An important aspect of Kuhn's philosophy of science is its stress on the social basis of science. In a sense the idea that different forms of knowledge have a relationship between types of knowledge and forms of society, is intensively explored under the heading, 'The Sociology of Knowledge'. One may argue that such a kind of relationship can also be seen in the Kuhnian thesis of scientific change. The Kuhnian thesis can also be seen from the perspective of the sociology of knowledge. Before looking for such a relationship in Kuhn's framework, it is important to gain an understanding of the sociology of knowledge.

The sociology of knowledge seeks to analyse any cultural phenomena in connection with the social circumstances that are prevalent at that time. It holds that the scholarly considerations or thoughts are interconnected with the social circumstances. These are fully understandable only if they are seen and studied within the particular social order.
prevalent at that time. This interconnection between thoughts and society is discussable in any area of human studies or human creation, such as arts, science, religion. It is believed by many sociologists that in a given society there is a specific configuration of human relationships, the characteristic forms of thinking and feeling. But the sociologists do not ask or seem to be interested enough to ask, what this connection is. It is the sociologist of knowledge who tries to find out what this connection is and how this connection should be seen. This means that the sociologist of knowledge provides both a doctrine as well as a method to explain the interconnection between the human thoughts and the prevalent social order, in which they arise. As a doctrine it states, what exactly the intellectual superstructure social substructures are, i.e., whether they are mutual are not, close or not etc. As a method, it enables us to find out 'the social roots of any mental structure by which one can gain more insight into the making and meaning, its essence and existence, than we could have otherwise.'
This interconnection or interrelation between human thoughts and its social and existential basis can be seen on two possible levels. At first, any human thoughts can be explained in terms of its connection with a group or a community within which it arises. At a second level, it can be explained on the basis of its background of the social circumstances prevalent at that time. That means any thought can be explained either in relation to a close community or in connection with a total basis of the social structure or the social order.

Prof. Stark makes an explicit distinction between these two levels of possible interconnection between the human thoughts and their social or existential basis. He describes them as micro sociology of knowledge and macro sociology of knowledge.2 Macro sociology of knowledge considers the total social order and its influence while the micro sociology of knowledge is more concerned with a narrower world - a world of a specific group or community.

In order to make this distinction more clear, Prof. Stark3 gives a concrete illustration of the movement of pragmatism. On the level of macro sociology of knowledge, the movement of pragmatism can be best explained according to the American
way of life. The social and cultural life of Americans might have suggested and stimulated an all round pragmatism. On the contrary, on the second level of micro-sociology of knowledge, the same movement of pragmatism can be explained in terms of a specific set of social institutions and organizations. In and by these institutions, the knowledge is professionally produced and administered; and not according to the social and cultural life in general. Micro sociology of knowledge, throws light on individual development. It enables us to have a deeper look into the individual insight. It leaves more room for individual spontaneity and originality. While the macro sociology of knowledge considers the same on the background of a broader framework of social and cultural context.

However, often the micro sociology of knowledge alone is considered as the domain of sociology of knowledge in general. It is quite possible as the micro sociology of knowledge considers the immediate connections between knowledge and the sources of its emergence. On the other hand, the macro sociology of knowledge considers the indirect source of knowledge in terms of its social and cultural contexts. Hence,
It may be said that the sociology of knowledge considers only micro sociology of knowledge which is directly connected with the knowledge.

By making a distinction between the micro and the macro sociology of knowledge, Prof. Stark in fact, suggests that both these levels are equally important for interpreting human thoughts. Moreover, he suggests that micro sociology of knowledge should be placed at a second order and prior to it, is a macro-sociology of knowledge which considers the total intellectual atmosphere of the society. It explains the intellectual system with reference to a total historical movement of the society. Hence, it is the macro sociology of knowledge which is primary tool of investigation while the micro sociology of knowledge is a secondary one. The micro-sociology of knowledge can, therefore, be included in the wider frame work of macro sociology of knowledge, whereby it would provide greater insight. In case of the movement of pragmatism, for example, the social and organizational structure of the learned community is a secondary aspect as it can be looked at from a wider frame of the western society, which is in fact more primary.
The secondary level of the particular group or the community, therefore, should be seen as part of the broader framework of the prevalent social order.

The relation between these two levels of interpretation has been characterized as that between an external system and an internal system, of the group by G.C. Homans in his work, 'Human Groups'. Here, in the above illustration, the structure of the community of learneds provide an internal system while its contemporary wider society refers to an external system. The internal system, therefore, can be said to be the substructure of the external system. The internal system can surely have some variations in the external system, moreover, it may sometimes twist the parts of external system. But this does not mean that internal system or the micro sociology of knowledge is the system influencing human thoughts and modes of life nor it alone constitutes the subject matter of the sociology of knowledge.

The micro sociology of knowledge which stands for the study of an internal system is directly concerned with the intellectual activity. It considers the composition of a group, its social derivation,
the methods and techniques used, the rewards and prestige received, its participation in other spheres of social groups etc. It is the central theme of the micro sociology of knowledge that explains how all these factors express themselves in the process of intellectual activity.

