CONCLUSION:

TOWARDS A THEORY OF REDUCTION

A) RESUME

The present study has now reached a stage when the basic issue should be clearly defined and separated from similar positions that have been historically interlinked and often mistaken one for the other. Individualism's basic problem is that it has four different uses according to purpose at hand. First, the metaphysical or ontological individualism is the assumption that only individuals are real and existing, and groups or collectivities such as 'society', 'institutions' are fictions or theoretical constructions that serve the purpose of minimizing mental work. Secondly, epistemological individualism is the assumption that we should never be satisfied by an explanation in terms of collectivities such as states, nations, races, etc., but should be based on descriptions of individual behaviour in a particular context. Thirdly, conceptual individualism assumes that 'collective' or 'societal' or 'institutional' concepts are reducible and analysable in terms of concepts of individual behaviour and dispositions, without any loss of explanatory content. And fourth, methodological individualism, assumes that explanations of all social phenomena can and should be in terms of individual dispositions, behaviour and actions. This last one is also called explanatory individualism.

Although our primary task in this study has been methodological, the four aspects are inseparable. Besides, it should be inquired into whether they are untimately reducible to one another, or all of them could be reduced to a type of individualism which incorporates all the four types. Although, the four types are conceptually distinguishable, in actual working they have the same structure, i.e., the terms of reference of all the four positions are the same. They merely differ in their functional relativity. We employ the term 'functional relativity' whereby we distinguish between function as such and 'function' in the relative sense. In the present context, the basic function of all
the four individualisms is the same (i.e., to explain or understand the phenomenon), they differ in their relative emphasis. One way of looking at the interrelationships between these various aspects is from the perspective of the ontological level. From this point of view the primary basis is the nature of that which is real, the individual or the collective. But this ontological perspective will have to presuppose certain epistemic distinctions. At the epistemic level, the question becomes — what is epistemologically primary, whether individual actions and behaviour patterns or systemic structures and functions. In turn the epistemological level itself presupposes a conceptual distinction between two types of conceptual articulations, and lastly, since concepts involve in science analyses of phenomena have to be defined in terms of operations, processes or methods, the conceptual distinction rests upon a certain methodological base. From this point of view methodological questions are seen to be implied by the conceptual, the epistemological and the ontological formulations. But this understanding of methodology is taken in a restrictive manner as standing for more or less specific operations of investigations. But methodology should be understood in a much wider sense as standing for an interrelated system of perspectives. In this sense methodology would be more or less the same as the theoretical background presuppositions of certain procedures of inquiries.

In this sense methodology would contain the conceptual, epistemological and the ontological levels of implicit presuppositions. Although these two ways of understanding the relationship of the levels are distinguishable, yet a full understanding of the debate on individualism requires us to see these two perspectives as themselves inseparable points of a unified conceptualization. If the primary task of science is to explain or understand the phenomena, then the metaphysical or epistemological or conceptual or methodological perspectives contribute towards explanations. It is therefore a fruitless and futile exercise to argue about the various distinction, emphasis, etc., in the present study. As we have mentioned in the Introduction, methodology is not the experimental procedures or techniques employed in the study of a given phenomenon. It is
the systematic and logical study of the principles guiding scientific investigation. It includes certain necessary assumptions about the world and consequently, a structure of inquiring concerning the subject matter.

In the study of Popper, the first issue was the notion of unity of method. We agree with Popper that all theoretical sciences whether natural or 'social' make use of the same method which is commonly known as deductive causal explanation and sometimes called hypothetico-deductive method. The method has been further perfected by C.G. Hempel and christened Deductive Holomological Model of Explanation. There does not seem to be any difficulty regarding such an unity of method. Because, one can claim that natural and social sciences radically differ from one another or one can argue that the 'social' objects are theoretical reconstructions, and still the unity of method can be defended. Further, Popper believes that the thesis of unity of scientific method can also be applied to historical sciences. This can be done without giving up the distinction between theoretical sciences (sociology, economics, politics) and the historical sciences (as history of sociology, history of politics, history of economics). This distinction is on the basis of interest either in universal laws or particular facts. Popper, however, defends his thesis that history is not basically interested in universal laws and generalizations, but in actual, singular and specific events.

Popper's most important contribution in this regard is his formulation of situational logic and interpretation of history. Traditionally, historical explanations have been centered around a hero, leader or a ruler, which gave an individualistic slant to historical phenomena. Popper's situational logic consists of explanation of human behaviour in terms of attempts to achieve goals or aims with limited means. The best application of situational logic, Popper alleges, is to economic phenomena, by far the best developed 'social' science. Popper's situational logic is an integration of two types of sciences, namely normative and empirical, and his offer of a methodological model of individualism is a method of problem solving which is in consonance with his theory of 'social engineering'.
Popper's next concern is with the notion of historicism which was actually the basic problem which led Popper to take up the methodological issue. Not entering the terminological controversy, Popper's refutation is based on certain assumptions. First, his own understanding of historicism. He considers historicism as an approach to social sciences which assumes that historical prediction is their principal aim, and which assumes that this claim is attainable by discovering the 'rhythms' or the 'pattern', the 'laws or the 'trends' that underlie the evolution of history. Popper seems to have, as Mayerhofer has rightly pointed out, given just one of the uses of these terms, so that he could have a 'target to shoot at'. This misinterpretation of historicism is understandable as an outburst of his fear that under the influence of Marxism, freedom may be completely suppressed. In fact, both Poverty of Historicism and The Open Society and Its Enemies were written during the war to defend freedom against the totalitarian and authoritarian ideas. Popper himself accepts that the two works were written as polemics against authoritarianism.

Popper rejects historicism because, he believes, we cannot predict, by rational and scientific methods, the future growth of our scientific knowledge. Further, we cannot predict the future course of human history. Hence, we must reject the possibility of all theoretical history. All this is so because the course of human history is strongly influenced by the growth of human knowledge. To prove his point, Popper has distinguished two types of doctrines: anti-naturalistic and pro-naturalistic. The naturalistic doctrines assume that laws of nature which are valid for all times cannot be accepted by the historicist as he claims that laws that hold for one society in one period do not hold for another. Further, the historicist 'holism' is against the naturalistic contention that 'natural whole' are sum total of their parts, together with their geometrical configurations. 'Social groups' cannot be specified, according to historicist, like the planetary system can be explained 'atomistically' by means of physical laws, their relative positions, mass, moments, etc. Even if the subject matter of social and natural sciences
were the same, the complexity of social science subject-matter, for historicist, makes the application of naturalistic methods impracticable. Because, experimentation, \( a \) la natural science model is impossible in social sciences. This leads to inexactness of social science predictions, which can be regarded as impure. In fact, the historicist assumes that the social science methods are different from natural sciences ones.

Popper's arguments, whether against historicism, proximity or against psychology raise a number of issues both individually and collectively. Popper's criticism of 'holism' consists of the following:—First, he analyses the term 'whole' which is used either (a) to denote the totality of all property or aspects of a thing or (b) to denote certain special properties of a thing which make the particular thing appear an organized structure. Secondly, argues, Popper, assuming that 'wholes' as in the latter case can be studied, it does not follow that 'wholes' as in case (a) can also be studied.

The historicist position suffers from the same inadequacies. Historicist holists believe that they can explain 'wholes' considered as totalities. The difficulty, according to Popper, is the misunderstanding of the term 'whole', which in the sense (b) is trivial and vague.

The historicist belief that the study of society is fundamentally different from the study of nature renders the application of the experimental method to verify the historical conditions, impossible. Historicians argue that the validity of generalizations in social sciences is confined to the historical period in which the generalizations are observed. Popper, however, does not question this assumption, but points out that it is wrong to believe that such regularities are 'social laws'.

