KNOWLEDGE AND BELIEF SYSTEMS

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This thesis is my original work and has not been presented for a degree in any other University

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Abstract

This study takes off from W.V.O. Quine's observation that philosophers have paid far too much attention to the analysis of the concept of knowledge at the expense of belief. Quine's attempt to naturalize epistemology is however not followed. The analysis of the concept of knowledge in this century is critically examined and seen to lead to the impasse of knowledge as something essentially unattainable and elusive. Given the problems of the ideal of knowledge as indefeasibly justifiable true belief in its absolutist, infallibilist sense, this ideal is relativised to belief-systems. Belief-systems are here understood to be systems of sets of beliefs perceived to characterize persons or social groups. They are a reflection of the world-outlook of such persons or social groups, that is their perception or conception of reality, persons, life, value, etc.

This study takes it that a belief-system like language is basic and necessary for authentic human existence. Like language, we cannot avoid having beliefs about the things around us. In this sense the growth and formation of beliefs is similar to that of human language.

Clearly, belief-systems do not arise from a vacuum, they arise out of given environments. Certain of such environments and how they influence and determine belief-systems are investigated for example the physical, social, historical and linguistic environments. It is argued that the sitz-im-leben or the

environments within which beliefs arise naturally mould and colour it. Given such a basis for an ecology of beliefs, belief cannot be fully understood in isolation but only on the basis of the belief-systems to which they belong and the environment from which they arise. The interplay of human forces in any environment is singled out as a key factor in the growth and development of belief-systems. Such human forces are here viewed in terms of human interests - interests concerned with the fulfilment of certain basic physiological needs and interests concerned with the fulfilment of certain higher social needs. It is argued that such interests play a crucial part in determining the direction and form as well as content of any belief-system.

The problem of rationality and irrationality in belief-systems is discussed. Rationality is viewed as encompassing more than logical rationality - although logical rationality is taken to be basic to rationality. Rationality is understood in a Bayesian sense as an attempt to optimize not only logical criteria but as well the values or interests espoused by the subject within the constraints defined by the environment. A view which takes the Popperian and Kuhnian conception of belief change as complimentary is defended and interpreted in the context of the picture portrayed here. The ideal of truth is understood here to be regulative in the Kantian sense. It is taken to be the aim and goal of belief-change. A unified view of truth which attempts to harmonize the correspondence, the pragmatic and the coherence theories is constructed and defended.

Underlying this study is a possible - world's conception of belief-systems. According to this view, at any given time, in any environment there is a possible belief-system which achieves the ideal of knowledge in its absolutist, infallibilist sense. There are however also in such an environment at any time several variants or alternatives to this ideal. Using possible - world semantics, developed by Kripke and Hintikka, as an analytical tool, an attempt is made to investigate into the logical structure of belief-systems in some given environment at a point in time.

Further, the function of beliefs in the transformation of environments is investigated. Human beings are here understood to act on the basis of their beliefs i.e. human behaviour presupposes certain sets of beliefs (and interests or desires). In this sense, the study of belief systems is seen to be related to problems in the theory of action and of mind.

This study then is a contribution to the understanding of man and his activities in society - in so far as such an understanding hinges upon the belief-systems which underlie the foundations of human life.

Introduction

This work is a study in the theory of belief-systems. It is in two phases. One phase is an account of belief-systems in terms of interests and of how belief-systems are connected to certain environments, e.g. ecological, linguistic, economic etc. The other phase concerns the evaluation and analysis of belief-systems. The framework of possible-worlds is here assumed and employed in the analysis of the structure belief-systems. Thus Hintikka's concept of model sets and S.A. Kripke's concept of model structures are used in the analysis of the internal logical structure of belief-systems as well as the types of logical connections that obtain among belief-systems. This framework is explicitly presented in chapter 5.

Chapter 1 is an epistemological analysis of the concepts of knowledge and belief. Whereas the current epistemological analysis of knowledge as "indefeasibly justified true belief" is accepted, it is argued that we cannot reasonably claim to be possessors of knowledge in this absolutistic, infallibilistic sense, especially in our cognitive activities or our activities of "knowledge-production."

An analysis of beliefs and their justification in terms of belief-systems is given. Fallibilism, the belief that we may be mistaken in our beliefs and that we should resist absolute dogmatism and be ready or willing to alter our beliefs should "facts", circumstances and vital human interests warrant such a change, is defended. Nevertheless, it is argued that any such move should be rationally justifiable. Rational justification is shown to be relative to a belief system, to the problem situation and the socio-historical framework as well as the relevant interests.

Chapter 2 discusses the place of belief systems in our cognitive activities. The link between belief systems and the environments within which they arise is discussed. Thus the ecological, social, cultural, political, religious, moral as well as linguistic environments within which beliefs arise are considered. The interaction between these environments and belief-systems is discussed. The extent to which these environments influence or determine belief-systems is also investigated.

Chapter 3 discusses the connection between beliefs or belief-systems and human interests. It is argued that belief-systems are rarely value-free.

They are value-loaded and presuppose human interests. The ideal of wert-freiheit (value-freedom)(Marx Weber' is shown to be untenable, such an ideal being itself value-loaded! The way "knowledge-production" "belief-formation" is guided by human interests is discussed. The question of whether beliefs can be free of human interests is also discussed.

Chapter 4 looks into the role and function of belief systems in the transformation of social institutions, physical environments and in the production process. The assumption here is that beliefs are very central in human rational action, as people intentionally act on the basis of their beliefs, together with other factors such as desires etc. Included here too is an investigation on the "power" of ideas (beliefs) and on the thesis of the primacy of ideas in social change.

Chapter 5 is an analysis of the structure of belief systems using Kripke's and Hintikka's models of possible-world semantics.

Chapter 6 discusses the idea of rationality and irrationality in belief-systems. The inadequacy of logical rationality in evaluating belief-systems is shown and the argument is made that value-rationalit is also crucial. Rational belief systems are shown

to be those which are not only "logically" rational in being consistent but are also as well value-rational in promoting the true interests of the community.

Chapter 7 discusses the problem of belief change. The influential models of belief change developed by Karl Popper and Thomas Kuhn are considered and evaluated. Whereas some have held those two models to be incompatible and mutually exclusive, here an attempt is made to reconstruct a model of belief change that combines elements from both and also explicitly takes into account the basis of belief-systems in human interests.

Chapter 8 discusses the problem of truth in belief systems. Three dominant theories of truth are considered - the correspondence, the coherence and the pragmatic. The problems of relativism and absolutism and their bearing on belief-systems are also considered. Again an attempt to construct a unified theory of truth is made.

Chapter Nine is the conclusion in which some final remarks are made.

This investigation is essentially theoretical and analytical. As to its method, it employs the tools of modern analytical philosophy - in particular logical analysis and phenomenological analysis

to reflect on the above problems in the theory of belief systems. It discusses current theories and models bearing on these problems and uses them to develop new conclusions and considerations.

It is hoped that this study will contribute to the understanding of belief-systems, and to the laying of the foundation for their scientific study. It seems to me that a full understanding of intentional human behaviour and social change is not possible without understanding belief-systems.

CHAPTER 1

The Problem of Knowledge and Belief -beyond the present impasse

> "A fundamental distinction must be drawn between the way the world is and what we say about it, even if we all happen to agree. We could all be wrong. Some of the most important commitments we make in our life could be based on error. What is true and what we think is true need not coincide. This simple statement seems self-evident, since it merely draws attention to human fallibility in general, and our own in particular."(1)

Ever since Plato, philosophers have been engaged in a search for a satisfactory explication of the notion of knowledge. Plato himself argued that knowledge (episteme), to be distinguished from mere opinion (doxa), is not merely attainable but that to qualify as knowledge it must be of the real, true (in an absolutist sense) and infallible.(2) Frank Ramsey defended in 1929 the view that knowledge is belief that is true, certain and obtained by a reliable process. He wrote:

> "I have always said that a belief was knowledge if it was i) true, ii) certain, iii) obtained by a reliable process."(3)

Bertrand Russel implicitly showed the inadequacy of the view that knowledge is justified true belief

when he argued in his The Problems of Philosophy (1912)[4] that justified true belief cannot be knowledge when it depends on some false belief or on some fallacy in process of reasoning.

However, the first celebrated refutation of the view that knowledge is definable as justified true belief goes back only to the year 1963, when Edmund Gettier offered in a brief three page paper two counterexamples against the above view.[5] His strategy consisted in a proof that justification is a defeasible concept, and that therefore certain types of justification may be rendered inadequate through access to some other knowledge not previously taken into account. Hence impeccable and adequate justification must be indefeasible i.e. such that no new knowledge can render it inadequate. The idea here is that once something has been accepted as knowledge it should not be possible to deny it that status again. What this means may be captured in the slogan: "Once knowledge always knowledge". This is what Gettier was trying to express. Bradley and Swartz have offered a simpler Gettier type counterexample as follows:

> "We imagine a possible world in which a secretary has relied for years on the electric clock hanging in his office wall. For all the forty years he has worked in that office, the clock has never once been wrong One morning a client walks in the

> door below the clock. Since her back is to the clock she doesn't see it, and wishing to know what time it is, she asks the secretary. He glances at the clock for the first time that day, reads it correctly, and reports 'It is ten minutes past nine'. Now it happens, unknown to him, the hitherto trusty clock expired exactly twelve hours earlier. He happened to glance at it at just the one moment during the morning when its unmoving hands were pointing at the right time. Three conditions are satisfied 1) the proposition that the time is ten minutes past nine, is true, 2) he believes that proposition to be true, and 3) he is justified in believing that proposition to be true - after all, the clock has been unerringly reliable for forty years. But does he know that it is ten minutes past nine? We would hardly want to say so. Rather we would say that his was a merely fortuitous belief, and for the reason that one cannot know what time it is by reading a stopped clock."(6)

Analytic philosophers in the light of the Gettier counterexample define knowledge as "indefeasibly justified true belief". Thus Lehrer(7) adopts the following as an analysis of knowledge:

S knows that p iff 1) it is true that p 2) S believes that p, 3) S is completely justified in believing that p and 4) S is completely justified in believing that p in some way that does not depend on any false statement. This analysis is essentially equivalent to the following fuller analysis from Bradley and Swartz(8). It goes: "We should ascribe the property of knowing that p to a person a, at a specific time t, provided that - 1) p is true, 2) a believes at t that p,

3) a's belief that p is justified at t, and further provided that, 4) it is not the case that there is some true disqualifying proposition q, such that if a had believed at t that q then a would not at t have been justified in believing that p. Conditions 3) and 4) in both analyses cater for the Gettier type counterexamples. When they are satisfied, the proposition is said to be indefeasibly justified. Knowledge is thus analysed as indefeasibly justified true belief.