Even though, these and such other investigations are important, and necessary, they alone cannot fulfil the aims of sociology of knowledge. These investigations have to be explained in wider terms. They should be interpreted on the back ground of a wider frame of the macro-sociology of knowledge. The micro-sociology of knowledge cannot provide a complete understanding of the genesis of culture or a cultural complex. This genesis of culture is social in character and should be understood from a sociological point of view. Understanding of this social genesis is the central theme of the macro-sociology of knowledge and also of the sociology of knowledge. It is, therefore, the macro-sociology of knowledge, rather than micro sociology of knowledge, which constitutes the subject matter of sociology of knowledge, in its true sense.
This distinction between micro sociology of knowledge and macro sociology of knowledge can give us a background to understand the social basis of Kuhn's thesis from the point of view of the general theory of sociology of knowledge. Kuhnian thesis of paradigms can also be viewed from these two levels. Kuhn explains the root metaphor 'Paradigm', in terms of a scientific community. The scientific community, Kuhn defines as the members of which come together with common interests and professional initiation, 'the members of a scientific community see themselves and are seen by others as the men uniquely responsible for the pursuit of a set of shared goals,' or paradigms. The scientific community is, therefore, solely responsible for the growth of scientific knowledge. It is active according to the controlling paradigm. Hence, this scientific community can be described in terms of micro sociology of knowledge.

However, in order to locate the macro sociology of knowledge we have to consider Kuhn's later works. Kuhn describes at a length the nature and structure of the scientific community. He also introduces the term disciplinary matrix instead of the term 'paradigm'. He says, it is disciplinary
because it refers to the common possession of the practitioners of a particular discipline. At the same time he reassures the scientific activity as a communal or group based activity.

Defining the structure of the scientific communities, Kuhn says that 'at a global level the scientific community consist of all natural scientists.' At a slightly lower level, there are main scientific professional groups, e.g., the groups of physicists, chemists, biologists etc. Even within these major professional groups or the communities there are various sub communities, e.g., the organic or protein chemists within the community of chemists; solid state or high energy physicists and so on. The scientific activity is actually functional at the lowest level of the community. Therefore, he states that these small units must be named as scientific communities as they are identified according to the subject matter for the further research. These small units or the sub-communities form the structure of the micro-sociology of knowledge. However, the scientific community at a global level can be described in terms of macro-sociology of knowledge as it provides us the scientific culture
in general. Kuhn gives an illustration of this. The community of physicists, is widespread at the level of subcommunities yet, there was no community of physicists before the mid-nineteenth century and it was then formed by the merge of parts of two previously separated communities viz., mathematics and natural philosophy. Hence, in order to consider the paradigm governed research it is important to locate the relevant group and also the groups which can serve as both the micro sociology of knowledge as well as the macro sociology of knowledge. This can fulfil the purpose of the micro and macro sociology of knowledge at a structural level. One can say that the structure of Kuhnian scientific communities can serve the purpose of these two distinct levels.

However, at a deeper level the same distinction can also be held. Both, at the structural level and also at a functional level, this distinction between micro sociology of knowledge and macro sociology of knowledge can be held successfully. We have to consider the function of the governing paradigm itself for this purpose. The paradigm is functional within a community on two important levels;
those are methodological and metaphysical. Kuhn defines them as the commitments of a paradigm. Let us consider these commitments in relation with the distinct levels of sociology of knowledge.

The methodological commitments are mostly confined to a group or paradigm bound activities. A research scientist learns these methods and techniques during his training within a particular group. Hence, within a normal research period, his research is always governed and directed by the controlling paradigm. The same paradigm he shares with his fellow beings. These small units or the sub communities are mainly responsible for further scientific development. The training within a particular discipline ties them together with some common interests as well as with some common initiation. It is necessary for both, the academic development as well as professional interests. That means, the important task of these sub communities is to socialize the scientists according to the commitments of a paradigm.

In short, one can say that Kuhn's description of the sub communities can be well explained in terms of the micro sociology of knowledge, these
sub-communities are also parts of a wider community or communities. These sub communities are confined to specific sets of social institutions and organizations. Likewise, they are concerned more with the individual initiation and insight rather than the development of science in general. Hence, both the microsociology of knowledge and the Kuhnian sub communities explicitly explain the process of the intellectual activity of an individual scientist.

Apart from these methodological and technical elements, a paradigm functions at many more levels. One of the important functions of a paradigm lies at the philosophical or metaphysical level. Kuhn calls them metaphysical commitments. These philosophical commitments can be interpreted in a more global frame than that of the micro sociology of knowledge. This wider or more global frame of analysis can be treated as macrosociology of knowledge. Let us consider it.

In the process of socialization, along with the methods and the techniques, a scientist also acquires some beliefs and values. These shared beliefs, opinions and values constitute the metaphysical commitments of a paradigm. These commitments tell the members of a scientific community
what sorts of entities the universe does or does not contain, e.g., there is only shaped matter in motion or action equals reaction etc. Kuhn treats such beliefs as parts of the metaphysical commitments. But later he defines such shared beliefs as the beliefs in a particular model and thus, expands the category of model as an element of disciplinary matrix. Similarly, while defining a disciplinary matrix he includes values as one of its elements, and gives much emphasis on these shared values. These shared values are necessary for theory choice and hence are more effective in a revolutionary period. Kuhn gives five criteria of theory choice, viz., accuracy, consistency, scope, simplicity and fruitfulness. These criteria of theory choice are treated as shared values. The most striking aspect of these shared values is that they are individualistic. The scientists are free to apply them at the time of crisis situation or at the time of theory choice. The advantage of the application of these values is that the scientific activity becomes a judgemental activity, the theory choice becomes an evaluative judgement.
The metaphysical commitments thus, have a peculiar character. They are functional especially as values at all the times in both the normal and revolutionary activity. On the contrary, the methodological commitments are more confined to the normal scientific activity; i.e., with the internal system. The values can be explained on the level of external system; with relation to other disciplines.