Further, Popper cannot accept the historicist position that historicist 'laws' are unique, because his notion of explanation consists of two parts: (a) universal statements (natural laws) and (b) specific statements (describing the special case in the specific events), which are called the initial conditions. Explanation consists of deducing a statement describing the event.
x from some universal laws and from some singular statements (conditions). Such a theory of explanation is tested by observing the predicted phenomena. Now the causal explanation of regularity described by an universal law is not the same thing as a general statement made about singular event. If, historicist laws are singular statements, then they do not have any explanatory value and are unverifiable as no predictions based on them are testable.

Popper, however, would have to answer various queries, and his answers remain at times inadequate and at times unconvincing. Popper's contention that if in the historicist law, the universe of discourse contains just one element, then the historicist law is untestable and subsequently, regarded as unscientific, is questionable. We could claim that the evolutionary process is not a unique one, and that the same process could be observed in other societies as well. Secondly, even if we were to assume that the evolutionary process is unique, we could still formulate a hypothesis on the basis of a 'trend' or 'direction', etc., which could be tested by future experience. Popper attempts to show that we cannot validly infer from the observation of particular historical development, a historicist theory. From this one cannot, however, conclude, like Popper, that historicist theories are or must be untestable. We cannot, and surely Popper would not, reject a theory on the ground that it is not proved from the facts. This however would lead us to Popper's notion of verifiability and falsifiability which he himself has started reformulating of late.

Popper answers to the second criticism by saying that we cannot make predictions on the basis of trends. There is, however, vast phenomena which does employ the statistical trends and also successfully predicts the future course of the phenomenon. If we observe a trend persisting for a hundred years, and as Popper observes, changes suddenly, then like all universal laws, it can be regarded as falsified. There does not seem to be any further proof as to to claim that historicist theories are unscientific and untestable. Popper, actually has little regard to statistical laws, following Hempel and Watkins as 'half-way explanations or generalizations',
Popper's argument against historicism is based upon comparison between 'evolutionary laws' and 'historical laws'. Popper argues that like evolution which is a 'unique process' and we cannot formulate' 'evolutionary laws' because of the absence of 'multiple possibilities' for testing, historical laws are merely descriptions or singular historical statements. The epistemic interpretation of the above argument would claim that the proponent of evolutionary laws mistakes a singular statement of an evolutionary sequence for a law which requires a singular statement for its expression. Popper claims that such laws are unscientific. The question, however, remains whether laws, which Popper accepts as hypothetical, need 'multiple testing possibilities' to gain the status of laws.

Further, Popper's use of the term 'unique' leaves much ground for interpretation. In fact, the term 'unique' can be employed in various senses. As Oling argues, perfectly law-abiding events may have unique spatio-temporal coordinates. Uniqueness of the evolutionary process is, of course, not a matter of logic, for one can imagine repetition of the evolutionary process; it is a matter of factual uniqueness.

Popper forwards two arguments to prove the factual uniqueness of evolutionary and historical processes. As Oling points out the case of stars considered, in terms of their courses but in terms of their sequences, cannot be explained, described by one law or a set of laws, which seems to be the assumption in Popper's argument. Popper's argument begs the question. Popper merely refutes one position which assumes evolutionary laws, notwithstanding other positions which regard evolutionary sequence as unique, but still admit laws or trends, as we have mentioned above.

Secondly, Popper disposes of all refutations by concluding on the basis of impossibility of developmental laws that there cannot be evolutionary laws. Modern scientists do admit two types of evolutionary sequences: organic evolutionary sequences which depend upon 'genes' or some master plan that unfolds itself and stellar evolutionary sequences.
Popper rejects psychology because it is unacceptable to his theory of epistemology. For Popper, the acceptance of the real world and its discovery was the primary task. And if we want to meaningfully argue about it, we cannot start from our sense experiences without falling into the traps of psychology, idealism, positivism, phenomenalism and even solipsism. Popper's problems of psychology are basically related to the epistemic issues rather than ontic ones.

Popper's two fundamental epistemic tenets are: the logic of scientific knowledge (which is not the same thing as psychology) and nonpsychological doctrine (which is the 'empirical basis' of science). For Popper, truth of scientific theories is not established by experience. He believed in the agreement among the community of scientists to assert the truth of a scientific theory. Popper further believed that inductive arguments from empirical statements cannot be valid, because all empirical statements are fallible, none can be justified or established as true. By this position, Popper felt that he has rejected the traditional epistemological doctrine which he believed, inclined towards 'subjectivism'.

Briefly, by means of his logic of scientific discovery, Popper attempts to lay down aims and standards by means of which we can not only create but also evaluate scientific theories. Further, he lays down a methodology, by means of which we can achieve these aims and standards which consist of (a) high explanatory power of empirical content, and (b) testability of the scientific theories.

The issue, however, is whether these scientists who apply the 'methodological rules' formulated by Popper are free from psychological considerations. For a strict application of Popperian methodology, these scientists should be 'critical minds', undogmatic. Are they?

Popper's rejection of psychology suffers from various assumptions which are not always nonpsychological. He requires from a scientist a sincere effort to overthrow the theory in question, which for him is a severe test of a theory. Further,
he demands a 'critical attitude' among the scientists in their attempt to formulate theories. Again, Popper's severity of tests, which is fundamental to his philosophy of science as the degree of corroboration of hypothesis depends upon it, seems to be on the psychological plane rather than the logical. Of course, Popper forwards another analysis, namely objective analysis of severity of tests, in an effort to isolate the subjectivist criterion of his earlier formulation. Although, Popper does attempt to emphasize the objectivity of his analysis, we have to depend upon Popper's assurance as a final word that he has succeeded in his attempt.

Musgrave tries to defend Popper in this regard, by asserting that sincerity on the part of the experimenter is a necessary condition of a severe test; it is not a sufficient condition. But this issue can be settled only empirically. Besides, it could be that a not so sincere tester formulates a severe test and hence the presence of a severe test does not imply the sincerity of the tester. Popper, however, emphasizes time and again that sincerity as a test of severity is not a psychological criterion, but an objective analysis. But, his attempts fail to explain how 'sincerity' could be a nonpsychological or objective criterion devoid of all mental or psychological determinants on the part of the tester.

Withstanding such 'minor' problems in Popperian formulation of anti-psychologistic theory, let us understand his major argument, why he rejects psychologyism and the possibility of reduction of social phenomena to a psychological one.

Psychology being one of the social sciences, Popper argues, cannot be the basis of social sciences. And human nature varies considerably with social institutions, and consequently, the study of human nature presupposes the understanding of such institutions. Popper disagrees with Mill and Comte on the notion of reduction, because social sciences, he believes, are concerned with the unintended consequences of human actions. Besides, the human factor is an uncertain and 'wayward' element in the social life and in all social institutions. This human factor can never
be completely controlled and any attempt to control it would imply the omnipotence of the human factor.

Popper rejection of reduction arises from his thesis of three worlds. The first world consists of the world of 'things' or physical objects; the second consists of subjective experiences; and the third consists of statements in themselves. Popper's distinction is on the basis of distinction between (a) a real picture, (b) the process of imagining which is an effort on our part, and (c) the more or less successful result of our attempt, i.e. the imagined picture. The world three, according to Popper, also includes theories, problems and critical arguments. The distinction between the three worlds is uncontroversial, however, the problem remains regarding the ontological status of these three worlds. Are they real as tables and chairs? And the second problem is whether World 3 can be reduced to World 2, and the World 2 in turn be reduced to World 1.

