting from this theory, the theory of logical types in fact has opened up a new vista for eradication innumerable paradoxes involving in language, logic and mathematics.

¹⁴⁵ Black, Max, *Language and Philosophy*, Cornell University Press, 1949, p.111.