With this broader perspective of the macro-sociology of knowledge, the metaphysical commitments refer to some important questions. Such as, how different communities are related with each other or what kind of relation is possible between these communities. Similarly, if Kuhn is suggesting a hierarchy of the structure of communities. Other important questions can also be raised, e.g., whether the communities on the higher level are controlling those on lower level? If such an inter-disciplinary control is possible, then how? If it is not so possible, then what can be the relation between two communities? These questions are more fundamental and, of course, prior to methodological ones. Therefore, we can say that these metaphysical commitments are wider in scope as they are inter-disciplinary; while the methodological commitments are more
inter-disciplinary. As the methodological commitments are confined with a particular group or a community, they are meaningful only within a respective domain. The methodological commitments are, thus, more concerned with the internal meaning of a discipline. The metaphysical commitments which are functional at a wider frame of the competing paradigms, are more concerned with the external meaning of the system.

The paradigm, along with the methodological and metaphysical commitments can be, thus, interpreted in terms of the micro-sociology of knowledge and macro-sociology of knowledge. The term paradigm can be linked with these two levels of sociology of knowledge in general.

However, both the micro-sociology of knowledge and macro-sociology of knowledge have to face some basic difficulties. Both these distinctive levels result into a kind of relativism. At the micro level the types of knowledge are determined by some specific group or community, while at the level of macro-sociology of knowledge the types of knowledge are determined by a wider frame of prevalent social order. Thus, both these levels of sociology of knowledge imply a deterministic or a causal point of view, and hence, both have to face the problem of relativism.
The same is true with the Kuhnian thesis of paradigm change. It, too, has often been changed as relative. A kind of relativism is involved in the very definition of the term paradigm; and also in the notion of a scientific community. On the one hand Kuhn defines the paradigm in terms of a scientific community, while on the other, he defines a scientific community in terms of a paradigm. i.e., a paradigm is that which the members of a scientific community share while a scientific community consist of the members who share a common paradigm. This circularity among the two definitions has to face a kind of relativism.

The causal or deterministic model has to face many more objections along with that of relativism. It has been criticized by Popper that the domination of a paradigm leaves hardly any room for individual spontaneity and insight, it also gives hardly any scope for a critical attitude. Hence, it suggests a model of growth of scientific knowledge which is based on certain irrational grounds. The scientific research which Kuhn explains in terms of a scientific community is charged as a form of mob psychology by Lakatos.
It is true that the members of a scientific community are the validators of any scientific research and as validators they perform two important functions. On the one hand, they evaluate the newly discovered phenomena as a novel discovery and on the other, they reject the previously established paradigm as being inadequate for further normal scientific activity. Hence, it is the scientific community that feels and appeals the novelty. The scientific activity, both normal and revolutionary is well organized by the members of the scientific community and hence such a group or communal activity is charged as mob psychology by Lakatos. Popper has criticized the same as irrational, specially when Kuhn portrays how in normal sciences the individual scientist is regulated and disciplined by the accepted framework. Such a formation and socialization of an individual scientist is sharply criticized by Popper. For Popper, it makes an individual scientist conservative and at the same time, it hardly does any justice to individual creativity or radical critical attitude.

All these and such other criticisms are the result of a causal or deterministic way of interpreting the relation between the types of knowledge and the prevalent social order. But today the sociology
of knowledge is understood in quite a different manner; i.e., by way of hermeneutics. It means, this relation can be interpreted in two different ways. The first, is a causal mode which we have just considered and the second is the hermeneutic. We have already seen that according to the causal way of interpretation the social basis determines the kind of knowledge. We have also seen that Kuhn's thesis of paradigm change is generally interpreted in a causal mode; and also that it results into a problematic situation. The causal mode of understanding leads to the criticisms such as, relativism, irrationalism etc. Hence, there can be an alternative way to interpret the same and that is the way of hermeneutical interpretation. But in order to see the possible interpretation of Kuhnian thesis by way of hermeneutics, first we have to explain the hermeneutic model itself. This may be helping us to apply the hermeneutic method to specific aspects of Kuhnian thesis of paradigm change.

For the hermeneutic model, we are here referring to Karl Mannheim's sociology of knowledge. Mannheim has also investigated the relationship between types of knowledge and the social order. These investigations, he states, as an alternative to the positivist's philosophy. According, for Mannheim, the point of investigating the social connectedness of an idea is
not to test its validity, but rather to advance our understanding of its meaning. Hence, the goal of Mannheim's sociology of knowledge is logically distinct from the causal model of interpretation.

The question Mannheim tackles is how to identify the distinctive characteristics and also the methods most suitable for investigating the world created by 'human guist'. It is an empirical investigation of a socio-historical process. Here again, Mannheim differs from the causal model of sociology of knowledge, because it hardly justifies the historicity of knowledge. Mannheim gives much importance to the socio-historical context of any human studies. He says that 'the range of human studies is determined by the objectification of the life in the external world. Everything on which man has activity impressed his stamp forms the subject matter of human studies. Mannheim, further says that it opens the fact that 'the epistemological knowing subject which makes the Seisteswissenschaften possible, is also an historical study."

In accordance with the nature of such a social inquiry, Mannheim presents his claims that the sociology
of knowledge is to be conceived as a tool of inquiring the subject matter of human studies. Here again, Mannheim is suggesting a method as well as a doctrine of the sociology of knowledge. The method suggests the hermeneutic or the interpretative way of understanding the interconnection between types of knowledge and the socio-historical facts. While the doctrine of sociology of knowledge suggests what to look for; i.e., the meaning endowing investigation of socio-historical facts. The hermeneutic model of interpretation is thus an enquiry of socio-historical facts and events in terms of their meaning.