The three worlds are real, claims Popper, because, we not only claim that physical objects are real, but also include among reals, magnetic field, electric currents, pictures on T.V., etc., which are not objects such as tables and chairs, but have a common characteristic, i.e. they act upon physical objects. Similarly, theories have changed the world of physical objects. Hence all these are regarded as ontologically real. By means of this 'three world theory' Popper attempts to solve the mind-body problem, which is the crucial problem in the theory of reduction, claims Popper. (Of course, Popper in his characteristic manner, claims to have solved the problem).

The human mind is an organism that produces objects of the human third world, and further interacts with them. It is, for Popper, essentially the producer of human language, and the basic aptitudes which are inborn. Language, for him, is an exo-semantic tool whose use we acquire genetically. Language comes first, and it is this emergence of descriptive language that is the root of human power of imagination, inventiveness and the emergence of the third world.

Popper makes a distinction between states of 'consciousness' (highly organized states, characteristic of the human mind)
and the human self. He believes that animals are conscious but do not have selves, because consciousness emerges before descriptive language; however, full consciousness of self emerges through language only after knowledge of other persons has developed, only after we become conscious of our bodies' extension in space and time, only after we become clear in the abstract about interruption of our consciousness in sleep, and have developed a theory of continuity of our selves.

Popper distinguishes two problems in mind-body relationship: (1) relationship between physiological states and certain states of consciousness and (2) emergence of self in its relation to its body. Popper is more concerned with the second problem which is of prime importance in his philosophy. Popper's solution rests on (a) his theory of language, (b) the objects of World 3 and (c) the self's dependence on them. Descriptive language helps the emergence of full consciousness which leads to the production of World 3, which in turn modify it through a feedback. Full consciousness is a dispositional form, which is always present, though not always activated. Popper concludes that such 'acts' of mind, there must be an organ that is capable of all this, but we do not find any physical organ that can do all this. According to Popper, it seems something different, like consciousness, is needed, and had to be used as part of the building material for the mind. Further, he believes that there is interaction between the various bodily organs, and between these organs and the mind, but for the interaction with the World 3 we need mind in its relevant stages. Reading, writing, coding and decoding can be explained in terms of the psychological system, but not the interaction with the World 3, argues Popper. Popper, therefore, proposes a form of dualism, though not of Platonic or Cartesian type.

Another attempt to solve the mind-body problem is his defence of 'open system' as against the materialistic 'closed-system'. He attempts to prove that mind which has some 'extra-physical' influence can 'interact' with certain living organisms. His argument in favour of 'open system' consists of (a) a belief in the existence of the mind as a source of activity and (b)
Darwin's 'trial-and-error' is assumed to be universal even in socio-cultural development. Popper applies the theory of evolution to his three-tiered ontology, and points out that World 1 is the physical world accepted even by materialists, World 2 (it is the world of primitive consciousness) is the world at a certain stage of evolution which emerges from World 1. World 3 is the next stage corresponding to the invention of language. It is the seat of all ideas, theories, problems, critical arguments, etc. Although, World 3 emerges from the interplay between World 1 and World 2, still it cannot be reduced to either World 1 or World 2, claims Popper. It is the seat of self, which is distinct from mere mind or consciousness.

Popper's fundamental thesis is that purely physiological analysis of the brain functions cannot explain the unity of our experience or the unity of personality of the acting subject (self) to whom we attribute all the varied experiences. Popper bases his argument for the existence of self-conscious mind on two studies which may at present stage be unexplainable in terms of models formed by scientific psychology. The question remains whether we really need such a self-conscious mind to explain the alleged 'instantaneous global gestalt recognition' as a power possessed by the mind which is irreducible to or unexplainable in terms of psycho-physical properties? Popperian World 3 is also explainable in terms of panpsychism, parallelism or even epiphenoenomalism. It does not necessarily need Popperian 'interactionism'. Popper's positive contribution in his theory is his explanation of the origin of consciousness, which seems to arise suddenly out of nothing, which creates intellectual discomfort to accept it.

Another issue in this regard is the notion of 'interaction' in Popper's theory. Popper observes two different interactions, i.e. between World 1 and World 2 and between World 2 and World 3. How can there be the same type of 'interaction' between World 1 and World 2 (which are bound to space and time) and World 2 and World 3 (the entities of World 3 are timeless abstractions)? Popper's 'interaction' between World 2 and World 3 is something different. It could be a mental event or some sort of 'cognitive act' in which the mind understands some abstract
object of thought. Of course, this has to take place in World 2, which in turn is dependent on World 1, i.e. the brain. One really does not know in what sense Popper uses the term 'interaction'.

Further, the three-world theory and the autonomy of World 3 would hold good if by autonomy Popper meant the same as universals are irreducible to particulars. But, Popper's theory is not an epistemological contribution, but rather is claimed to be an ontological classification.

Again, the dualism of Popper does not seem to be strong enough to reject the materialistic thesis that is backed by enormous evidence, which is increasing day by day. Some recent studies have, however, attempted to produce evidence contrary to our contention. They have attempted to point out to some mind activity which is alleged to be independent of brain mechanisms. But, those who argue in favour of such parapsychological phenomena, do not explain how this phenomena occurs. The materialist exponent would be only too quick to assert that the alleged 'evidence' is unexplainable in materialistic terms, due to inadequacy of scientific knowledge of the workings of the brain.

We can, in the end raise doubts about Popper's consistency in holding on the one hand, unity of method of natural and 'social sciences', and on the other hand should adopt the principle of methodological individualism or 'institutional individualism'. For Popper 'institutional individualism is the via media between the two extreme views, namely individualism and collectivism. The two traditional approaches, according to Popper, do not enable us to explain intended institutional changes and also the absence of change. For holism, society is super-individual; for psychologistic individualism, society is the sum-total of individual interactions; but for institutionalistic psychologism, as the one proposed by Popper, society is the conventional means of co-ordination between individual actions.

No scientific strategy is more informative than reduction or the effort to achieve a simpler, more unified and comprehensive theory. Popper's rejection of reductionism is not
the result of his commitment to non-reductionist sociological theories, but because it is inconsistent with his three worlds, (of physical objects, of conscious and sub-conscious experience, and of spoken language, social institutions and cultural products). His 'interactionism' leaves a lot unexplained - and with prospects of a psychophysical interactionism being proposed without any contradictions.

For Hayek, there is no distinction between the problems of natural sciences and natural sciences of men, and the problems raised by the former are not necessarily unsolvable by the latter. He, however, points out that social sciences that deal with man's conscious actions could be explained in terms of the physical changes, but this would imply that we confine ourselves to less than what we know. Because, human beings classify external stimuli in terms of their subjective experiences, and hence many definitions have to be formulated in terms of 'intention in mind', 'sensibility', etc., of men. The difference can be explained in terms of subjective and objective approaches. Hayek distinguishes between 'subjective social sciences' and objective natural sciences' whereby he argues that there is a fundamental distinction between the two. Economics, for instance, has always made progress on the basis of this subjectivism, because, the objective economic theory cannot be defined in objective terms, but with reference to human purposes. This is what he calls the 'subjective' character of all economic theories. All our explanations, Hayek demands, should start with what men think and mean to do. And all social institutions can be understood only in terms of what men think about them, because 'society' is built up from the concepts and ideas of men, and social phenomena can be recognized by us and be meaningful to us only as they are reflected in the minds of men.

He further points out that the belief in collectivities such as 'society', 'economic order', 'capitalism', 'imperialism', etc., should be regarded as provisional theories or popular abstractions, which a scientist must not mistake for facts. They
are 'pseudo entities'. A scientist should start from concepts which guide individuals in their actions. It is this feature of methodological individualism which is closely related to subjectivism of social sciences.