The above analysis leaves however many crucial questions unanswered. One such question may be formulated as follows: How can one establish or prove that a given knowledge claim is knowledge in the above sense, i.e. that it is indefeasibly justified true belief? A related formulation due to Habermas is the following:

> "Wollte man die philosophische Diskussion der Neuzeit in Form einer Gerichtsverhandlung rekonstruieren, wäre diese zur Entscheidung der einzigen Frage einberufen worden: wie zuverlässige Erkenntnis möglich sei."(9)
>
> i.e. If one were to reconstruct the philosophical discussion of the modern period in the form of judicial process it would be deciding a single question: how is reliable knowledge possible?)

The analysis of knowledge does not solve this problem it poses it! It opens up a whole chain of other questions. Take for example the truth condition. It is widely accepted and defended by people of all creeds.

Nobody has ever defended a Falsehood-Condition. It would amount to defending contradictions in everyday discourse as well as in scholarly research. Everyone seems to agree that what is "known" cannot be false, and that truth is the aim of research and scholarship. Whereas the Truth-Condition as a formal requirement is innocuous, trouble arises as to how it should be understood and applied. Disagreement in this area has led to so-called theories of truth. Susan Haack (10) lists as many as eight theories of truth: the coherence (Bradley, Rescher), the pragmatist (Peirce, James, Dewey, Dummett), the correspondence (Russell, Popper), the semantic (Tarski, Davidson, Kripke), the redundancy (Ramsey) the perfomative (Strawson), the simple (Prior, Mackie, Williams) and the prosentential (Belnap, Camp, Grover). This multiplicity of theories of truth already poses another tricky problem: which of the many theories of truth is the true one? But again, how should we understand the term true? The problem of truth is not really an easy one. Now however this problem is solved it raises another problem, namely the problem of justification. In the first place, the truth-condition and any theory of truth preferred must satisfy a justification condition. That is, a claim that p is the case presupposes another claim that q is the case, q in this case justifying or supporting p. But clearly the justification condition is satisfied provided that q in turn is true and provided also that p follows

validly from q. But theoretically there does not seem to be a clear way out, for either we may end in some infinite regress, some vicious circle, or some apriorism. Can we possibly break from this dilemma? The traditional solution has proceeded by demonstrating some so-called secure foundation of certain, infallible, justifiable, absolutely true knowledge. But such a foundation is open to the same charges mounted above. This point has been made by W. Bartley III as follows:-

> "No matter what belief is advanced, someone can always challenge it with: 'How do you know?' and 'Give me a reason'. Unless this procedure is to go on forever, it must be halted at a 'standard', 'criterion' 'ultimate presupposition', 'end', or 'goal' whose authority is simply accepted. If all men do not cease their questioning at the same point, however, "ultimate relativism" results. For there is no Archimedes' lever with which to decide among competing sets of ultimate standards. Even if everyone did happen to stop at the same place there would be no way to determine whether this universal subjective standard led to objectively true statements about the world. Obviously, a man cannot without arguing in a circle, justify the rationality of his standard of rationality by appealing to that standard. Yet, if he holds certain beliefs - for example, the standard itself - to be immune from the demand for rational justification and from the question 'How do you know?' he can be said to hold them irrationally or dogmatically. And, so it is claimed, argument among men about the radically different beliefs they hold in this way is pointless. For rational argument consists in mutual criticism, with each man supporting all his beliefs with good reasons. The limits of rational argument within any particular way of life, then, seem to be defined by reference to that object or belief in respect to which commitment is made or imposed, in respect to which argument is called to a halt." (11)

The conclusion from the foregoing may now be formulated as follows:

1. If someone claims to know that p, it does not follow that p is indefeasibly justified true belief, i.e that it is absolute, infallible knowledge.
2. However, for someone to claim that he knows that p, entails that that person believes that p is true, given his belief-system.

But in the light of the foregoing discussion, since claims to know are predicated upon belief, it follows that if someone claims to know that p, then that person also believes that p. Our argument would be that claims to knowledge are pointers to the value assigned to some given claim within some belief system, and that knowledge and truth on the classical realist account is rather elusive inspite of the continual and unending quest for it. Knowledge or truth in this sense appears to us to be indeed a useful and fundamental regulative ideal in the Kantian sense, but it is something that keeps slipping through our fingers. What this means is that we normally operate in the realms of beliefs, or rather on the basis of beliefs to which we attribute various degrees of confidence.

Hence in our search for knowledge and truth our beliefs and our subjective or intersubjective truth-valuations of them are basic and primary. Indeed new knowledge-claims can only be justified on the basis of beliefs already held, irrespective of their

"objective" truth-value. One can distinguish however between rational and irrational beliefs, rational beliefs being those that are justifiable on the basis of prior beliefs in some logical way.(12) Irrational beliefs are those which would defy any such justification, being maybe contradictory or inconsistent, and having no basis whatsoever in some supporting evidence. We would therefore make the following distinctions with respect to belief:

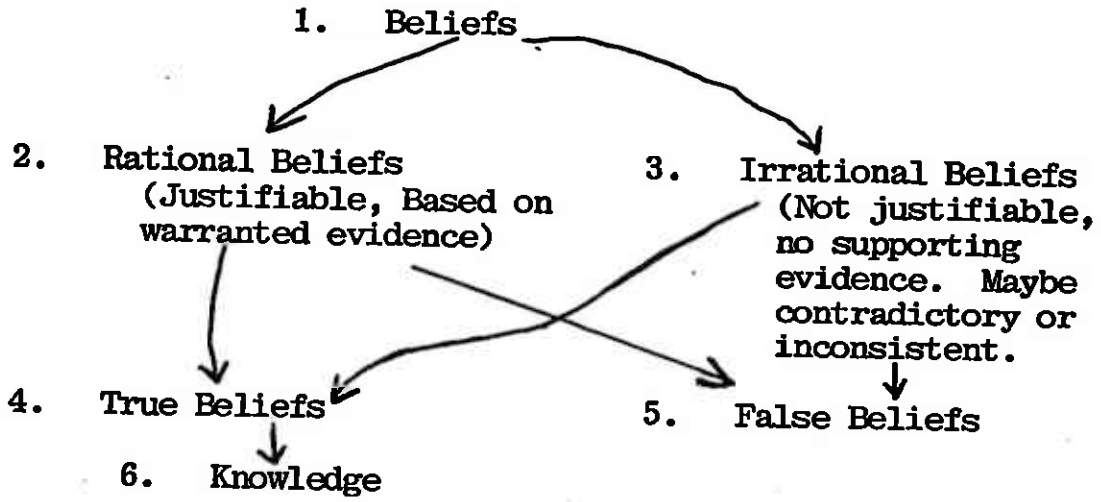

Diagram of Belief

In the above diagram, we see that knowledge understood as indefeasibly justified true belief is clearly a subset of belief. One might be tempted to note an apparent paradox in so analysing knowledge. Such an apparent paradox arises when one assumes that belief can in principle be false and knowledge cannot be false by definition. Hence defining knowledge in terms of

belief leads to a paradox since there is a fundamental categorial distinction between them. This paradox disappears however when one notes that belief does not necessarily imply falsity. Any given belief can be either false or true. This disjunction of Truth or Falsehood is what is necessarily implied by belief. Knowledge is understood to be implied in the one half of the disjunction which corresponds to truth. Further we see that a rational belief may in fact be false, just as an irrational one may turn out to be true. But the chances of a rational belief being true appear to be higher than those of an irrational belief being true. We are of course understanding truth as correspondence with an objective reality. Given the theoretical problems as to whether we can be infallibly certain in questions of truth, it would appear that in real life we operate in the region of points 2 and 3 of the above diagram. And with respect to those two points, rational beliefs are to be preferred to irrational beliefs. The reason being that man is a rational animal, and historical experience has shown that rationality contributes more to survival and to human well-being than irrationality. And since beliefs are in the final analysis guides to action as well as tools in the art of living - rationality seems to be our instrument in deciding between beliefs. Our position here shares a certain affinity with

Prof. Wiredu's paper "Truth as opinion"[13] in defending fallibilism, rationality and open-mindedness in our beliefs.

Rationality and justification of beliefs are in this sense central in shaping our beliefs. From the foregoing, it is clear that rationality and the justification of beliefs are both contextual and belief relative. That means that at some given time and place and in given circumstances, one justifies a new belief (accepting it, rejecting it, withholding it) on the basis of other beliefs of his. So one's belief system is the basis for the evaluation of new beliefs. An example will illustrate this point: In some traditional African societies, disease or calamity were explicable in personalistic terms or in terms of social relations in the community and its hierarchical structure of forces. Nothing that happened to a person in the community was accidental. Everything occurring to a man was explained on the basis of some causal nexus. So if someone was walking on some lonely path in the forest and a tree fell on him killing him or maiming him, this would be no accident. There would be a cause which would be in principle discoverable. Mbiti is very illuminating on this topic. He writes for example: "a bereaved mother whose child has died from malaria will

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not be satisfied with the scientific explanation that a mosquito carrying malaria parasites stung the child and caused it to suffer and die from malaria. She will wish to know why the mosquito stung her child and not somebody else's child."(14) Now if someone is a "traditional" African even if only in the above aspect, such a person will justify misfortunes quite differently from say someone whose belief system presupposes the teachings of modern science with respect to the explanation of events in nature. Similarly, a modern doctor is bound to look to the germ theory for the explanation of bodily disoders and malfunctions where our traditional believer will use a quite a different explanatory framework. But note that there may be cases where such explanatory frameworks may be seen to be complimentary, as in the case where one framework is seen to be concerned with 'why' questions and the other with 'how' questions. There may also be cases where these frameworks may be taken to be mutually exclusive and as offering alternative explanations.