Mannheim's methods are thus designed to investigate the situationally determined knowledge. Such a kind of knowledge is not merely the simple objective accumulation of the information of the facts nor it is understanding an interdependence in life processes. It is, thus, not just an explanation of thoughts as a causal or hypothetical general law. In short, it seems that Mannheim's sociology of knowledge considers the problem for accounting for thoughts in terms of social reality and its aim is to understand the meaning. It is, therefore, a problem of interpretation and not the problem of reduction as seen in the causal model. Mannheim's sociology of
knowledge is, thus, different from the causal model at the very opening point and hence it may give us a new outlook on the socio-historical facts.

To investigate these socio-historical facts, Mannheim makes a distinction between an objective culture, and a subjective culture. 'The objective culture, he says, includes all kinds of objectifications such as religion, science, arts and the states and forms of life.' While, on the other hand, by a subjective culture he means the appropriation of these objectifications by the human beings.' These objectifications can be grasped either immediately or mediately. By the immediate sources these objectifications can be grasped through direct sense experience; as in the science of nature. Further, he explains that the objectifications that we grasp immediately have an objective meaning and this meaning is entirely conferred by the knowing subject. The object which is thus known directly or immediately is, mute or passive or given. Whereas other kinds of objectifications are grasped mediately. The mediation occurs at two different levels. Firstly as an expression of meaning and secondly, as a documentation of meaning. Mannheim calls them expressive meaning and documentary meaning respectively.
By expressive meaning, we refer back to its immediate sources as it is conferred by the intentional act of the expressing subject. Hence, the object to be known by the mediated expressive meaning must be read according to its meaning as recognized or discovered. Whereas by documentary meaning, we are directed to a more comprehensive context of meaning. It suggests a context of an inter-subjective communication, as the documentation is always in the form of a written discourse or a text. In a sense, it is also like an expression as it is determined by the subjects to be known and not by the knowing subject. At the same time it differs from an expressive meaning as the documentary meaning is not governed by the intentional acts of the other subjects. And hence, the documentary meaning cannot be established by any single individual.

The documentary meaning gives a novel interpretation of a socio-historical context. It says that any cultural product must be interpreted in a double sense; as an expression and as a document. The second sense, the documentation is a significant one. This documentary meaning suggests the possibility of a shared context of communication. It is a documentation of something which is already expressed;
it can be shared by many individuals other than the expresssee and hence, it provides a shared context of communication. Since, each one reads or interprets it according to his own way of understanding the documentation also provides an intersubjective context. Hence, the documentation is identified as a shared context by an inductive procedure. The requirement of a shared context thus, becomes a logical necessity. Mannheim, therefore, says that the greater our collection of instances of expressions, articulated in a common socio-historical environment, more confidently we can identify the documentary reference that they share.

A shared or common context is a basic requirement of any successful communication. The socio-historical context of documentary meaning is, therefore, an intentional act of individual's participation in a common context of discourse. A shared context is a 'construction', which is considered by some conscious efforts, or conscious acts. These conscious acts, Mannheim says, have to be reflective and retrospective as they are considered from the outside.

Mannheim further remarks that no a priori categorical determination of the structure of documentary meaning is possible. This context of
intersubjective expressions suggests that by an inter subjective communication a common context of inter subjective meaning is shared or imputed to the participants of a common universe of discourse and not a shared context itself is imputed. Such a notion of inter subjectivity is different from the notion of consensus. By consensus, a common context is shared, such as common beliefs, opinions etc. and not a common context of shared meanings which is shared by a group inter-subjectivity.

Moreover, it helps to show the link between the expressive and documentary interpretation in terms of part whole relation i.e., the whole can be understood by interpreting parts, while a part from the whole. Mannheim gives an illustration - 'Spirit of epoch we derive from its individual documentary manifestations and we interpret the individual documentary manifestations from or on the basis of what we know about the spirit of the epoch.'

Another aspect of the documentations is more important. As there are a number of instances of expressions, each one of them has a respective documentation. Hence, there is not merely one context of collective experience. Rather, there are
many simultaneously existing but mutually contradictory trends of thoughts. All are struggling against one another with their different interpretations and common experiences. The clue to this conflict is found in varying expectations, purposes and impulses arising out of different experiences. Superficially, these cleavages may reduce to fundamental philosophical differences, but are actually guided by antagonism and competition between the concrete conflicting groups. Mannheim, therefore, says, 'What from imminant history of ideas appears to be an inner dialectic, becomes from the point of view of the sociology of knowledge a rhythmic movement in the history of ideas, affected by competition and succession.'

The sociology of knowledge, thus, concerns the matter under discussion on a total basis of thoughts, among many. It does not go behind the immediate subject of the debate. Such a type of interpretation and evaluation is possible and also beneficial when there is a complex of collective experiences without a common basis of thought. Similarly, it is possible only if one develops a detached perspective from the group involved. Such a perspective can be gained only under certain
conditions such as when a member leaves his group or
when a group needs a shift in group or when a group
needs a shift in its traditional norms and institutions;
otherwise, when there are conflicting interpretations
within a group and if each one is trying to establish
with reference to one another.

The method of hermeneutical interpretation
can have some initial advantages while explaining some
of crucial notions such as consensus, conflict or
change etc. The important aspect of it is that it
goes beyond any validity claims and opens the socio-
historical facts with some new perspective. It relates
the individual ideas to the total structure of relevant
historico-social subject. Such a kind of relativism,
Mannheim says, should not be confused with a
philosophical relativism, as sociology of knowledge
is designed as a relationism. Further, he says, that
'Relationship does not signify that there are no
criteria of rightness or wrongness in a discussion.
It does insist that it lies in the nature of certain
assertions that they cannot be formulated absolutely
but only in terms of the perspective of a given
situation.'