Individualism, argues Hayek, consists in recognizing that the individual is the ultimate judge of his ends and his own views should govern his actions. It assumes that the scales of values exist only in the individual minds, Hayek's individualism is opposite of socialism. The term 'socialism' has no links with the term 'social'. It is the latter term that has created large number of difficulties in the debate of individualism and collectivism. He points out that 'social' presupposes the existence of known and common aims behind the activities of a community. It assumes that 'society' has certain concrete tasks that are known to all and are acknowledged by all.

Although Hayek proposes all these distinctions, his starting point was (like Popper's attack on historicism was his fear of authoritarianism) his fear of 'planned economy' which compels him to take up the defence of individualism.

The observable difference between natural and social sciences is that in the latter, it is the attitudes and beliefs of the individuals that are directly observable. Hence to understand the complex social phenomena, we discover the principles of structural coherence which otherwise would not have been observed. In physical sciences, we begin with complex phenomena and move backwards to infer the components of the complex phenomena, observes Hayek. He, therefore, distinguishes two methods, namely, synthetic (for social sciences) and analytic (for natural sciences).

The unnatural scientist basically looks for empirical regularities (as an outsider) by means of which they explain the phenomena. The social scientist attempting to use the same method tends to study 'wholes' because they enable him to find regularities in 'social' phenomena. It is because of this that Hayek recommends 'subjectivism', because 'objectivism' tends to lead to methodological collectivism. A social scientist takes the specific subjectivist approach, i.e., begins from our knowledge of the inside of these social complexes, knowledge of individual attitudes.
etc. By 'collectivities' Hayek means, are those 'entities' which are mistakenly accepted to be real entities such as 'society', 'capitalism', etc. He believes that such wholes are not given facts. They are never observable, and merely constructions of our mind. They cannot be perceived except as a mental scheme that shows some connection between some of the many individual facts. They are not given to us as natural units. And finally, they do not refer to definite things in the sense of stable collection. They merely refer to certain structures of relationships between some of the many things we observe.

Social sciences do not analyse the given 'wholes' but constitute wholes by constructing models which convey some vague and indistinct suggestions regarding certain relationships between certain phenomena. Hayek, however, does not reject totally the 'entities' behind the terms used in the popular language. He believes that these 'wholes' of social sciences correspond to 'wholes' of ordinary language, and as such need not be rejected as useless. He does not propose that they should be retained in the theoretical sciences, but if they are, then it should not be assumed that they have definable physical entities. Hayek believes that the mistakes of assuming that there are 'wholes' has created various theories and raised equal number of pseudo problems. Hayek argues that it is an illusion to regard that the 'macroscopic view' of human phenomena will enable us to distinguish 'wholes' by objective criteria. Even statistical explanation is a source of a lot of misunderstanding in social sciences as it is concerned with individuals and their attributes. It does not discuss particular individuals but only attributes which we already know to have a certain quantitatively determined proportion of all the individuals.

The economic phenomena prima facie seems to be macroscopic, but the development of microeconomic theories and especially those of Friedman, has proved that microscopical analysis of the alleged 'macroscopic phenomena' is possible.

Hayek's concern with individualism originated from his fear of totalitarian 'planned economy'. But he proposed a strong theoretical defence of 'individualism'. For instance, he argues
that when we speak of behaviour as that of 'price system',
we can only reconstruct it by following up the reactions of
many individuals to the initial change and its immediate ef-
facts. It is, therefore necessary, that we single out the
relevant aspects in the attitudes of men towards things, which
is possible only by the individualistic models.

The three issues to be answered in Hayek's thesis of
individualism are: (a) Are social sciences 'systematically sub-
jective'? (b) Is the use of macroscopic, collective, non-psy-
chological concepts always illegitimate? (c) Should explana-
tions in social sciences be in terms of individual motivation
and behaviour only?

Regarding (a) there is a strong case made out by May
Brodbeck that social sciences for Hayek are 'systematically
subjective'. But Hayek's reasons for holding social sciences
subjective appears to be based on the cogency of methodological
distinction. For Hayek, introspection is an indispensable and
the only way in which we can come to understand other minds by
assuming that they work like our own. So the argument that social
sciences are systematically subjective, does not hold good. Regard-
ing (b) Hayek does not argue that such use is illegitimate. He
points out that we should not assume that there are definable
physical entities which the terms describe. He says that they are
grouped as 'wholes' because they have similar relationships. And,
finally, regarding (c) Hayek never clearly asserted that they
should be such. There is nothing in his argument that points out
to contrary view. His attempt to analyse the notion of 'market'
in individualistic terms only reinforces the suggestion that
explanations in social sciences, to be adequate and fruitful,
should be in terms of individual motivation and behaviour only.

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Unlike Sir Karl Popper and Prof. F.A.Hayek, J.W.W.
Watkins does not present any difficulty in his analysis of the
notion of methodological individualism. Watkins' primary task
is to lay down a method of inquiry which consists of formal and
material rules, that will guide the scientist unerringly to truth. The formal rules do not raise any problem, as they are applicable to all empirical sciences. The applicability of material rules is, however, disputed. Watkins claims that the fundamental differences between various sciences ought to be reflected in these material rules or regulative principles appropriate to each science. A social scientist, therefore, should formulate such material rules that would help him to analyse the 'distinctive' social phenomena.

Watkins' starting point is his belief that the ultimate constituents of the physical world are impenetrable particles which obey simple mechanical laws. It has been pointed out that the existence of such 'particles' is unexplainable by science. Watkins, however, argues that every complex physical thing or event is the result of a particular configuration of particles and can be explained in terms of the laws governing their behaviour in conjunction with a description of their relative positions, masses, moments, etc. ... whereas explanations of large-scale phenomena in terms of large-scale factors are unfinished half-way explanations. But we have not arrived at rock-bottom explanation until we have deduced their behaviour from statements about the properties and relations of particles. This scientific principle is almost a truism for Watkins.

The primary task of social scientists is to build up a generally applicable theoretical system and for this, Watkins proposed the use of ideal types which are constructed not by withdrawing from details of social life but by formalizing the results of a close analysis of some of its significant details considered in isolation. He observes two forms of ideal types: holistic (to give a bird's eye view of the broad characteristics of a whole social situation) and individualistic (constructed by analysing the situations of actual individuals and by abstracting from these; general schemes of personal preferences; the different kinds of knowledge of his own situation which the individual may possess; and various relations between individuals, and between individuals and his resources.

Watkins concludes that knowledge of the social situations
can be obtained only by analysing the complex social phenomena not as 'abstract wholes' but by analysing the dispositions, beliefs, and relationships of the interacting individuals.

According to Watkins, the principle of methodological individualism maintains that social processes and events should be explained by being deduced from (a) principles governing the behaviour of the participating individuals and (b) descriptions of their situations. On the other hand, methodological collectivism or holism maintains that the behaviour of individuals should be explained by being deduced from (a) macroscopic laws which are sui generis and which apply to the social system as a whole, and (b) descriptions of the positions or functions of the individuals within the whole. Defending individualistic doctrines, Watkins argues, that physical things can and do exist unperceived, whereas social entities are created by personal antitudes. Consequently, an explanation of their formations should be individualistic.

Secondly, a social scientist does not have direct access to the overall structure of the behaviour of a system of interacting individuals (as in case of physics or chemistry). The conclusions of a social scientist are at most 'fairly reliable opinions' about dispositions and situations of individuals. Watkins does not argue that the acceptance of these two 'truisms' entails individualism. They merely support it.