The problem is therefore posed whether epistemology should continue to preoccupy itself with the problem of knowledge if the concept of knowledge is understood in an absolutist and infallibilist sense. Such a preoccupation is not likely to prove very fruitful or to lead us to any deeper understanding of people's knowledge-claims or beliefs which are basic to understanding their life in society.

It would appear that the absolutist, infallibilist concept of knowledge current in analytic philosophy renders knowledge inaccessible to anyone.

The proposal then is to shift attention from the analysis of the concept of knowledge to that of belief. Prof. Quine seriously observes that 'Perhaps philosophers have done us a disservice by focussing so much on knowledge and so little on belief.'(15) This existing imbalance clearly needs to be redressed. This inquiry is a contribution in that direction.

This does not however entail the throwing of the concept of knowledge overboard. On the contrary in this study, the concept of knowledge as well as that of truth are retained as regulative ideals somewhat in the Kantian sense. Maybe knowledge and truth ought to be the aim, objective, indeed the categorical imperative of all our scholarly or intellectual pursuits.

In this search we operate only at the level of our beliefs or knowledge-claims as already argued. What should be our strategy or guide in attaining the above ideal? This is a thorny problem, defying an incontestable solution. In the search for a solution - perhaps the concepts of rationality, probability, interests and justification may be pointers to the required solution. Similarly, the concepts of coherence and pragmatism may serve a similar function. This suggestion merits some investigation.

Beliefs as suggested above are best understood only within the context of a belief-system. This leads to the need to understand the nature, structure and function of belief-systems. The related problem of choice among competing beliefs or belief-systems, as well as that of belief-change poses itself and deserves some scrutiny.

Such problems as that of the relationship between beliefs and their environments, beliefs and human interests, beliefs and reality, etc are seen to be really variants of the same underlying problem. The above cluster of questions define the problematik which is the central concern of this inquiry.

FOOTNOTES

1. Wilson, R.B. Rationality, Oxford, O.U.P, 1973, p.1.
2. See for example the discussion in Plato's Republic, Theatetus or the Meno.
3. Ramsey, F.P., Foundations, ed. O.H.Mellor, London, R&KP, 1978, p.126.
4. B. Russell, The Problems of Philosophy, New York, O.U.P. 1912, 1952, pp.131-132. His "Prime Minister" 'Newspaper' and 'Socrates' examples are lucid, brief and extremely appropriate in illustrating this point.
5. See Gettier, E. (1963): "Is Justified True.Belief Knowledge", Analysis, Vol.23,(1963),pp.121-123
6. Bradley,R. & Swartz,N. Possible Worlds, Oxford, Basil Blackwell,(1979) p.27.
7. Lehrer, Knowledge, Oxford, O.U.P. (1974) p.21.
8. Bradley & Swartz N., op.cit p.138.
9. Habermas,H., Erkenntnis und Interesse Frankfurt/M, Suhrkamp Verlag 27. 1968, 1973, p.11
10. See S. Haack, Philosophy of Logics, Cambridge, C.U.P 1978, chp.7. pp.86-134.
11. W.W. Bartley III, The Retreat to Commitment, New York, A.A.Knopf,1962, pp.90-92.
12. For the problem of the rationality of prior-beliefs (which R.G. Collingwood in his An Essay on Metaphysics, Oxford: Clarendon Press, 1939, p. 188 terms "absolute Presuppositions") see the discussion in Chapter 6

13. Wiredu, K. Philosophy and an African Culture, Cambridge, C.U.P. 1980, Ch.8, and also 11 and 12

14. Mbiti, J. African Religions and Philosophy, London, Heinemann, 1969, p.200 The whole of Ch.p16 is very illuminating on this point.

15. W.V. Quine and J.S. Ullian, The Web of Belief New York, Random House, 1970,1978,p.14

CHAPTER 2

Belief Systems and some of their environments

> "All testing, all confirmation and disconfirmation of a hypothesis takes place already within a system. And this system is not a more or less arbitrary and doubtful point of departure for all our arguments: no, it belongs to the essence of what we call an argument. The system is not so much the point of departure as the element in which arguments have their life."(1)

Beliefs are, it would appear, indispensable to human thought and action. They are as it were our tools for orientation in the world of nature as well as that of human relations. On the basis of the discussion in Chapter One, we shall understand knowledge in what follows not as "indefeasibly justified true belief" except where explicitly stated. Instead knowledge will be understood to be what men take as such, that is "those beliefs which men confidently hold to and live by ..... beliefs which are taken for granted or institutionalised or invested with authority by groups of men .... what is collectively endorsed"(2) Now beliefs which persons presuppose, accept, endorse, are committed to, live by, either individually or communally may be referred to as a belief system. Such a belief system is simply a set of beliefs. It may also be understood to consist of propositions which describe some possible state of affairs, or some possible state of the world. Such a depicted situation may be either actual i.e. obtaining in the real world, or not, remaining only

in the realm of possibility. It is to be noted that included in a belief-system are not just beliefs about nature, man and society, but also beliefs about what ought to be, beliefs about the nature of the good life, the good society, or the beautiful. Thus an axiological sub-system, a religious sub-system, are among others, part and parcel of belief-systems.

Now whenever we come across some new event or phenomenon or encounter a new belief, we always fall back on our beliefs, that is on our belief system at that time, in order to explain or understand the new. Understanding or explanation that does not depend on prior beliefs appears impossible. Beliefs in this sense are nothing but our theories about reality. Hence a theoretical system is a belief system, and the claim being made here is that theory-neutrality is not possible. For even observations or perceptual beliefs are theory-laden. Our common sense too is a theoretical system which is by no means static. Indeed it can be said that scientific research and findings influence our perceptual judgements even at the level of common sense. To judge that something is a germ requires some theory of germs. Even the observation that something is a monkey requires the ability to distinguish between monkeys and gorillas and chimpanzees and other members of that family. This position of the theory-ladenness of human intellectual

activity, including our observations and our raw human everyday experience has been defended most ably by Hanson Polanyi, and Kuhn among others.(3) The main idea here is that there is no presupposition-free explanation or understanding. For to hold that something has the a property x or that it is a y presupposes that certain other beliefs are the case.

Prior beliefs are not only central to thought but to action as well. For example, if Udo smiles because he has seen his girlfriend Binti, it would follow that Udo believes that the person he has seen is Binti. Or if Taki remembers that he has forgotten his money in the restaurant, then he must believe that he has forgotten his money in the restaurant. Or if Ngato is disappointed because his favourite football team has lost a match then he must believe that indeed his favourite football team has lost a match. These cases show that thought or action presupposes some background of beliefs which help to rationalize it or to make it intelligible.

Let us suppose again that John recognizes a face which he declares to be of an old school-mate Nkini. He may be asked why he thinks he is not mistaken. In his answer he would cite some set of evidence q believed by him to be true and also believed by him to support the belief that the person he has seen is his friend Nkini. Included in the set q may be the information

that they were in school together, that they belonged to the same clubs, that they were in the same dormitory, that his memory of him is still quite fresh, that they meet occasionally for a drink, etc. Whether q, the evidence adduced in support of p, is sufficient and adequate, is a different question. It suffices here to state that q is adduced to support p. It should be added however that q must be in the repertoire of beliefs believed by John, that is, that it belongs to his belief set. Thus such an underlying belief set serves its role not only in the explanation and understanding of some new event, belief, or action, but as well in their justification. Obviously such justification is belief-relative and contextual, depending also on the person or group of persons who may share commitments and beliefs. It is also as well relative to the problem situation and the way questions are formulated. It is also relative to the ends or objectives being persued. The point here is that in practical everyday life or even in scientific research absolute infallible or indefeasible justification seems to be elusive, and practically impossible. Lehrer has correctly viewed the situation thus: "In whatever way a man might attempt to justify his beliefs, whether to himself or to another, he must always appeal to some belief. There is nothing other than one's belief to which one can appeal in the justification of belief. There is no exit from the

circle of one's beliefs."(4) From the foregoing it would follow that justification, explanation and understanding always presuppose a point of reference, that is a belief system. To get outside the system of belief systems and to be able to give an objective absolute evaluation of some claim is attempting the impossible. It is like Archimedes looking for a fulcrum outside the system of nature whereby he would be able to move the world. Moreover in the case of belief systems such a new vantage point would also need validation only by going outside it, which is absurd.

It is clear that belief systems arise out of some given environments.(5) In any such environemnt there may be a multiplicity of belief systems not reducible to each other, that is, mutually exclusive. For example belief systems A, B, C, D, etc, may be represented in some environment and persons in the environment may be committed to the different belief systems prevailing in their environment. Moreover even within a single belief system, persons may not have equivalent belief sets. They might for example agree on fundamentals and differ on details or peripheral beliefs. Common to such persons is the notion of <u>commitment</u> to a system of beliefs. By commitment to belief system is meant an acceptance or endorsement of some given belief system and a preparedness

to act and live on its terms.Commitment here implies a belief in the truth or reliability of what one is committed to. It would be irrational to be committed to something which one believed to be false or even unreliable. This however does not rule out irrational commitments. The question is how they are to be explained. Allowance is made here of situations of belief-vagueness, for example where the boundary between belief and unbelief is vague. To solve this problem the notion of degrees of belief (or degrees of confidence) may be introduced, so as to facilitate the assignment of some positive probability measure to the belief in question.(6) Commitment to a belief system implies that one acts or is predisposed to act on the basis of what one is committed to. Commitment to a belief system can be said to determine or shape action or conduct in daily life. Thus commitment to the theories of modern science is the basis of space scientists risking their lives on a trip to the moon. Similarly a committed Marxist is one who acts or is prepared to act on the basis of the Marxist belief system. "Mere intellectual assent to Marx's doctrine does not make a man a committed Marxist"(7) What is being suggested here is therefore a clear link between belief - commitment — action, that is, the idea that beliefs shape commitments, and that commitments shape action or conduct. The plausibility of this link shows itself when one compares for example the believer in the liberal - capitalist system

and the believer in the Marxist-socialist system, and particularly for example with respect to the question of private property and freedom of private economic activity. It is to be expected that the policies persued by these two when in political power will be determined by their respective commitments to their respective belief systems. Another example of the proposition that there is a link between belief, commitment and action is given in a consideration of other cultures. It is clear that such cultures differ from one another simply because of the differing commitments and belief systems. Thus it could be argued that the differences in modes of action and conduct derive from differences in the belief systems (world outlooks) characterising such cultures and the commitments which ensue therefrom. Commitment to a belief system is a commitment to a whole system of propositions. In the words of Wittgenstein:

> "When we first begin to believe anything, what we believe is not a single proposition, it is a whole system of propositions (light dawns gradually over the whole). It is not single axioms that strike me as obvious, it is a system in which consequences and premisses give one another mutual support ..... The child learns to believe a host of things. i.e. it learns to act according to these beliefs. Bit by bit there forms a system of what is believed and in that system some things stand unshakeably fast and some are more or less liable to shift. What stands fast does so, not because it is intrinsically obvious or convincing, it is rather held fast by what lies around it.(3)

A corollary of the above argument is the proposition that a change of beliefs will entail a change of commitment

and correspondingly a change in modes of action or conduct associated with the beliefs in question.