However, it can be argued that even this kind
of relationship can turn into a kind of relativism.
According to the hermeneutic model, the cognitive statements are intelligible only within a context of a specific conceptual framework. The hermeneutic view, thus accounts for the intelligibility of the epistemic claims by locating them within a system of background assumptions. Hence, we can understand meaning of any claim only within contextually specific statements and claims, or within a particular cognitive perspective. The kind of relativism, hermeneutic model results into, is different in kind than the relativism of a causal model, i.e., the relativism not of validity claims but that of meaning.

The deterministic model suggests the truth of the statements in relation to its socio-cultural context. While the hermeneutic model interpretes the meaning of the statements related with the conceptual frameworks in which they arise. This means that the kinds of relativism, these two models lead to are distinct in kind.

But there is a more basic difficulty in the exploration of the hermeneutic mode. By the hermeneutic model it is granted that the meaning of specific statements can be understood within a conceptual frame. The problem then arises, that if there are alternative conceptual systems mean that
meaning is related to those alternative systems. This problem can be called as the problem of hermeneutic relativism.

One may, therefore, argue that the use of an hermeneutic model is meant for just shifting the focus of the problem, i.e., shifting the problem of truth to the problem of meaning. But mere shift of the problem does not eliminate the problem of relativism which is an important issue in the Kuhnian thesis as well. It, therefore, seems that a shift from a causal to a hermeneutical model can also be problematic. One may apparently say so. But at a deeper level the hermeneutic model can be beneficial for the understanding of some particular issues such as problem of consensus, change etc. Though it does not settle the problem of relativism, it can focus upon specific problems with a new perspective, which we find rather problematic in the causal model. Apart from this novel understanding, the hermeneutic model has other important dimensions as well.

One important aspect is that it provides us with a more adequate understanding of the notion of objectivity. As we knew that the problem of relativism
has to be seen in relation to the objectivity of knowledge, hence with the shift from causal to hermeneutic the focus of relativism also shifts. It is no more a sociological problem. Rather, it becomes an epistemological issue. Hence, the resolution of the problem of relativism depends upon the epistemological notion of objectivity. It is, therefore, a shift from a sociological to an epistemological point of view. As such, the use of hermeneutical model can prove to be useful in the case of Kuhn's thesis of paradigm change.

Kuhn himself has suggested the possibility of the hermeneutic interpretation. However, he is suggesting it for the reading of history and not for the interpretation of the theory of paradigm change. He states that the hermeneutical interpretation does more than make history seem consequential. What first looks absurd, later becomes sensible with the use of hermeneutical interpretation. Even in the case of paradigm change what seems unintelligible, may prove sensible with its hermeneutical interpretations. In conclusion, what first seems problematic within a causal model, can be easily accommodated within the hermeneutical perspective.
Hereby, we have briefly introduced theory of sociology of knowledge that emphasises more on a hermeneutical interpretation of any thought with reference to its socio-historical context. Our further task is to show how it can be applied to the specific aspects of Kuhnian thesis of scientific change. In order to consider the Kuhnian thesis from the point of view of the hermeneutical model of sociology of knowledge, we may have to reconsider some of its main concepts. For example, the important notions such as scientific community or the notion of consensus can be interpreted from an hermeneutical point of view, since these notions have some sociological bearing. Here, we can attempt to reconsider the notion of scientific community with this new perspective.

Kuhn defines, a scientific community in terms of a shared paradigm. Kuhn is directly concerned with the scientific community in specific and not with the nature of any community in general. However, one can claim that the Kuhnian image of a scientific community is a micro representations of a larger theory of a social community. As such, Kuhn's thesis presupposes a certain concept of order. Similarly, according to Kuhn, with the existing paradigm, the community shares some methodological
and metaphysical commitments. These commitments also represent a broader thesis of a consensus model of social communities. A consensus model suggests consensus on fundamental beliefs and values. Such a consensus is necessary for society to maintain a group as a whole or a homogenous group. It is this general consensus theory that Kuhn assumes while describing the shared commitments of a paradigm.

In order to interpret the Kuhnian concept of a scientific community hermeneutically, let us first explain the notion of a community in general sociological analysis. In general sociological theories, the social groups or the said communities are mainly studied from two points of view. These are, a consensus theory of a society and a conflict theory. Both these theories deal with the problem of social order. Both are interested in solving the same problem of the possibility of social organization.

Within the consensus theory, the social organization is possible or in conceived in terms of the consensus on shared beliefs and values. The conflict model argues for the coherence of the social groups by way of constraint and conflict. In
accordance with the conflict model there are
different groups with differing interests. They
are in a constant conflict. The coherence is
possible with force and constraint as some of these
groups domineer while the rest subject themselves.

The conflict model has to take into
consideration that though there are different groups
with differing interests, these groups have a consensus
within their own bounds. But the consensus within
a group has a subordinate place in the function of
these conflicting groups. Similarly, even in the
consensus model there is a place for the notion of
conflict. However, when a consensus model dominates,
the conflicts with other groups function at a second
level. The consensus is prior to the conflicts.
And this fact is responsible to have a stable
integrated unit.

It, therefore, seems that these two models
consider the problem of social order from two polar
opposit points of view. As per the consensus theory,
a society is constituted of stable integrated groups.
These groups are functionally co-ordinated. In case
of the conflict theory, a society is constituted of
various groups with differing interests. Such groups
cannot be integrated nor are they functionally co-ordinated. In short, these two models consider totally opposite views such as stability instability or integration disintegration or functional co-ordination functional non-co-ordination etc. These two models are thus, always treated as the two alternatives, though both of them ultimately concern the problem of social order.