Watkins illustrates his contention by successfully explaining the phenomenon of 'price fixation' and the 'English State'. He, however, finds difficulties in applying his individualistic model to: (i) solar-system as conceived by classical mechanics, (ii) the economic system as conceived by classical economists, and (iii) the phenomenon of bee-hive. (i) can be explained in individualistic terms, by applying the inverse law and the law of inertia to the system's components. The (ii) phenomenon, as we have already seen in Chapter Three, can safely be explained by appealing to personal dispositions and attitudes of the interacting individuals. The (iii) case, however, still remains unexplained. This is not so because the individualistic model is inadequate, but because scientists have not yet been able to understand the phenomenon itself.
In more recent studies, Watkins has revised his position of methodological individualism on the basis of group selection theory. Group selection theory is itself unwarranted, as the 'natural selection theory' is adequate enough to explain the notion of evolution. The theory of 'group selection' is an attempt to explain how adaptations in individuals arise from larger group of individuals. The exponents claim that biotic adaptations arise because adaptations arise which favour species (or populations) one over the other - because species per se compete in the economy of nature. But, how can the group selectionist explain how some species failed to survive. Group selectionists avoid the problem of extinction and tend to use their theory as sparingly as possible, i.e., only when the natural selection theory 'seems' unconvincing.

We have, natural selectionists such as Ghiselin and Williams who have successfully explained the phenomena of sexuality, altruism, population control, territoriality, etc., by means of the mechanism of natural selection. In fact, we can call all the phenomena alleged to be biotic adaptations as organic adaptations. Organic adaptations promote the genetic survival of individuals.

On the basis of 'group selection theory' Watkins has modified his methodological individualism so that he can accommodate biotic adaptations, which, he believes, give certain reality to some popational groups in the natural and social economy. In fact, 'group selection theory' is similar to the metaphysical theory of design, proposed by natural theologians, which we are sure will not be easily accepted by Watkins, if not immediately rejected.

We can, therefore, conclude that group selection theory as it has been proposed does not fulfil the task of adequately explaining the phenomenon it attempts to explain. Watkins revision of his methodological individualism, is therefore, uncalled for.
Methodological individualism has been questioned both on the basis of reduction of social objects and on the basis of reduction of explanations. The idea of reduction brings to our mind the notion of eliminability of either laws or theories, entities or supposed entities, suppositions or beliefs. As mentioned above, in social sciences, there are two contexts in which reduction can be understood, which raises two sets of questions: (i) Are there social objects in addition to particular persons or things? And there are, how are they related to the particular persons and things? (ii) Can the 'usual' explanations of social phenomena be reduced to or be replaced by some other type of explanations. The former context is called reduction in the weak sense and the latter as reduction in the strong sense. We prefer to distinguish the two as ontological and explanatory reductions.

The main argument for ontological reduction is as follows: there are no social objects above, beyond or alongside individual persons and things. For the sake of convenience, we use two disciplines, namely 'sociology' and psychology as representative of science from which the terms and properties are reduced, and to which terms and properties they are reduced, respectively. The anti-reductionists carefully argue that there should be a 'full-blown' reliable theory of reducibles. But we believe, as Prof. Laird Addis' points out, it is not "logically necessary that the relevant expressions be known to enter into any significant laws of nature at all. But it is useful nevertheless to introduce the idea of reduction abstractly by way of assuming that one has theories about both that which one is reducing (the reduced theory) and that to which one is reducing (the reducing theory)."  

1. Prof. Laird Addis' book The Logic of Society (Minneapolis: University of Minnesota Press, 1975), contains probably the best analysis on the present issue from the neo-positivist point of view. In this last section, to a large extent we depend on his notion of 'reduction'.

2. Ibid. p.39.
Assume that there are two theories \( T^1 \), reducing theory (i.e., psychological) and \( T^2 \), the reduced theory (i.e., sociological). Further assume that \( a_1, a_2, \ldots, a_n \) are the various states of the system or systems \((A)\) that \( T^1 \) is about, and similarly \( b_1, b_2, \ldots, b_n \) are the states of the system or systems \((B)\) that \( T^2 \) is about. Finally assume that \( a_i \) and \( b_i \) such that there is a recurrence of a given succession of states in a system \((A)\), such as \( a_1, a_2, a_3, a_4, a_5, a_6 \). Now, for the reduction to be successful, a connection should be established between the two theories, such that it has the following conditions:

a) Every \( a \) is coordinated to one and only one \( b \) which occurs at the same time. (Thus, there is no necessity of \( a_i \), having a \( b \) coordinated to it.)

b) No \( a \) is coordinated to more than one \( b \). Consequently, every \( a \) is either coordinated to one \( b \) or not coordinated at all.

c) Every \( a \) if it is coordinated to \( b \) at a given time, it must be coordinated every time \( a \) occurs and vice-versa.

Although, we know the primary characteristics of the connection to be established between the two theories, we are unsure as to what type of connection would meet the above requirements. There are two kinds of connections, namely, definitions and laws of coexistence. Reduction demands that properties terms of theory \( T_2 \) should be connected either in terms of definitions or in terms of laws of coexistence. Further, the connection of laws of coexistence is tenable only between properties which are distinct from one another. Hence, a lawful connection between \( T_1 \) and \( T_2 \) can be established if and only if logically either could exist without the other. The fundamental question in any theory of reduction is the inquiry into the nature and status of 'social' objects and properties. The issue is, are all social properties definable in terms of properties of individual entities or are there some social properties that are unanalysable in terms of individual properties?

The answer to the above query could perhaps be found in

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the study of descriptive individualism. The whole issue seems to be based upon one statement: There are so simple properties of social objects. Denial of this statement would assume that there are social objects in addition to individual persons and things. Sociologists argue that there is no need of evidence to prove that there are social objects such as government, working class, etc. Common-sensically, we assume that there are such objects, however, ontologically speaking it is problematic and controversial, as there are two possible positions: 1) Social objects are really not objects, but ways of behaving and other properties of individual persons and things. 2) There are at least 'some' social objects (e.g. state) which is more than or other than any properties and relations between persons and things.

Logically extended, the second position, namely there are social objects, can mean one of the following: (a) there are some social objects that exist without there being people, (b) there are some social objects that have properties or characteristics which an individual or thing does not possess, (c) there are some social objects that have simple properties. Regarding the first possibility, there does not seem to be any serious sociologist who claims such a position. Regarding the second, one offers various examples which prima facie seem to justify the position. For example, a political party has the property of being united or disunited, which cannot be said of the individuals in the party. However, the property of unification or disunification can be understood as the ways in which members of the political party feel, believe and behave. Consequently, it is a shorthand way of describing the various properties and modes of behaviour of the various members of the group. It is therefore accepted even by staunch collectivists that some of the properties of social objects are definable in terms of individual persons and things. The issue, however, is: are all properties of alleged social objects reducible to properties of individual persons and things? If we deny such a possibility, then we can affirm that there are, ontologically speaking, social objects. If we accept that such properties are explainable in terms of individual properties, then we can say that there are no, ontologically speaking, social objects.
What we call social objects are merely convenient fictions or logical constructions though they are not on par with nonexistents such as unicorns and mermaids. Unicorns or mermaids are different from existent objects because they are unexemplified, whereas the former are exemplified. The distinction between social properties and individual properties is the distinction between simple and complex properties. Again, the issue is whether there is a real distinction between these simple and complex properties.

The position that there are no social objects, and that so-called properties of social objects can be explained in terms of properties of individual persons and things is called descriptive individualism, as opposed to descriptive emergentism, which believes that there are simple properties of social objects.