The question of commitment raises other problems related to rationality and human interests. These will be discussed in a later chapter. It seems however, that commitment is also greatly influenced by the environments presupposed by a belief system and in which the person grows and lives. We turn our attention to a consideration of some of these environments, namely: the physical environment, the social environment, and the linguistic environment. The argument to be made in each of the three cases is that the nature of the environment is likely to influence the type of knowledge possible in it, and therefore certain types of beliefs or findings are only likely to arise in certain environments but not all. This seems to hold even when we assume the case of there being a similarity of interests in all environments. Let us take the physical environment first. Clearly the ecological environment of tropical Africa is quite different from say that of Europe. While in Europe one has the four seasons - summer, autumn, winter, and spring, in tropical Africa these are almost non-existent. It is to be argued that this fundamental difference is most likely a basis for many of the differences in the belief systems, cultures and civilizations of Europe and

Africa. For if one could imagine for a moment that these four seasons obtained in Africa as is the case in Europe,then it is possible for one to imagine a totally different Africa with a totally different civilization, cultures and belief systems. Given the reality of severe winters and given the common human interest in survival and self-preservation, there could have been quite a different African architecture - without the semi-permanent, grass-thatched structures which have characterised the past. There could have been a revolution in the cloth-making technology to facilitate protection against the cold. The effects in other areas could be tremendous. All this is to argue that belief systems could be different, for belief systems are greatly influenced by these ecological realities. The economic history of the continent could also have been different. If we reverse the example and give Europe a tropical climate - we could likewise have a totally different Europe, with a different history, different knowledge structures etc. This would follow from the fact that beliefs arise out of man's interaction with his ecological, physical environment, and out of his need to live and survive in an environment. In fact a belief system may be an indicator of the survival potential of a community vis-a-vis its ecological environment, and its adversaries. It is also a useful commentary

on life in a given environment as experienced by its owners. The physical ecological environment exerts certain pressures on man and facilitates certain breakthroughs in knowledge production and in survival techniques. Further ecological environments influence the development of certain economies - whether predominantly agricultural, industrial, fruit-gathering, or hunting. And with each economy other institutions arise which generate relevant and exploitable knowledge. Of course it hardly needs to be said that possibilities to interpret nature and invent 'thinking models' do not depend only on ecology. There are other factors as well, as will be seen later.

In the case of religious systems which appear as sub-systems in most belief systems, there appears to be evidently some connection to the physical ecological environment. Thus because of the great economic importance to the people of the River Ganges it is made into an object of worship and reverance. So is the case of the life-giving Nile as a sacred river among the the early Egyptians. Moreover the water of these rivers is given some purifying role in the religion. Among the Agikuyu of Kenya for example, Mt. Kenya is given a certain religious significance. Certain plants and animals in the environment which have some certain cultural significance receive some role

as well. On this topic, Sopher, D.E. has the following to say: "religion often seems to be entirely a ritualization of ecology. Religion is the medium whereby nature and natural processes are placated, cajoled, entreated, or manipulated in order to secure the best results for man. Even at a very primitive technological level, however, every culture operates selectively in taking its sacred 'resources' from its ecological milieu. The religious behaviour of such societies becomes an extended commentary on selected usually dominant features of their economies".(9) Indeed the causal effects and constraints of the physical ecological environment on belief can hardly be emphasized. Thus it would be inappropriate for people in tropical Africa to compose and sing songs about winter if they have had no contact with winter conditions, just as it would be inappropriate for them to be preoccupied with winter clothing and architectural patterns or structures of the winter countries. The ecological basis for such implied constellations of beliefs and actions would be absent.

It has already been noted that the physical ecological environment also influences the social and cultural forms of a society. In this way a hunting and cattle herding community would be organised differently from a farming community or from a nomadic community.

Yet these social-economic forms are determined largely by the ecological environment, although not exclusively. We will see later the function of belief in the transformation of the ecological environment. The social - economic - cultural environment also has a significant effect on the content and form of beliefs. For clearly certain beliefs are likely to have causally come only from certain social environments. It is well known that Marxism is a product of 19th Century socio-economic conditions and depended for its development on a certain matrix of ideas current in that environment, namely those of German philosophy, British political economy and French socialism as they were understood by Karl Marx and Frederick Engels. Marxism as a theoretical system is as explained above a belief system. The claim to be made here is that this system of beliefs referred to as Marxism could not have been produced in a society totally different from that of Europe after the Industrial Revolution. There is no way Marx and Engels could have been produced in say 19th Century African conditions or those of India for that matter. For in truth the system of Karl Marx's 19th Century ideas could not have been produced in the hunting, nomadic, fruit-gathering, farming societies of tropical Africa. A 19th Century African Karl Marx is inconceivable. Indeed the notion that a belief system has its roots in a given social matrix is a notion that is even propounded by Karl Marx himself. In its Marxian formulation this notion

receives diverse and conflicting interpretations. The 1859 Preface to A Contribution to the Critique of Political Economy formulates the notion as follows:

> "In the social production which men carry on they enter into definite relations that are indispensable and independent of their will, these relations of production correspond to a definite stage of development of their material powers of production. The totality of these relations of production constitutes the economic structure of society - the real foundation, on which the legal and political superstructure arises and to which definite forms of social consciousness correspond. The mode of production of material life determines the social political, and spiritual processes of life in general. It is not the consciousness of men that determines their being, but on the contrary, their social being determines their consciousness."(10)

Inspite of the problems of interpreting this passage two views seem to stand out, namely that this passage defends some form of historical materialism either in the form of a technological determinism which gives primacy to the productive forces, or in the form of an economic determinism which gives primacy to the relations of production, i.e. the economic structure. It may indeed be argued that although these factors are crucial, they are not sufficient to explain socio-historical movement. We will treat this problem in the next chapter. It suffices here to note that ideas, not least Karl Marx's theory itself play or have played important roles in the transformation of societies and in their growth. A fuller account seems to be that the entire social matrix - with all that constitutes it has a share in whatever is

produced therefrom. Naturally one may give various weights to various components in the social matrix depending on what is to be explained. But to isolate one or two components as sufficient to explain the whole is to simplify this complex story. The view being defended here may be termed holistic and is in a certain sense dialectical, ie. that the causal links are not uni-directional. Marx's theory may serve as an example again. This theory arose out of a specific social matrix, i.e. this social matrix and this individual caused it. But as well this theory was instrumental in the transformation of this social matrix in certain directions. Our point then is that belief systems are not produced in a vacuum, but arise out of given social environments, in the context of which they are better understood, explicated and appreciated.

Further, human belief systems insofar as they are rooted in social communities are inextricably tied to a linguistic environment. The nature of a linguistic environment and its connection to belief systems is our last consideration here. The underlying idea may be introduced by a consideration of the much discussed Sapir - Whorf Hypothesis. This Hypothesis eludes precise and unambiguous characterization, at least in the work of its authors, as has been noted, for example, by Max Black.(11) None the less the general thrust of

the hypothesis is clear. It generally defends the idea that possession and use of a language unconsciously imposes a certain world outlook, a certain way of defining experience and ordering reality, as well as limiting the possibilities of thought. Thus Sapir, speaks of "the tyrannical hold that linguistic form has upon our orientation in the world"(12). He argues that language "not only refers to experience largely acquired without its help but actually defines experience for us .....because of our conscious projection of its implicit expectations into the world of experience"(13). In 1929 Sapir formulated this hypothesis as follows:

> "Language is a guide to social reality. Though language is not ordinarily thought of as of essential interest to students of social science, it powerfully conditions all our thinking about social problems and processes. Human beings do not live in the objective world alone nor alone in the world of social activity as ordinarily understood but are very much at the mercy of the particular language which has become the medium of expression of their society. It is quite an illusion to imagine that one adjusts to reality essentially without the use of language and that language is merely an incidental means of specific problems of communication or reflection. The fact of the matter is that the real world is to a large extent unconsciously built upon the language habits of the group. No two languages are ever sufficiently similar to be considered as representing the same social reality. The worlds in which different societies live are distinct worlds not merely the same world with different labels." (14)

Whorf in speaking of "our linguistically determined thought world" (15) maintained that:

"the linguistic system --- of each language is not merely a reproducing instrument for voicing ideas but rather is itself the shaper of ideas, the program and guide for the individual's mental activity, for his analysis of impressions, for his synthesis of his mental stock in trade. We dissect nature along lines laid down by our native languages. The categories and types that we isolate from the world of phenomena we do not find there because they stare every observer in the face, on the contrary, the world is presented in a kaleidoscopic flux of impressions which has to be organised by our minds - and this means largely by the linguistic systems in our minds". (16)

This hypothesis led Whorf to renounce the possibility of objectivity and impartiality within the framework of human language. He therefore spelt out a 'new principle' namely the principle of linguistic relativity. In this connection Whorf writes: "We are thus introduced to a new principle of relativity, which holds that all observers are not led by the same physical evidence to the same picture of the universe unless their linguistic backgrounds are similar or can in some way be calibrated" (17). This principle as defended by Whorf and Sapir seems to be an early anticipation of similar theses in present day philosophy. One has in mind for example W.V. Quine's celebrated thesis of the indeterminacy of translation as well as his other related thesis of the underdetermination of theory by data. (18) It may also be noted in passing that the other important thesis of the incommensurability of theories as defended by either Kuhn (19) or by Feyerabend (20) is also closely related to the above Sapir - Whorf Hypothesis.