The Kuhnian thesis of scientific change also presupposes a kind of order. To maintain this order, Kuhn gives more emphasis on the consensus theory. The consensus within a paradigm is central to his thesis. The consensus enables the normal scientific activity and thereby further scientific advance is made possible. The perspective of consensus has its own peculiarities. Most importantly, the consensus theory presupposes a certain kind of socialization by which consensus is imposed. Kuhn describes the kind of socialization process which each scientist has to undergo. He elaborately portrays how within a normal science a scientist is regularized and disciplined by the accepted framework. What a scientist grasps are the values and norms of the accepted paradigm. Socialization of a scientist becomes necessary within a general consensus model, as it is essential for a
cohesive integrated society. However, Kuhn has been immensely criticized, especially by Popper, for this viewpoint. The consensus model does not give any scope for individual spontaneity and creativity and as such, it lacks a rational critical attitude. Here, the scientific change itself becomes anomalous. It is true, that consensus within a group is necessary for a cohesive social organism, but it cannot serve as a paradigm for any theory of possible social order. Apart from the consensus model, there is a model of conflict. We have already seen that in a general sociological theory, both these models are considered as the alternative models.

However, it is argued by Dahrendorf, that for an adequate understanding of any social system both these models are necessary. Instead of treating them as alternatives, he treats them as complementary models. Dahrendorf illustrates this point of complementarity with an example of modern industries. He says that along with the modern industries a new class is created, i.e., the class of managers. This class is essential, to establish a functional co-ordination between the owner and the workers. But the increasing tendency of putting down the tools
and going on strike suggests nothing other than a tension between these two groups. Hence, Dahrendorf argues that both the consensus and the conflict exist simultaneously in any society. These two models can never be mutually exclusive. Instead of considering each of them, as a solution of the problem of social order, they should be seen in connection with a specific social problem.

The same can be true with the Kuhnian thesis of paradigm change. If we focus on it from this viewpoint of both, the conflict model and consensus model, then it may perhaps highlight the problem of paradigm change and also the problems relating to it with some novelty. Let us, therefore, first consider the conflict model in general and then explain its possible affinities with a particular Kuhnian problem of paradigm change.

A conflict is always focused from the point of view of the social change or more precisely it activates the process of social change. For a better understanding of the function of conflict in the process of social change we may look at it from the viewpoint of Talcott Parsons. Parsons makes a distinction
between changes within the system and changes of the system. Similarly, we can think of a conflict within a system and relationship of a conflict towards changing of any social system.

The conflict within or between various groups is always a result of clash of values and interests. Any society is formed by a complex of different groups and the conflict model always brings out the tension between these groups. Such group clamours for its own power. Hence, there are always some new strata arising from these groups. On the ground of which they continue to demand further power. There is a dynamic tension between what is and what ought to be.

When a new strata supersedes the other groups, it changes the structure of any social system, such a total change depends on the strain and conflict within that particular system. Each system contains some potential elements of constrain and force, according to which various conflicting groups are formed. Hence, change of a system also depends on the elasticity and intensity of the constrains and force; whether the change is radical, also depends on the same. Thus, the perspective of conflict has a central role in the process of change. Coser says,
that if these elements of conflict are ignored and if only the adjustments of patterned relations is the only focus of attention then it is not possible to anticipate basic social change.  

The two levels of conflict, conflict within and of the systems are related with each other. This relationship suggests that there is a continuity between the past and present and also between a present and the further expectations. Marx has emphasized this point. For him, changes from feudalism to a different type of social system can be understood only through an investigation of the stresses and strains within the feudal system. The conflict within a system, thus, leads to a change of the system.

A similar line of thought can also be traced in Kuhn's thesis of paradigm change. According to Kuhn normal scientific activity is always paradigm bound. Even though, one paradigm dominates a scientific group, it always has some other alternatives. The conflict between these alternatives is highlighted only on specific occasions, especially in a situation of crisis when the domination of any particular paradigm does not exist. As the governing paradigm fails in progressing further, the members under control
of that paradigm no more believe in it and search for a new paradigm. In this particular situation, the conflict between different paradigms is more functional. When any such novelty is discovered, then that community of scientists is in a constant struggle to be established as a new paradigm. In the problem of paradigm change, the conflict between the groups or scientific communities plays an important role on a very specific occasion of the situation of crisis, which is, of course, a result of conflict within the existing paradigm. An important aspect of this conflict between alternative paradigms is that it leads to a change in the system or culture of science. With the acceptance of a new paradigm, a new tradition in science begins, e.g., in the history of physics the Newtonian tradition has been superseded by the tradition of Einstein.

The above discussion clearly shows that even within the Kuhnian model of consensus, there is a place for conflict. From the viewpoint of consensus alone, it gives a one-sided picture of the reality while on the other there is, of course, the conflict theory. Hence, without a consideration of conflict, the theory of scientific or paradigm change is
insufficient. We have pointed out in the earlier discussion, that emphasis merely on the consensus makes the possibility of change anomalous. In short, even in the case of paradigm change, both consensus and conflict prove to be complementary to each other, rather than as two alternatives.