The whole argument in defence of descriptive individualism can be summed up in: (i) Negatively speaking, "we have no reason to believe that there are simple properties" of social objects; and (ii) positively speaking, "a predicate term can have a clear meaning only if it either refers to a property with which we are acquainted or can be defined in terms of properties with which we are acquainted." #1

There are, however, some odd cases where it seems that we perceive simple properties of social objects. We readily accept that we cannot perceive a state, etc., but we do not deny easily that we can hear an 'orchestra'. 'Orchestra' seems to be a collective or social object. There are two positions an individualist can take. First, he can deny that what he perceives as 'orchestra' is a physical object and not a social object. Besides, the descriptive individualism has not denied that there are no simple properties of physical collectivities. But the second position is more relevant to our position. One very often perceives complex properties as simple. Although, this is very unlikely, as we can never say we perceive properties of social objects as simple — but even, for the sake of argument, if it is granted

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that some individuals perceive social properties as simple, an individualist maintains his position regarding the ontological status of these properties.

Descriptive individualism, therefore, categorically maintains that there is no lawful causal connection between so-called 'social properties' and properties of individual persons, as there are no two distinct types of properties. For example, there is no connection whatsoever between the anger of the crowd and the anger of individual persons in the crowd except a definitional one. The connection of the sort presented, meets the requirement of 'reduction' proposed above. We have therefore in reduction, eliminated the alleged social entities by making definitions. De facto, there is no eliminability, as there does not exist anything that we can call social entity. We neither eliminate 'social laws' as we merely formulate laws in terms of individuals. The only activity performed regarding the formation of laws, is that we have eliminated the double set of the same laws, namely one set of laws that speak of properties of groups, and another set of properties of individuals in the same group.

In descriptive individualism, there is a definitional connection or set of connections between properties of social objects and properties of individual persons which satisfy the conditions for reduction abstractly. Whereas, descriptive emergentism does not entail such connections. As Addis points out:—

"If for every single property of social objects, there exists a law of coexistence such that property is exemplified if and only if a certain state of affairs occurs at the level of individual persons and things, then we have, in the sense defined above, the ground for reduction."

Although descriptive emergentist can possibly accept reduction, he de facto does not, more for other considerations than theoretical or logical ones. He is an anti-reductionist as he believes that 'group' is more than the individuals in it or 'state is higher than any persons in it' or 'collective is more important than the individual', etc., and such other statements expressing moral and political values. They,

descriptive emergentists, therefore will not accept that the so called properties of social wholes are merely parallel configurations at the individual level. Briefly, the emergentist position can be defended on two grounds and both of them fallacious or unconvincing. First, one claims that we are acquainted with simple properties of social objects. As observed above, this is not possible with the sense organs we are endowed with. However, if one claims that there is a special faculty of the mind which observes such simple properties, then this position becomes an institutionalist theory (which no serious philosophical position can hold.) It therefore suffers from the same difficulties an ethical or epistemological intuitionist positions would suffer from. The second argument is an imperative which argues that simple properties of social objects must be 'postulated' in order to explain certain phenomena. It can be noted that the same is done in case of atomic and quantum physics, where certain properties are assumed to exist for certain observable phenomena. Two problems still remain. First, does the above 'postulation' necessarily follow that there are such simple properties, or could they (properties) be regarded as configurations of simple properties of individuals? Secondly, is such postulation necessary for the examination of 'social' phenomena?

Descriptive individualism entails reduction of social objects which, as mentioned earlier, is reduction in a weak sense. However, reduction can also take place, indeed, takes place at the explanatory level. This we call reduction in a strong sense. Briefly, reduction in the strong sense consists in the "new" laws of psychology being deducible from the "old" laws of psychology. The "new" laws of psychology are those "former" laws of sociology to which, so to speak, definitional reduction has been applied. What are the conditions necessary for obtaining deduction in this sense?

To understand deduction at an explanatory level, various issues are to be considered, such as composition rules, the notion of explanation, etc. Regarding the rules of composition and reduction, we shall have to revise our assumptions regarding behaviour as already explained above. An individualist assumes
that there is no such thing as group behaviour, except under purely physical conditions which result in a single complex phenomenon. If we were to formulate our problem by asking whether the laws of behaviour of individuals in complex situations are deducible from the behaviour of individuals in less complex or simple situations, then such a formulation would lead to asking whether the laws of group behaviour can somehow be deduced from the laws of individual behaviour.

Given the masses, positions and velocities of any two bodies at a time \( t_0 \), applying Newton's laws of motion, we can compute the position and velocity of the two bodies at a future time \( t_f \). However, can we compute the positions of a three-bodied system at time \( t_f \) on the basis of the given data about a two-bodied system? Two models can be proposed by which this can be done. First, with the help of composition rule, and the law of two-bodied case and the relevant variables of the three bodies, we can make the necessary computation and predict the positions at time \( t_f \). Secondly, from the given law of a two-bodied case and the composition rule, the law of a three-bodied case can be deduced, and then on the basis of this new law and the relevant variables, necessary computation can be made regarding the positions of the bodies at time \( t_f \). Addis' distinction between the two procedures seems to be merely a terminological issue. He points out that the first procedure describes what actually goes on in physics and consequently psychology. However he prefers the second, as it gives scope for the formulation of the deduced law. This above paradigm of Newtonian mechanics helps us to explain the notion of rules of composition, which if successfully applied to explain 'group' behaviour, would prove that explanatory reduction is possible.

A few comments on the above models are necessary to understand what is composition rule. Composition rule is a law of nature and not a mathematical or logical truth. Further, as observed above, a certain proposition in conjunction with a composition law would yield (deductively) another law. Therefore, what applies in case of a two-bodied system, deductively applies to a three-bodied system, and what applies to a three-bodied
system applies to a four-bodied system, and so on and so forth. We have therefore a paradigm of explanatory reduction, in which the laws of behaviour of larger groups are deducible from the laws of behaviour of smaller groups in conjunction with the composition rule.

Although we argue that reduction of explanations is different from definitional reduction, the latter is assumed in the whole procedure of the former.

Another point worth noting is that *prima facie* it seems that composition rule breaks down in face of highly complex cases, for example 1000 body-case. The failure of accurate computations although does not have any theoretical significance, it can be attributed to one of the following reasons: (i) For 1000-body-system there is no determinism and hence there is no lawful behaviour. Consequently, we cannot reliably predict the behaviour of individual bodies. (ii) For a system of 1000 body-case, it may be that a new interacting variable should be added for the system to be closed. This variable is not present for a causally closed system at 999 body-level. And (iii) the complexity of the phenomenon, a 'new' law. Hence, a new law and a 'new' composition rule is necessary for the deduction of laws for the 1001 or 1002, etc. body-cases. The second and third possibilities seem to create no problems as they do not contradict the law of determinism, as often was misunderstood. Explanatory emergence does not imply indeterminism. All the three possible cases are that of explanatory emergence.

Explanatory emergence takes place only relative to some given theory or law/s. But in case of a 1000 body-case and above, we may not be able to deduce the laws from a two-body-case and composition rule, but we may be able to deduce laws from 500 or 999 body-cases. Thus, there does not seem to be explanatory emergence.

It has been accepted that no law, about x+1 body state can be deduced from law of x body-case alone. Similarly, a law of a complex case cannot be deduced from a law of a less complex case alone. Further, it is possible that there is no composition law at all and that each complex situation has its own law which
is not deducible from a less complex situation. This is not an argument against determinism in science. Besides, if such was the case, then science would be extremely complicated from what we see today. Now, considering the above remarks, we can argue either for explanatory reduction or explanatory emergentism only on the basis of empirical evidence of the science concerned. We cannot a prioristically conclude that one of them is real. Whereas in the case of descriptive individualism and descriptive emergentism, the issue was metaphysical and theoretical, although empirical evidence did play an important role.