As already indicated the Sapir-Whorf Hypothesis has given rise to diverse interpretations. We will not go into that now. We would only wish here to raise some objections to one particular interpretation of that hypothesis, namely the one which defends the case for a linguistic determinism. According to this interpretation language is prior to thought and belief in the sense that it determines them. The tenability of this thesis interpreted in this way seems doubtful. Clearly there is an inextricable link between language and belief but this does not suggest the primacy of one or the other. Indeed the fact that within some given language conflicting world outlooks are possible is an argument against the primacy thesis. For example within the German language - one could find at the same time groups committed to Marxism-Leninism, Christianity or National Socialism. These systems of thought are contradictory but could in this case be expressed in this language. In fact original formulations and contributions to these systems were made within the context of this language. How is this possible given the thesis of linguistic determinism? It appears that language is a tool for expressing our propositional attitudes. But some languages are better developed or conditioned to express certain ideas better than others. Indeed languages can be consciously developed to handle certain areas of experience more efficiently,

effectively and comprehensively than others. A good example here are the specialized languages of science. There is no doubt that languages presuppose forms of human experience, ways into which reality is categorised, experience ordered, human relationships perceived, etc. In this sense then the worlds reflected in the various languages of mankind are not the same. They reflect certain beliefs about nature, man, society, goodness, truth, beauty, etc., To illustrate this we might consider the case of the semantic basis of Bantu nominal classification. There is evidence to suggest a definite principle of categorisation, which unfortunately has been blurred and is not clear to present-day speakers. One can nonetheless notice a suggestion of an ontological understanding of the nature of reality here. We will not consider the case of Proto-Bantu as Welmers[21] for example has done, but will instead consider the case of Oluluyia (Olunyole dialect). In Oluluyia one can identify the following classes:

Class	Example	Reference Class
1. omu - aba	omundu = a person abandu = people	Kinship terms proper names human beings
2. omu - emi	omuhembe = mango tree emihembe = mango trees	mostly trees & other plants
3. (e) li-ama	lihembe = mango tree amahembe = mango trees	most fruits

Class	Example	Reference Class
4. esi-ebi	esindu = thing ebindu = things	mainly things
5. (i)n-tsi(n)	inyumba = house tsinyumba = houses	mixed
6. olu-tsin	oluchendo = journey tsinjendo = journeys	mostly things that are long or tall in proportion to their width
7. akha- oru	akhaana = tiny child orwana = tiny children	dimunutive class
8. obu	obulamu = life	abstraction abstract nouns
9. okhu	okhukhola = doing	infinitives verb nouns
10.ha	hango = at home	locative place, external, at
11.mu	munyumba = in the house	place, internal, in
12. oku- emi	okundu = huge thing or being emindu = huge things or beings.	augmentative (giant) Class

As a detailed study would show this noun-class system seems to have been based on some principle of categorising reality. Over a period of time and through the process of language change this categorization has been blurred. Presently there is no strict adherence to this archaic mode of categorizing reality, as it appears that the underlying principle is no

longer explicitly defended. The assumption here is that originally these categories were 'pure' and consistent. If this is so it is clear that most of the categories above are impure. For example while class 2 above contains mostly trees and plants as indicated, it also has such objects as cars i.e. omutoka - emitoka. Similarly Class 3 contains mostly fruits but it also contains such objects as jembes i.e. lijembe - amajembe. Such examples could be multiplied for other classes. This example of the Oluluyia nominal classification. suggests the idea that there is always a "language lag" (cf.cultural lag), that language is slow in responding to new developments in our thought worlds, or changes in our belief systems. In this sense language is conservative. Thus when in the English language reference is made to the "setting of the sun" or to the "rising of the sun" inspite of the knowledge that the sun does not rise or set, but rather the earth which rotates and revolves around the sun, one sees here also a clear case of a language lag. That is language lags behind developments or changes in our belief systems. But although belief systems are always expressed and communicated through language, language does not determine them. Language might nevertheless colour the content of what is communicated.(22) In connection with the foregoing, then, the thesis of the indeterminacy of translation developed in Quine's Word and Object,(23)

may be interpreted to imply that a given language is compatible with several belief systems which may be in conflict with each other. According to Quine a speaker's knowledge of a language is evidenced through his dispositions to assent or to dissent from sentences. This being so, Quine argues that "two men could be just alike in all their dispositions to verbal behaviour under all possible sensory stimulations, and yet the meanings or ideas expressed in their identically triggered and identically sounded utterances could diverge radically, for the two men, in a range of cases"(24). Quine has expressed the foregoing alternatively as follows: "the infinite totality of sentences of a given language can be so permuted, or mapped onto itself that a) the totality of the speaker's dispositions to verbal behaviour remains invariant, and yet b) the mappings are no mere correlation of sentences, in any plausible sense of equivalence however loose"(25) As Quine himself has put it: "The same point can be put less abstractly and more realistically by switching to translation. The thesis is then this: manuals for translating one language into another can be set up in divergent ways, all compatible with the totality of speech dispositions, yet incompatible with one another"(26).

It would appear that the situation with respect to this relativity and indeterminacy in language also

obtains exactly with respect to the interpretation of observational data. According to the idea of the underdetermination of theory by data, it is held that theories are underdetermined by all actual and possible observations and that such theories may be logically incompatible but empirically equivalent. A weak version of this idea holds that cases of underdetermination are possible but not necessitated in all cases. A stronger version holds that underdetermination infests all theory. Thus "one point that already stands forth, regarding the relation of theory to observation, is the vast freedom that the form of the theory must enjoy, relative even to all possible observation. Theory is empirically underdetermined. Surely even if we had an observational oracle, capable of assigning a truth value to every standing observational report expressible in our language, still this would not suffice to adjudicate between a host of possible physical theories, each of them completely in accord with the oracle"(27). This proposition that all theories are logically constrained by facts but are underdetermined by them is by now fairly uncontroversial and widely accepted. It leads to the point that facts and observations are not the only criteria for theory. There are other considerations in the choice of theory, such as those relating to value or human interests. These will now be considered in the next chapter.

FOOTNOTES

1. Wittgenstein, L, On Certainty, ed. by G.E.M Anscombe and G.H. von Wright, Oxford, Basil Blackwell, 1969, p.107.

2. Bloor D., Knowledge and Social Imagery, London, R&KP, 1976, p.2-3.

3. See for example Hanson, N.R., Patterns of Discovery, Cambridge, C.U.P. 1958, Kuhn, T.S., The Structure of Scientific Revolutions, University of Chicago Press, 1962, 1970 and Polanyi,M. Personal Knowledge, London , R&KP, 1958, 1962.

4. Lehrer, K, Knowledge, Oxford, O.U.P. 1974, pp 187-188

5. R.J. Njoroge's paper on the "Social Foundations of Knowledge' seems to be a detailed development of one aspect of this problem. This paper is an argument that knowledge is determined by the social environment - its tradition, language, intersubjectivity.

6. Hilpinen, R. 'Some Epistemological Interpretations of Modal Logic' in G.H. von Wright ed. Logic and Philosophy, The Hague, Martinus Nijhof,,1980 pp 19-29 and Jeffrey, R.C., The Logic of Decision, New York, McGraw and Hill Book Co. 1965, have attempted to construct such a measure employing certain principles of decision theory.

7. Trigg, R., Reason and Commitment, Cambridge, C.U.P, 1973, p.45.

8. Wittgenstein, op.cit. p.145

9. Sopher, D.E. Geography of Religions, N.J. Prentice Hall, 1967, pp 17-18

10. Marx, K. in Freedman, R., ed., Marx on Economics, Penguin Books, 1961, p.6

11. in Hook, S. Language and Philosophy, New York Univ. Press, 1969, pp.31-35.

12. in Hymes,D. Language in Culture and Society, New York, Harper and Row, 1964, p.128.

13. ibid.

14. in Mandelbaum, D. Selected Writings of E. Sapir, Berkeley, Cal. 1949, p.162.

15. in Spier L. et al, Language, Culture and Personality, Manasha, Wisconsin, 1941, p.89.

16. Whorf, B.L. Language, Thought and Reality, ed by J.B. Carroll, Cambridge, Mass, The M.I.T. Press, 1952, p.5.

17. ibid.

18. See for example Quine W.V. Word and Object, Cambridge, Mass, M.I.T. Press, 1960, Ch.2 and his Ontological Relativity, New York, Columbia University Press, 1966, Ch.1.

19. See Kuhn, T.S. op. cit. Kuhn explicitly indicates his debt to both Quine and Whorf, see Kuhn, op.cit. p.vi.

20. See Feyerabend, P. Against Method, London, N.L.B., 1975

21. See Welmers, W.E. African Language Structures, Univ. of Cal. Press. 1973.

22. For a further discussion of Bantu categorization see Hountondji, P.J. "Remarques sur la philosophie africaine, in Diogène (1970) 71, pp.120-140.
Kagame, A. La Philosophie bantu comparée, Paris: Présence Africaine, 1976.
and Ntumba, T., Denken und Sprechen. Ein Beitrag zum linguistischen Relativitäts-prinzip am Beispiel einer Bantusprache (Ciluba), Frankfurt/M, 1980.

23. Quine, W.V. 1960, op.cit.

24. ibid. p.26

25. ibid. p. 27

26. ibid.