With this complementarily between consensus and conflict, we can go back to the Kuhnian model of consensus on a paradigm. One can now argue, that it overemphasizes the notion of consensus. Dennis Wrong considers this very problem of social order. He points out two possible ways of socialization seen in any society. In the first instance, socialization is possible by internalization of social norms. While in the second instance, it is possible because of man's desire to achieve a positive image of self by winning acceptance or status from other fellow beings. However, for Wrong, both these patterns are not adequate. Internalization is often equated with learning or with habit formation. Thus, when a norm is said to be internalized by an individual, it means that the norm is first of all habituated and afterwards this habit is confirmed through the conduct of an individual. Secondly, to seek an approval from
others, is a formalized version of a distinct sociological perspective of human motivations. This pattern of socialisation by motivations also gives a picture of generalization of a particular emphasis. Therefore, it may be valuable for a limited purpose.

Wrong states that both these processes of socialisation ultimately result in an oversocialized concept of man. By internalization of a socio-cultural norms a guilt may be developed. A man who absolutely or perfectly absorbs these norms is more bothered about them, especially when these norms are violated. Human motivations, on the other hand, socializes an individual in a particular dimension. The motivations are developed for fulfilling a particular role. Hence, due to the motivating forces, man is increasingly seen as a role player. This gives a one sided view of man.

On similar grounds, it can be argued that when Kuhn has been criticized on the point of consensus, the critics are referring to the same oversocialized concept of a scientist. As a student, a scientist is all the time following the norms and values described by the given paradigm. At the same time he is also trained into professional initiation.
With this academic and professional training, a research scientist internalises what the scientific community had previously with difficulty gained, a deep commitment to a particular way of viewing the world and of practicing science in it. The commitment to a paradigm is an actual constitutive of research, as both problems and their solutions are defined by them, further, a paradigm also indicates the troublesome spots from which significant innovations of facts and theories are inevitably deduced. The scientific discoveries or the innovative scientific theories are always in response to the failure of the previously established paradigm.

This means, that even the socialization of an individual scientist may have to face some difficulties. Especially critics, such as Popper, claim that the Kuhnian emphasis on socialization within a particular paradigm gives hardly any scope for a critical approach towards that particular paradigm. It also lacks any rational grounds for theory choice. These criticisms are mainly brought to bear on the process of socialization of an individual scientist. Therefore, it seems that the critics of Kuhn are also emphasizing indirectly, the oversocialized concept of a scientist. This is especially apparent when they charge it as relative, irrational or a mob-psychology.
The oversocialized concept of man is not only insufficient to explain the problem of social order but, in fact, it resists the socialization in its perfect sense. Wrong further suggests that man should be seen as a social being. The very social nature of men is the source of conflict and antagonism that creates a resistance to socialization by internalizing norms of any given society. Wrong further suggests two distinct meanings of socialization. According to the first, the culture in which a man is born, is passed over, from one generation to another. According to the second, the unique attributes of human beings are acquired in the actual interaction with others. For wrong, it is the second meaning of socialization, which actually contributes towards the socialization of men. Hence, in the perfect sense of socialization, men are never completely moulded by particular values and norms of their own culture. This does not mean that men could exist without any culture or independent of any society. All the cultures do have some such elements, which do resist man's socialized bodily drives.

On the basis of these ways of socialization, we can go back to the notion of consensus as seen in the
Kuhnian model. The point of reference for this discussion is a correct understanding of Kuhnian interpretation of socialization. For Kuhn, socialization is a process by which a common point of view is made possible. It is necessary for any culture or society, to be continued from one generation to the next generation. Hence, socialization is a continued process that builds the consensus. We have already discussed how this consensus building is made possible. It is, either by the way of internalization of values and norms or by some motivational acts. We have also seen that these two ways lead to an oversocialized concept of man. It is the same with Kuhnian notion of socialization of a research scientist. In the case of oversocialization, the type of consensus that is built up, can be described as an imposed consensus. What Kuhn earlier states as the type of consensus within a scientific community can be described as an imposed consensus. One can therefore, argue that oversocialization results into an imposed consensus.

However, if the later Kuhnian position is considered, then it seems incompatible with the notion of an imposed consensus. For, it is incompatible
with Kuhn's theory of value judgements leading to theory choice. In the later works, Kuhn has elaborately discussed how a new paradigm is chosen on the basis of value judgements. These values judgements, the scientists have to form, their own. What enables them to evaluate the alternative paradigm is, of course, their own way of socialization. Though, a common perspective is achieved individually, only by practicing in the group. The point of arriving at common perspective, however, differs from individual to individual. That is, an individual achieves a competence to evaluate the common perspective, which he internalizes in the process of socialization. It can be described as an achieved consensus, as it is built-up by the participant himself. This achieved consensus does not negate the responsibility of individuals. On the contrary, he is precisely within any community as a free responsible member. Hence, the achieved consensus can represent differing personality types. Let us see how a paradigm choice is made on the basis of the achieved consensus.

Kuhn, in his later works, gives five criteria of theory choice, viz., accuracy, consistency, scope, simplicity and fruitfulness. There can be many
more criteria but these are the fundamental ones. These criteria of theory choice, Kuhn treats as values of any paradigm. As being values of a paradigm, they function at both, normal and revolutionary scientific activity. At the normal stage, these values function as the metaphysical commitments. While educating within the domain of a particular paradigm, a scientist is acquainted with these values. These values are, thus, commonly possessed by the members of any scientific community and therefore, shared by these members. These shared values are highlighted in the situation of theory choice. At the time of paradigm choice, there is no single, dominating paradigm, as there are many alternative paradigms competing with each other to be established. Hence, the application of these shared values is apparent more than as seen in normal sciences.

The individual scientist is free to evaluate according to his own rationale. e.g., a scientist may accept a theory $T_2$ as a new paradigm as it may be more accurate for him while, for others, $T_2$ may be more consistent than $T_1$. The same is the case of the refuted theory. There can be differing grounds to refute the previous theory. Thus, through the freedom of theory choice, the acceptance of a new
paradigm becomes a judgemental activity. It is, thus an individualistic or a subjective activity.