The above discussion between definitional reduction and explanatory reduction is necessary to understand some of the common errors. Those who identify the two mistakenly believe that (a) their empiricist metaphysics commits them to explanatory reduction, or (b) believe that explanatory reduction follows from definitional reduction, or (c) they must defend explanatory reduction to uphold the moral and social values of the individual.¹

Opposed to the above thesis of individualism is holism which has been used in more than one sense. We can distinguish four different meanings of the term. First, holism is employed to mean that there is explanatory emergence. The second meaning of holism is the thesis that all the variables of the system in question — society or organism — 'interact' with one another. The third meaning of holism is the doctrine that wholes have properties which their 'parts' do not have. And finally, the fourth sense of holism is the thesis that assumes the truth of third meaning of holism and a special case of holism in the first sense. It assumes that "there are properties of wholes which interact 'back' with their parts such that no system which includes the variables which characterize the 'parts' can be causally closed unless it also includes the property or properties of the whole."²

The argument and evidence given for reduction can be summed up in Addis' words: "Within the empiricist context the

². Ibid. p.60.
tradition of descriptive individualism, explanatory reduction takes place, first, by assuming that all the relevant property terms mentioned refer to the properties of and relations among individual people and things, and, second, by finding a composition rule such that it in conjunction with the law(s) of the less complex case(s) yield deductively the laws of the more complex cases."  

Now, when 'reduction' is applied to the human sciences, various problems arise which are either technological and methodological or terminological and definitional or logical and philosophical. We have seen a large number of them in the present study, especially in the first four chapters. Our present concern is the idea of explanatory reduction of sociology to psychology, which we believe is the strongest possible form of reduction.

Addis distinguished two types of behaviour, 2 namely, social behaviour, i.e. behaviour of an individual in a group, and solitary behaviour, 3 i.e. individual's behaviour 'outside' any group. Explanatory reduction then consists of deducing laws of social behaviour from the laws of solitary behaviour. Reductionists very often described reduction as deducing laws of group behaviour from those of individual behaviour. This can be done only through composition rules.

A similar distinction had already been made by Max Weber in The Theory of Social and Economic Organization, where he claims that social action need not involve another person in a causal or spatial sense. What is necessary is the actor’s consideration of the possible behaviour of others. This relating


2. The distinction, according to Leirid, is dependent upon three criteria: (i) the distinction should somewhat correspond to the already existing distinction in common sense discourse, (ii) it must be able to decide whether a particular case is either social or solitary behaviour, and (iii) the distinction should be capable of raising the issue of explanatory reduction significantly.

3. By solitary behaviour, I mean individual behaviour, with or without relation to physical environment or other individuals. Addis' preference for the term solitary behaviour seems to have made to distinguish between the behaviour of an individual in purely physical sense and behaviour in relation to 'social' environment or having some reference to other individuals.
to others is merely intentional, and hence social action takes place in isolation from other people. Weber's distinction is doubtful, if we can point out, as a matter of fact, an act which is performed without considering either positively or negatively or neutrally the behaviour of others. However, if we claim, by definition, 'social action' is necessarily so, and that if the action is not 'connected' with the behaviour of others is 'non-social action', then the difficulty seems to have been overcome.

But addis is not satisfied with this answer, as it is not an intuitive insight into the 'real' nature of social behaviour. It is merely an imperfect reflection of a piece of empirical fact. To know the facts, however, one must know what an act 'is' in terms of the 'subjective' meaning, i.e. the behavioural-dispositional or physiological correlates of the 'subjective meaning'.

It is very often argued that an action is not solely explainable in terms of the physical movements. Prof. Addis strongly argues this position in the following:

If the 'something more' of an action over a 'mere' piece of behaviour is indeed something, then there can be no reason in principle why it should not, with the behaviour itself, be amenable to scientific explanation. And for the purposes of scientific explanation those behavioural dispositional or physiological correlates both can and must be taken as the 'something more'. For those purposes, 'having-such-and-such-attitude' and 'having-such-and-such-belief' and even 'having-such-and-such-thought' and 'having-such-and-such-feeling' will be treated as dispositions to behave in certain particular ways under certain particular environmental and physiological conditions. Hence the fact that an action is 'more than' a piece of behaviour is no objection to a strictly behaviourist account of human behaviour.

By this, Prof. Addis makes two points: (a) action is not solely explainable in terms of physical movements, and (b) it does not follow from (a) that action is not susceptible to scientific explanation.

B.F. Skinner defines social behaviour as "the behaviour of two or more people with respect to one another or in correct with respect to a common environment." 

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that "social environment" consists of those functional stimuli which are provided by people; and social behaviours are those under the actual or potential control of social stimuli, in either their acquisition or maintenance, or both." 1 Both Skinner and Gerwitz attempt to define 'social action or behaviour' in terms of stimuli which is believed to contain something which can be labelled as 'social'. It is difficult to characterize social behaviour in terms of an observable feature of it, which can be called 'social'. However, instead of Weber's attempt to explain 'social action' in terms of the actor's consciousness, it would be better to, following psychologists, characterize it in terms of causes. Addis points out that the important point is that other persons are involved in the stimuli of social behaviour. For instance, the two phenomena, (political rally and funeral) basically differ from each other. The given 'social situation' will involve number of variables such as expectations, attitudes of the participants, the biological relations between them, etc. But all this does not entail explanatory emergentism, although we seem to be looking at the phenomenon in 'global' terms rather than individualistic ones. It is, of course, admitted that such variables make extremely difficult the formulation of laws of 'social behaviour.'

One of the conditions of reduction is that the laws of reduced theories cannot contain names of variables which are not in the laws of the reducing theory. Because, composition rules add nothing descriptive. All the relevant variables in the explanation of human behaviour must occur in the laws of solitary behaviour themselves. It has been claimed that the logical fact of reduction, i.e., meaningful language about human behaviour, should be such that every behaviour is capable of being characterized as the combination of values of the same variables. This difficulty (inability of reduction) is not due to any a priori conditions but insufficiency of techniques on the part of investigators.

One difficulty, however, still remains, and that is

what are the relevant variables in the explanation of different kinds of human behaviour? In case of mechanics we can calculate on the basis of values of relevant variables the values of earlier or latter variables. But in case of human behaviour the environmental variables are very important - however, it is difficult to achieve a science of human behaviour if by environmental variables we would mean a set of laws and initial conditions by means of which reliable predictions of solitary behaviour or social human behaviour can be made.

The explanatory emergentist takes the relevant environmental variables 'globally' resulting in what he believes to be a possibility of science of sociology. But the study of the causes of human behaviour, from the psychological point of view, explains why there is no need of emergentist interpretation of the above. Why is the emergentist position untenable? The following six statements will sum up the criticism of the emergentist position:

(i) Human behaviour is some combination of learned and unconditioned responses to a given situation.

(ii) These responses will vary with the stimulus.

(iii) There is no difference between the origin of our responses to other people and nonhuman things. In fact, they are explained in terms of exactly the same processes.

(iv) The appearance of behaviour of another person presented to us is 'originally' a combination of several distinct stimuli. Later on, however, they appear to have certain unity of simplicity.

(v) Like in case of mechanics, there must be some rule (which we call composition rule) by means of which we 'put back together' the complex situation which we have analysed into number of situations of simple stimulus, and calculate the response of the 'organism' in question.