27. Quine, W.V. in Guttenplan, S. ed. Mind and Language, Oxford, Clarendon, 1975, p.79

CHAPTER 3

Belief Systems and Human Interests

It is interesting to note that Heinrich Gomperz, writing in 1939 for Erkenntnis (The Journal of Unified Science) a journal which at that time was the organ of the Vienna Circle, defended the view that "he who does not recognise certain values cannot hope to attain to knowledge".(1) Gomperz articulated the view that:

> "Values determine the specific fields to be investigated by science and the selection of the facts to be considered. If science investigated all things whatsoever, it would simply duplicate the universe. It manifestly needs a selective principle. This is constituted by value. Men investigate what they are interested in, either practically or theoretically. Fields of science are fields of interest, and fields of interest are fields of value. It is because people are interested in characters, in religion, in politics, and in the military art, that a biography of Napoleon deals more fully with his pedigree, his education, his convictions, his negotiations, and his campaigns than with the number of his hairs, his corns, the size of his purse, and the amount of cash he used to fill it with, Such interests, however, shift and the fields of science are shifted accordingly."(2)

The above is interesting in the sense that appearing as it did in a journal which was considered to be the organ of the famous Vienna Circle, it seems to have been a reaction against the argument supporting the ideal of a value-free science. This ideal seems however to have received its most celebrated formulation and defence from Max Weber who saw this ideal as a necessary

presupposition for objectivity and respectability in the human sciences. It is not however our intention to discuss here the views of the Vienna Circle or those of Max Weber. It is nonetheless worth noting that the ideal of value-neutrality or value freedom is not itself value-neutral or value-free. On the contrary this ideal is itself a value. This observation raises the question whether this ideal is possible given its self-contradictoriness. It is our intention to show some of the difficulties inherent in upholding this ideal.

It seems clear that almost all men by nature desire to increase their knowledge relative to their interests and abilities.(3) Suppose we posed the question - Why do men desire to know? several answers may be given. One such answer may be that some men seek knowledge for its own sake. This answer is an old one and is related to the famous dictum of art for art's sake. What is meant by this answer is not quite clear. If however by this is intended the idea of interest-free knowledge, then we are back to the Weberian ideal of value-neutrality together with its self-contradictoriness. We intend to defend the idea that men desire to know because of the value-functions of knowledge. This may also be formulated as follows: men desire to know because it is in their interest to know. It is such interests which legitimize and make possible the activity of knowledge-production

and dissemination. The term interest is used here to refer to such norms and values which guide and legitimize human action, including the activity of knowledge-production (or systematic cognitive activity). Our use of the term interest shares a common intuition with R.B. Perry. For Perry, "it is to this all-ervasive characteristic of the moto-affective life, this state, act, attitude or disposition of favour or disfavour to which we propose to give the name of "interest. 'He continues: "This then we take to be the original and constant feature of all value. That which is an object of interest is eo ipso invested with value. Any object, acquires value when any interest whatever it be is taken in it, just as anything whatever becomes a target when anyone whosoever aims at it"(4). In support of this position Perry cites Spinoza's argument to the effect that "in no case do we strive for, wish for, long for, or desire anything because we deem it good, but on the other hand we deem a thing to be good, because we strive for it, wish for it, or desire it".(5) This may be qualified by the observation that "it is of course possible to desire a thing because it is good, where its goodness consists in its being desired by other subjects, or by some other interests of the same subject".(6) This view leads to a grounding of value in the human subject in community and hence to his interests. Accordingly, it is suggested that the production of knowledge, its legitimation as well as its transmission including as well other cognitive

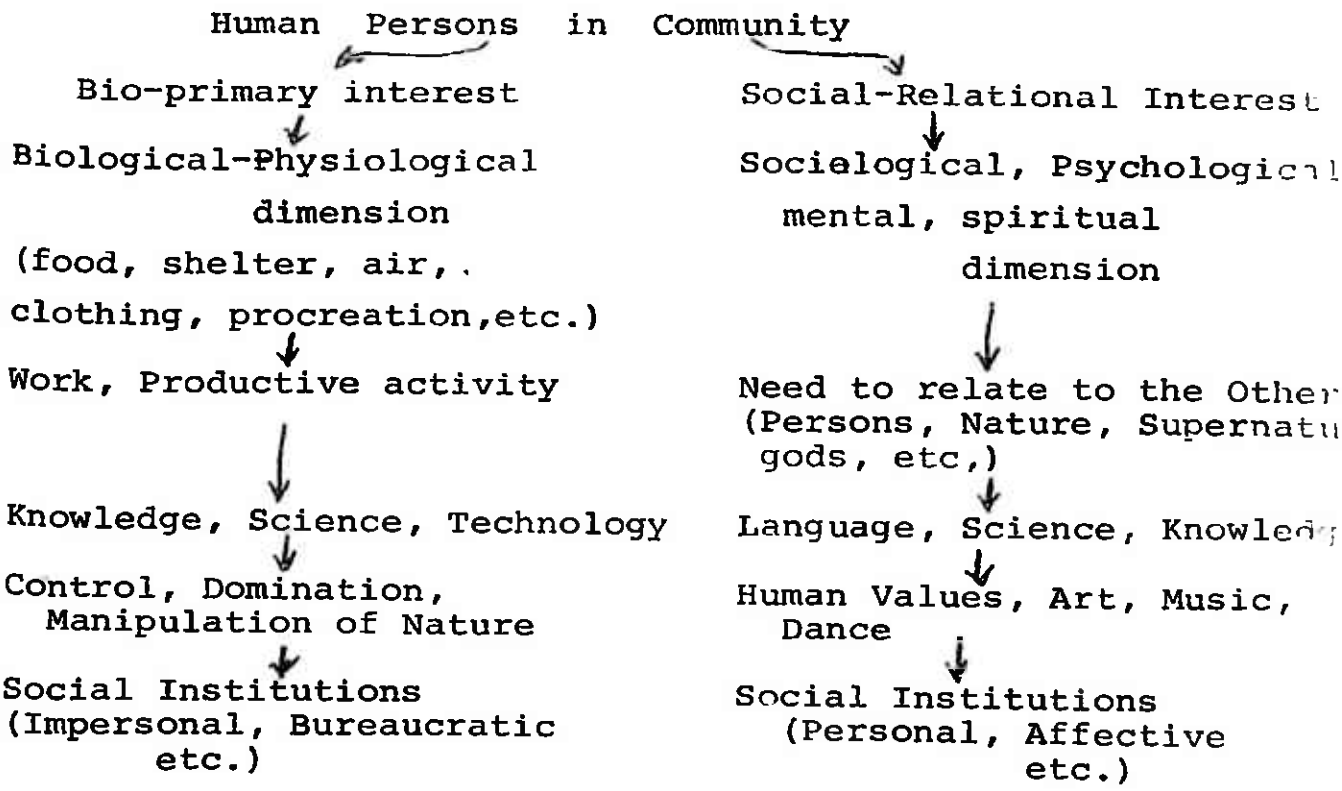
activities are rooted in certain specific anthropological or human interests. We would suggest the following two as fundamental: the bio-primary interest and the social-relational interest.

The bio-primary interest has its basis in man's biology or physiology and is concerned with the fulfilment of certain physiological needs of the organism, the specific nature of which depend on the given specific historical moment or conjuncture. Such fundamental needs as air, food, clothing, shelter, procreation, health, movement, etc. are within the domain of this interest. The demands of this interest, as a matter of course, necessitate work or labour, that is, the role of man as worker or homo faber. Doubtless, without productive activity given present and past historical situations of scarcity, and the nature of our ecological environment, man would be unable to meet the demands of this interest, and hence unable to sustain his life on this planet. But in order to produce man needs a technological base of tools, know-how, know-why (knowledge) as well as a favourable environment (nature). These further operate in the context of certain structures of human relationships (division of labour, etc,) and of symbolic and value systems. It can thus be argued that productive activity in society is inextricably tied to the knowledge-potential in that society. Similarly

that ability of a society to protect itself from its enemies depends to a significant extent on its knowledge of its real and potential enemies. Obviously this is the basic assumption behind all intelligence and secret service organizations, such as the American intelligence organisation (C.I.A), or its Russian counterpart (KGB), among others. In this connection it has been said that we are living in an age in which the first line of defence is knowledge. But the growth of knowledge- its nature, quality, quantity, extent, or limits is greatly facilitated and influenced by the growth of the productive forces in a given society. The computerisation of the knowledge industry or the growth of libraries, or the invention of new information storage facilities and its retrieval are good examples of this, and they are clearly connected to production in a given society. Thus each stage in the development of knowledge and of the productive forces stimulates and makes possible the further development of both.

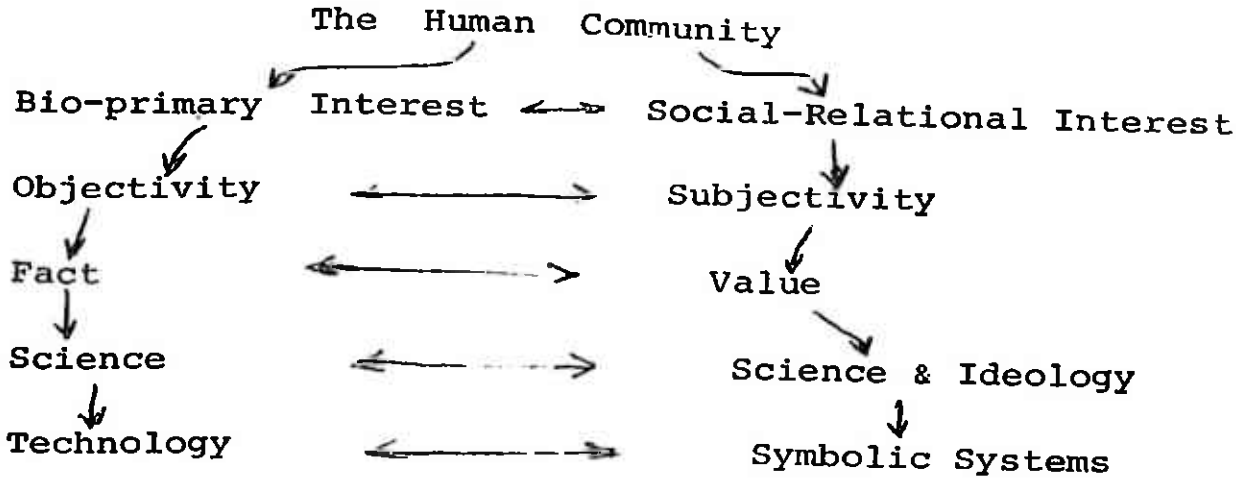
The social-relational interest on the other hand may be said to be based on man's social relational dimension: his need for security from physical and psychological deprivation, his need for belongingness and love, his need for esteem and recognition as well as for self-respect, his need for actualization or self-realization or fulfilment.(7) We take it here

that the social-relational interest develops in the context of a given society in time. This follows from the fact that a social order consisting of only one individual appears to be historically unknown. As a matter of fact, persons are born in community - hence community precedes the individual. This interest then presupposes a social or communal framework and seems to be the basis for social co-operation, for friendships and loving human relationships, for the values of peace, justice, authority, and forms of human interaction. It could be argued that language presupposes and furthers this interest. This interest which generally encompasses the need to relate to the other is not necessarily limited to other persons, but transcends this to include nature and supernature. Hence such forms of communion as in religions, mysticism, art, music, dance, etc. are expressions of the social-relational interest. Also included here are such concerns as self-determination, self-understanding, human freedom and emancipation, harmony and justice. The above explication of the idea of interest could be illustrated diagrammatically as follows:



Whereas these two fundamental interest domains are clearly distinct and in a certain sense autonomous with respect to each other, there is a close and constant interplay and interaction between them. For example, each interest domain requires the other for its proper fulfilment. The saying that "Man does not live by bread alone" may be interpreted in our sense to mean that man cannot live on the basis of the bio-primary interest alone. Of course on the biological level he may indeed survive, but he would lack the human fulfilment made possible on the basis of the social relational interest. Moreover many of the developments in the realm of the bio-primary interest are made possible only in the context of the social-relational interest. Indeed it has been a constant feature in much recent writing that the dislocation

of modern industrial society and its reduction of individual to the level of robots and objects of control and manipulation is to a great extent facilitated by the hegemony of the bio-primary interest. This underlines the argument that a healthy balance between the two basic interests is a pre-requisite for a healthy community. Below is another diagram showing the interaction between the two basic interests which satisfies the healthy inter-relationship condition:



The above diagram indicates that the objectivity - subjectivity, fact - value, science - ideology dichotomies are expressions of these two basic interests, and that they shade and flow into each other.
It should be observed that the way in which these interests manifest and express themselves is a function of the historical process. This is so since man is so to speak, wholly and thoroughly immersed in history.

He is the only creature of whom we can claim awareness of his own history, by virtue of his mode of consciousness, his capacity for memory and thought, his capacity for language and symbolic systems, his rationality and his ability to store and retrieve elements of his past which are of significance to him. He alone is a historical being in the manner history is usually understood. If we however interpret history in a broad and loose way, we could say that everything is historical, insofar as it has a past and insofar as it participates in the process of becoming which characterizes all beings as such. Man is historical in both senses - the general sense and the technical sense. The reason for this distinction is fairly obvious. Whereas everything we know of, including man <u>is</u>, man is the only being who as far we we know has some understanding of who he is, and has some responsibility to determine who he is to be. Put differently, we can say that whereas only man is capable of authentic existence in which he takes hold of his own possibilities of being, making responsible or irresponsible decisions, negating or affirming those structures and forces that tend to dehumanize him and keep him in bondage, other existents are by their very nature incapable of this. Or so we believe with some justification. Such other beings are in a situation of inauthentic existence.

By extension also, human interests are subject to the vicissitudes of man's history, or at least reflect that history. This also implies that the bio-primary interest and the social-relational interest are not static in their manifestation or expression. They are dynamic and change as society and human history change. For example, a study of economic history reveals the manner in which man through work or the production process has exercised his dominion over nature. Moreover at each stage of man's history a specific historical form of man's relation to nature in order to produce the goods and services required for survival is evident. At the same time, social relationships in society given the productive forces and other related factors make possible the realization or non-realization of a certain quality of life. That is to say that both the production and distribution of goods and services in society is greatly influenced by the social relational interest. Our view is at variance with the thesis referred to as economic determinism of society. According to one version of this position human social life and its diversity is wholly determined by economic factors and wholly explicable in economic terms. While maintaining that economic factors are important in understanding many aspects of social life, they are not the only factors needed for a fuller understanding or explanation of human social life. An argument developed by

Knut Tranoy[8] will be employed to illustrate one of the key arguments of this chapter. Tranoy distinguishes three distinct traditions in the history of Western science and scholarship. These are the Platonic-Aristotelian, the Baconian and the Weberian. He sees the first as based on the value of self-realization, the second as based on welfare as a function of technological control and the third on the justification of science through Wertfreiheit (value-freedom) of its practitioners. The Platonic - Aristotelian tradition understood the search for knowledge and truth as based on the ground that it was good and necessary for the knower. Truth (i.e. knowledge or science) was considered liberating and enriching, and necessary for the improvement and perfection of the individual knower and human nature in general. For Socrates and Plato, knowledge was certainly necessary and essential for the specific and most perfect happiness to be had by man. The Stoics taught that knowledge was liberating, emancipating and that it was a condition for a type of human freedom and welfare. This tradition is shown to flow through Augustine, Aquinas and is given tacit acceptance in the Christian dictum that "The truth shall make ye free". It evidently influenced such thinkers as Spinoza, Freud and in our own times the Frankfurt school. It was also the saving gospel of the Enlighten-ment period when true knowledge was seen as the means

of liberating man from ignorance, superstition and prejudice. In the light of our analysis of human interests it may be argued that the Platonic - Aristotelian tradition was/is greatly dominated by the social - relational interest.

The Platonic - Aristotelian tradition was supplanted by the Baconian tradition which understood the aims of science and scholarship in terms of making possible a technology whose aim should be to promote human welfare, through the ability to control the forces of nature. In this tradition, the seeker's own good is less important. A high premium is placed on applied and practical knowledge. Pure or fundamental research is justified on grounds of its potential for application in the short or long run. This tradition makes way for "the alliance between scientific progress and industrial socio-economic, military and political power"(9). Its concern is for an external, material and collective welfare rather than the inner, spiritual, personal welfare envisaged in the Platonic - Aristotelian tradition. It may be said that the Baconian tradition is dominated by the bio-primary interest. The term domination is deliberately chosen because it implies the presence of other subdued elements.

The third tradition - the Weberian has underlined the requirement of value-freedom in science and

scholarship, and emphasizes the need to eliminate personal value-judgements, prejudice and subjectivity from scientific results. The Weberian doctrine of Wertfreiheit "tells me that my sacred duty as a scientist is not to become embroiled in questions concerning the moral and political presuppositions and functions of what I do. My sole and only concern is the truth, other values are out of bounds, the use others make of the truths I find and deliver is not part of my concern or responsibility."(10) This tradition appears to contradict the other two traditions. It however raises the question, already noted, whether such a value-free science or scholarship is indeed possible. In any case this tradition no doubt appeals to values for justifying knowledge-claims for example, the value of truth. Such a value may be taken to be absolute and unchanging. It is however worth noting that criteria of truth or probability as well as methods for its search do vary and have varied considerably from one period and place to another. In any case even with agreement on the criteria of truth and acceptability, "the truth-value alone is not, and never has been sufficient to justify science and scholarship. The standing problem is how the value of (the acceptance of) truth can(or should) be supplemented by and connected with norms and values of a different nature: of a general moral or political

(human, social, economic, technological, cultural, etc) kind"[11]. The ideal of value free science does not seem possible. Basic questions remain: How does the scientist choose where to look for truths? How does he decide what areas of research to direct his attention? On what criteria is research to be financially sponsored? How is significance among facts to be established? etc. Clearly the ideal of truth is not sufficient to answer these questions. Failure to come to terms with this problem, could lead to the misuse of the academic community - turning them into "obedient servants of forces whose interests are, no doubt, focused on values other than truth values."

Given then that science and scholarship (and hence also our belief-systems, since science and scholarship operate in the context of belief systems are governed and guided by norms and values, i.e. human interests, it may be said that it is these norms and values which determine in the final analysis what shall constitute knowledge and in particular the forms and types of knowledge. In this sense we may speak of knowledge - guiding interests as Habermas[12] in fact does. In his analysis he distinguishes between three types of science according to the knowledge-constitutive interests on the basis of which these sciences are legitimated as well as their corresponding internal

logico-methodological rules which govern their practice and the production of knowledge in each. These are - the empirical-analytic sciences which incorporate a technical cognitive interest, the historical-hermeneutic sciences which incorporate a practical interest and lastly the critically oriented sciences which incorporate an emancipatory cognitive interest. Whereas there is obviously an important insight here, certain weaknesses in this framework need to be pointed out. Firstly it may be argued that for each of the sciences Habermas names, more than one interest may be involved in generating knowledge in its sphere. Thus the empirically-analytic sciences may involve a technical cognitive interest as well as an emancipatory cognitive interest. As it has been already observed by some of his critics, he accepts the positivistic understanding of the empirically analytic sciences. Secondly it is doubtful whether Habermas' three-fold categorisation of the sciences improves upon the classical two-fold categorisation, which distinguishes between the sciences of nature and the sciences of man (or of the spirit), conveniently referred to in German as "die Naturwissenschaften und die Geisteswissenschaften". It seems that the traditional distinction is still sound. It would seem, further to us, that whereas the bio-primary interest is dominant in the sciences of nature and the social relational interest dominant

in the sciences of the spirit, both are guided by an emancipatory interest, the desire to overcome ignorance, the need to understand and to explain the unknown, the need to satisfy curiosity, the search for truth which sets free or creates conditions for liberation and freedom.