Kuhn, however, further states that the subjective element involved in a value judgement is always different from that of a taste. There are subtle differences between the two. A taste is more confined to the matters of personal likes or dislikes, e.g., a statement, I like 'X' is different in kind from a that he likes 'X' the others may either agree or disagree with his personal feelings. On the contrary, when one says that 'X' is beautiful, he is evaluating the 'X' which is based on some criteria, which are shared by others. In case of judgements, one may agree or disagree on rational grounds. These rational grounds provide a common basis to discuss further. Whereas, in case of individual taste the roads for any further discussion are blocked. The judgements are further discussable, and are prone to have a rational persuasion. A scientist, who may not agree on the relative accuracy first, may, later, agree on the same. Such a rational persuasion is not possible in case of statements of personal taste.

Kuhn further claims that when his critics have seen the paradigm choice as subjective what they mean is
value judgements are quite peculiar. The scientists do not just grasp these values as commitments but act upon them at the time of theory choice. Moreover, along with the acceptance of a new paradigm a new tradition begins. This means, that the development and progress of science is solely dependent on the newly accepted paradigm. Hence, the scientists have to be more alert and more choosy while accepting a new paradigm.

One can, therefore, agree that when critics see the theory of paradigm choice as subjective or irrational, they are mainly referring to the notion of imposed consensus. However, in the later works of Kuhn, we find a different kind of consensus; a consensus that enables the scientists to have rationally based value judgements. We have coined the same as an achieved consensus. The achieved consensus is of course deeply rooted in the imposed consensus and can be distinctively marked at the time of theory choice.

Moreover, the reasoning that is achieved for a theory choice is always a matter of practical discourse.
This kind of rationality does not require any determinate rules or criteria as necessary and sufficient conditions of theory choice. What it requires are exemplars or judgemental interpretations. These exemplars enable an individual scientist to critically evaluate the alternatives with shared criteria rather than any maxims. Hence, theory choice as a value judgement is based on a different kind of rationality which can be described as practical rationality.

Richard Bernstein has shown a corollary between the judgemental activity of paradigm choice and the characteristic features of 'Phronesis' or 'Practical rationality'. Both phronesis and the activity of paradigm choice require a type of reasoning in which there is a mediation between general principles and a concrete situation that requires choice and decision. In order to form such decisions there are no determinate rules as the necessary and sufficient conditions. Rather what it requires is an interpretation and specification of universals, that are appropriate for that particular situation. As such, there can be differing opinions or 'doxai' of the interpretations regarding the theory choice. These interpretations
are likely to change. We have already seen that even in case of paradigm choice, rational persuasion is possible. An important aspect of ohronesia is that it is nurtured by 'Polis' or 'Community.' The same is true about the judgements of theory choice. The judgements of rational deliberation concerning paradigm choice are always shaped by the commitments of a paradigm which the scientists internalize in the process of socialization. In short, the judgemental activity is achieved by the scientists through what has been imposed on them.

In the later works of Kuhn we thus find a different notion of consensus on a paradigm. The consensus on a new paradigm is what a scientist achieves by practicing science. However, what is required in order to practice science is always imposed on him, by way of the process of socialization. One can argue, that when critics treat the paradigm choice as subjective, irrational etc., they mainly referred to the earlier position of Kuhn, but the later position gives a different picture of paradigm choice. We also find a parallel distinction in some anthropological studies. A.F.C. Wallace, has shown that social order and communal integration is possible by two ways of socialization. He describes
them as replica of uniformity and organization of diversity. In many of his investigations he found that members belonging to a group or community behave in the same way, under common circumstances. He found the reason in the common patterns of socialization, within a common cultural environment. So any member within that community could stand its replica and further what the members of the same society represent is a basic personality type.

On the other hand, there are certain cases where there is a deviation from the basic personality type. He has also found cases which respond differently, under common circumstances. Such a diversity is found in differing habits and motives of the different personalities or customs which are well organized, integrated within the boundaries of any society. Wallace describes it as an organization of diversity. These cases refer to the model personality types bound together by values and norms of any culture.

An affinity between these two models and the two types of consensus can be seen clearly. The replication of a basic personality type can also be found in the members of a particular scientific
community. Nurtured in the same paradigm, the members of a scientific community can be a replica of uniformity. While the achieved consensus reflected in varied judgements can be seen as organized diversity.

An important implication of these two models, as well as, the two types of consensus is that the imposed consensus resists any kind of change, while the achieved consensus is the result of a change. However, this does not pale imposed consensus into insignificance. It serves an important function of continuing the values of any culture from one generation to the next. But its limitation is that it does not justice to the possibility of change. Achieved consensus provides a justification for change as it creates space for different kinds of judgements.

An important aspect of the distinction between the imposed and achieved consensus is that it can throw a new light on the debate between Popper and Kuhn. These two types of consensus can be linked by a rational critical attitude. Hence, one may possibly show a complementary or reciprocal relation between consensus and criticism. Since Kuhn emphasizes on
consensus, whereas Popper gives more importance to criticism. Therefore, both these perspectives have been treated as two alternative approaches. But it is possible to show that in Kuhnian consensus theory there is a place for conflict as well as the consensus has its own role in Popper's conflict theory.
NOTES

2. Ibid, p.20.
7. Kuhn, 1970, p.177
8. Ibid, p.41.
10. Ibid, p.34.
11. Ibid, p.34.
17. Kuhn, 1977, xili