(vi) Human social behaviour is one kind of behaviour in which the stimulus is highly complex. We can deduce laws of social social behaviour from the laws of solitary behaviour by means of some composition rule/s.

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1. Addis, on the basis of this criticism argues that we can explain all the practical difficulties encountered in the process of reduction. For instance, from (i) it follows that the differences in various responses of different individuals in a society is due to the nature of the learned and unlearned responses. From (ii) it follows that we respond differently to humans, animals, plants and things.
By now it must be clear that the present study has a deterministic frame of reference and that human affairs can be explained by deducing them from laws. At this stage, we must point out how historical phenomenon would fit in our reductionist frame of reference.

Historians offer explanations of historical events that seem to be causal explanations. According to Anglo-American philosophy of science (Hempel and others) an adequate explanation has the form of deductive argument, i.e. (a) statement (premise) which is a law of nature, (b) initial conditions (descriptions of the event or circumstances said to be the cause) and (c) conclusion (description of the event being explained).

However, no actual historical explanation seems to contain any statement of law of nature. Hence, we can conclude either (a) historical explanations are defective, as none of them have a law of nature, or (b) deductivistic model of explanation is defective, as some adequate causal explanations do not have the form demanded by deductivistic model, or (c) the deductivistic model has been misunderstood — it does not demand the above form, or (d) some historical explanations do fit the above model — as they make implicit reference to some law/s of nature. The four possibilities are truly exhaustive to the solution of the present issue. Each of the above positions admit that the causal explanations of historical phenomena given by at least some historians are adequate. The issue, however, is whether the laws of nature, which the deductivist model expects, are implicit, if they are not explicit.

Prof. L. Addis raises three primary questions: (1) Can there be a causal explanation of the world without the 'connection' being a lawful connection? (2) Is everything capable of being explained with the deductive model? (3) If (1) is false and (2) is true, then why are historians not capable of formulating such historical explanations? In the present deterministic frame of reference, answer to (1) is affirmative. Addis, on the other hand, believes that there can be causal and consequently, lawful

connection between the two events without appealing to the law of nature. Addis seems to be making a volte face at this stage. He argues, for example, that "if some historian mentions the cause of the French Revolution was 'an incompatibility' between feudal social and production relations on the one hand and the development of actual productive forces on the other, it is not required, according to the analysis of causation (he) has embraced, that there be any true law of nature mentioning only events of the kind mentioned in the explanation, but only that there be a nontrivial true law of nature in which both are mentioned along with other variables as well."  He seems to have forgotten the implicit presence of human individuals that are governed by their desires and motivations, and react to the given environmental situation. No deductivist ever demands from a historian that he should begin to rewrite all their historical narratives in the schema proposed by the model. It therefore follows, that the answer to (2) will have to be affirmative.

Regarding question (3), we can argue that it is extremely difficult to formulate laws that will encompass the exceedingly complex historical phenomena. Besides, as Addis rightly points out, to get a truly scientific law of behaviour of involved individuals, a historian will have to go beyond merely mentioning these characteristics of things and people which a general reader of history regards as 'historical'.

Historians argue that it is not possible to subscribe to the deductivist model because of the problem of free will. However, the philosophical doctrine of free will itself is indefensible, and hence, the issue does not present a problem.

At various places of the present study in general and more specifically in the present concluding chapter, we have attempted brief summaries of the main line of the arguments. Hence, as concluding remarks, we touch upon the main intentions of the study and also reemphasize some of the major conclusions.

The present study has two basic orientations: (1) We have been concerned with the methodological and explanatory problems in the old and recent debates over individualism versus collectivism. (2) We have been equally concerned with the study of how the individualistic mode of conceptualization and explanation enter into the process of theory formation in social sciences. Accordingly, while we have been concerned with epistemological foundations of individualism, we have been equally concerned with problems of the forms and functions of individualistic theories, for example in sociology and economics.

This dual concern with the philosophical foundations and theory formation in specific sciences, we believe is of utmost importance, as very often we become aware of the real philosophical issues involved, only when we analyse the philosophical assumptions used in shaping and articulation of specific theories. We feel that too often philosophical debates are pursued more or less in some kind of abstracted vacuum with very little contact with how the philosophical idea actually works in chosen cognitive domains. We have attempted to give this realistic dimension by relating our philosophical discussions to the two basic orientations. There are, however, two basic difficulties in this attempt. (1) Due to the above mode of treatment, purely philosophical problems cannot be pursued to their logical limits. For instance, in the present study, the problem of reduction pursued as a philosophical problem would certainly take one beyond the limits of the present debate. Problems of body-mind relations would have to be faced in such a treatment of the idea of reduction. But, while we are conscious of the need for such further extensions, we have deliberately not allowed the extension that far. (2) In choosing
to illustrate the working of the philosophical point of view in terms of a given scientific domain, we find that the chosen scientific theory has certain features which pose specific problems. This has been illustrated in case of economic theory. We may observe that the concept, structure and specific problems of economic or sociological theory differ in certain significant manner from each other, or from other disciplines. But again, one cannot hope to illustrate the working of a philosophical idea in all relevant domains. Here as in other cases, concentration of an analysis may have to be preferred to the width of illustration and application.

Apart from these limitations of the mode of treatment, it may also be mentioned here that the discussion has been selective in another sense also. It is usual to distinguish between ontological, epistemological, conceptual and methodological levels of the debate. But as we have tried to argue, these various levels form a complex unity and hence cannot profitably pursue one at the expense of the other. Therefore, the selectivity we are talking about now is not that kind of selectivity rather what is involved in the decision to concentrate on three sets of problems, namely: the conceptual, the epistemological and the explanatory. Since these three aspects seems to have a crucial place in the study of the debate as a whole, we have concentrated on these three in the form of three full length chapters.

The conceptual framework seeks to provide an overall discussion regarding the proper formulation of the questions involved. Too often the debate over individualism gets bogged down because of a neglect of conceptual focus. Like any other philosophical controversy, this also requires attention about the proper formulation. But the basic intention of the debate is also epistemological. The thesis of individualism is among other things, a thesis in epistemology. Perhaps, this aspect of the debate becomes particularly visible in the writings of Prof. Karl Popper. Accordingly, the chapter on epistemological implications has been concerned with an analysis and critical appreciation of views of Karl Popper. But as a thesis in philosophy of science,
individualism is connected with the problem of explanatory adequacy which has been, we feel systematically treated by J.W.N. Watkins. On the basis of these specific concentrations, it was possible to go back to an overall survey and assessment of the fortunes of this ongoing debate in the philosophy of social sciences.

In chapter five, accordingly, I attempted a kind of conceptual survey of the debate in post Popperian discussions. Here again, it was not our intention to provide any exhaustive or complete account of the controversy. What was thought to be more important and, therefore, attempted was to provide an indication of the basic positions that could be taken in this debate. This selective summary converges upon one fundamental issue which perhaps may be said to be the core of philosophical problem, namely, the problem of proper formulation and defence of the form and feasibility of reduction. Accordingly, the study finally attempted a reconsideration of the thesis of reduction. The reconsideration in both prospective and retrospective: Retrospectively, it hopes to build upon the distinctions and clarifications which have already been made. It also seeks to base itself upon at least one close investigation of a particular scientific theory which could be said to implement the programme of reduction in its actual working; namely, individualistic models in sciences. But prospectively, the final section on reduction looks ahead to the carrying of tasks we have already indicated.

Within the limits of the present study, it would be neither possible nor desirable to touch upon the frontier problems. But there may be occasions and opportunities, we hope to return to a further explanation of the dual orientation suggested by the present study.

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