The question may now be posed : What would constitute truth or knowledge (in the classical epistemological sense of analytic philosophy) if knowledge claims are a function of human interests? This question may be formulated as follows: What is the connection between human interests and truth? Is truth a function of interest? If so, does this necessitate a concept of relative truth, that is, is the idea of absolute truth thereby invalidated? or is truth and falsehood independent of criteria based on interest, genesis, or utility? Can we like Karl Mannheim (though not his position) argue that: "the imputations that the sociology of knowledge establishes betwen a statement and its assertor tells us nothing concerning the truth-value of the assertion, since the manner in which a statement originates does not affect its validity. Whether an assertion is liberal or conservative in and of itself gives no indication of its correctness."(13)

From the foregoing, it may be claimed that the genesis or origination of our beliefs or belief-systems

depends on a certain constellation of human interests as intuitions, as well as environments. Such interests and environments provide both the external and internal constraints for the development of our belief-systems. The internal development of our belief-systems depends as well on our manipulation and application of certain inductive and deductive procedures within our belief-systems. Although we fully agree with Mannheim's above quote that "the manner in which a statement originates does not affect its validity", or truth-value; it needs to be added that"validity" and "truth-value" may be conceived relative to the belief-system. This means that concepts and beliefs about truth and validity are themselves part and parcel of the belief-system itself and hence subject to the same dilemma. For an absolute criterion of truth or validity independent of any belief system, one would need to transcend one's belief-system which is impossible. It would therefore appear that a statement is true or valid within a belief-system if it satisfies the conditions for truth or validity within that system. But such conditions are determined within the basis of that system and therefore also subject to the same factors and interests giving rise to that belief system. But if we assume a set of truth-conditions and validity conditions which are independent of all belief-systems,

that is, criteria of absolute truth and absolute validity, then it would follow that the validity or truth of any statement is independent of a belief-system and of all interests. Thus a belief that p would be judged to be true or valid not because it belongs to a system A or because it had certain superior technological pragmatic or humanitarian advantages or because it satisfied certain desirable interests but because it satisfied the criteria of absolute truth and validity whose determination is not dependent on any belief system. It seems to me therefore that whereas knowledge or a belief system free of all human interests is logically possible, in practice all our belief-systems are infected with our interests. The nearest we come to a belief-system apparently free of all human interests is when we encounter some beliefs apparently belonging to all belief-systems, for example, some basic beliefs about nature and about man without which life is impossible. But here again it might be argued that this is a case of a convergence of interests. Thus the demand for knowledge or beliefs free of all human interests is equivalent to the demand for absolute objectivity or absolute truth. But these demands are themselves not interest-free. They are themselves values to which one is committed. The question is rather how these ideals are possible or how they could be realized in our knowledge - production, and how we could know that

we have indeed attained them. Aspects of this problem are discussed in Chapter 6 as well as in Chapter 8. It seems however that we are caught in the circle of our interests or values. This does not mean that one cannot exchange one set of interests or values for another. It happens all the time within societies and across societies. Certain interests of course cut across societies, for example the bio-primary interests. Even then they are always manifested within the context of a form of life, shared traditions, or intersubjective experiences and interpretations of life.

FOOTNOTES

1. Gemperz, H. "Unified Science and Value" Erkenntnis 9 (1939, 1975) p.5

2. Ibid. 5 - 6

3. See Aristotle, Metaphysics I: 980 & 21

4. Perr R.B. "Value as any Object of any Interest" in Sellars W. & Hospers, J., Readings in Ethical Theory, New York, 1970, p.138

5. Ibid

6. Ibid.

7. See Maslow, A.H. Motivation and Personality, New York, Harper & Row, 1954 where the idea of a hierarchy of needs is defended.

8. Tranoy, K. "Foundations of Cognitive Activity - an Historical and Systematic Sketch" in Inquiry 19, 1976, pp. 131-150

9. Ibid. p.136

10. Ibid p. 137

11. Ibid. pp. 133-134

12. See Habermas, J. Erkenntnis und Interesse, Frankfurt/M, Suhrkamp Verlag, 1968, 1973.
English translation, Knowledge and Human Interests, trans. J.J. Shapiro, Boston, Beacon Press, 1972.
Raymond Geuss, The Idea of a Critical Theory, Habermas and The Frankfurt School, Cambridge, C.U.P. 1981, esp. ch.2 has a very stimulating discussion on this matter.

13. Mannheim, K. Ideology and Utopia, New York Harcourt, Brace & Co. 1936 p.183.

CHAPTER 4

Belief Systems and some aspects of their Function and role in Society

In the preceeding chapter we have argued that knowledge or beliefs obtaining in a given society reflect the interests or the norms and values dominant in that society conceived in terms of space and time. Such norms and values influence the forms and types of knowledge which prevail, which areas of research are financially supported and encouraged, and the use to which knowledge shall be put, as in applied research and technology. The development of alternative technologies, such as for example that advocated by Schumacher's intermediate or appropriate technology, presupposes this point.(1)

In the present chapter we turn our attention to an important aspect of the foregoing discussion, namely the social function of beliefs in society. Given our two-fold schema, it may be noted at the outset that the social function of beliefs in society closely reflects what is included under the domain of these interests. Thus we employ our knowledge or beliefs to defend ourselves against our enemies, such as hunger, disease, lack of shelter, clothing, etc. We employ our knowledge to better our food production, we employ our knowledge to manufacture military weapons for defence against our enemies, we research into medicines and cures against disease, we

build various structures for shelter, etc. In fact human civilization is based on the edifice of knowledge. The content of a society's material and non-material culture is only a reflection of its state of knowledge. That this should be so is not surprising, since human activity or action presupposes some set of beliefs on the part of the agent as well as his interests i.e his desires, wantings, urges, promptings, moral views, aesthetic principles, economic prejudices, social conventions, public and private goals, and values. D.A. Kemp has written in this connection as follows: "knowledge, and new knowledge, are essential for man's survival, in either the individual or the collective sense. Indeed, information has been described as the fifth need of man ranking after air, water, food and shelter.....it is obvious that everyone needs a certain amount of knowledge to survive in the daily business of living. The writer, in order to survive, needs to go to work, to go to work he has to travel by train, to travel by train he has to know the times of the trains which will get him to work on time. Moreover he has each year to acquire new knowledge relating to the annual changes in the times of the trains. If he drove to work, it would be necessary for his survival (in a more immediate way) to know that he should drive on the left side of the road".(2)

Knowledge-production and dissemination may also be viewed as an activity explicable in the same way as any other variety of human action - and hence presupposing some prior set of beliefs as well as interests. This implies too that new knowledge-claims can be understood to be in a certain sense, products or commodities of human labour, and that as products or commodities they could be analysed in economic terms, for example in terms of scarcity, supply and demand, cost, production and distribution, monopoly, division of labour, specialization, etc. Such a comparison is much more convincing today given the interest of big business in the knowledge industry, at least that area of this industry which is lucrative- e.g research in production of chemicals, medicines, sophisticated military and industrial ware. Such knowledge has obviously a very high price-tag, and societies may resort to espionage or intelligence activities to gain access to it. Certainly they would pay a considerable fee for such knowledge. Social science knowledge too is increasingly becoming marke-table. The increase in the number of knowledge-based consultancies is a proof of this. After the Iranian experience connected with Ayatollah Khomeini's revolution, the power of, for example, religious beliefs in society is now seriously taken into

account by social scientists, among others, wishing to understand the forces operative in such a society. Viewed then as commodities, beliefs have use-values. They satisfy a certain social function - either public or private, external or internal, material or non-material. We do not think that the use-values of beliefs are exclusively instrumental or even materialistic. The presence of religious and mystical beliefs, and of certain ethical and aesthetic beliefs controverts the instrumentalist thesis. This follows naturally from the diverse and complex nature of human interests. It should however be made clear that such use-values are not necessarily positive, in the sense that they promote human interests connected with the welfare or wellbeing of the community or individual concerned. Certain beliefs may indeed possess unintended side-effects or consequences in their applications. It is clear that the present-day ecological crisis due to scientific and technological developments and their application in society was unintended and therefore unforeseen. We do not always know or understand all the consequences or side-effects of our beliefs, just as we do not always know or understand all the consequences of our actions - intended or unintended.

Certainly beliefs by themselves are not sufficient for explaining social behaviour or the transformation of human environments. Beliefs require a certain constellation of interests as well as some given social context understood in spatial - historical terms. It is only in these terms that one can speak of the power of knowledge and ideas (or simply of the power of beliefs). In this sense then beliefs provide a power-base for the transformation of human environments, be they physical-ecological, social-political, moral-religious, linguistic or whatever. Thus, for example, if we kept some given environment constant and introduced into it new inputs of different belief-sets, all of which are accepted as a basis for action and behaviour, changes in such an environment would depend upon the nature of the belief-set input. Thus for example the infusion of Christian ideas in many traditional African societies contributed to the transformation of these societies. Similarly, it is undeniable that modern scientific ideas have contributed to the transformation of many present-day societies. The power and influence of Marxist-Leninist ideas is openly acknowledged by many governments. All this suggests that ideas play a vital role in the transformation of societies - in transforming people's beliefs or attitudes towards nature, man, society, work etc.

This explains the present vitality of the knowledge - industry in the world today. The above hypothesis does not imply that ideas or beliefs are the primary determinants of social change. The point is that the environment whether this is conceived in terms of technology, ecology, economic substructure, language, or a combination of these is not sufficient to explain social change, if beliefs are completely ignored. What the above thesis states however is that some given belief-system interacts with some given environment mediated through human beings in society pursuing their interests in the medium of work, play learning, discussion, etc. A change in the environment is as significant as a change in the belief-system. Thus one group of people may on the basis of knowledge make a desert bloom, while another may not because of deficiencies in their knowledge. Max Weber's celebrated study The Protestant Ethic and the Spirit of Capitalism whose major argument is by now well known exemplifies the thesis that beliefs (knowledge or ideas) provide a power-base for social change, or the transormation of the environment. In this study Max Weber showed that a particular set of ideas or beliefs played a key role or function in the rise of capitalistic society in 19th bentury Europe. These ideas were namely those of ascetic, calvinistic protestantism and its accompanying morality.

The validity of the Weberian thesis in the above work has been hotly debated. It is not our intention to discuss this thesis per se here. However the general thesis which it defends, namely the power of ideas in society and in the lives of individuals seems to be valid. For example few would doubt that Greek ideas have played a fundamental role in the development of Western thought and civilization. Similarly few would doubt that Christian ideas have left a tremendous impact on Western thought and culture. The recent impact of Christian ideas on African traditional thought and culture is today everywhere evident in Africa. It should be noted in passing however that the examples given above only represent fragments of the belief-systems of which they were or are a part. In any case their influence is best appreciated in the context of the total belief spectrum at the time and the given environment. This means that within a given belief-spectrum or environment several belief-systems may be competing for hegemony or dominance. The influence of any belief-system in such an environment is therefore dependent on its relative strength vis-avis its competitors. The strength of a belief-system vis-avis other belief-systems in a given situation is a function of several factors: internal as well as external with respect to

the belief-system. The internal factors include such requirements as truth, consistency, coherence, simplicity elegance, among others. External factors include such considerations as success, predictions, technological applications, explanatory adequacy, aesthetic, moral, religious, and mystical appeal of the system, meeting expectations and satisfying interests, connection to political and economic power base of the belief system, etc.

The above analysis may have given the impression that men are passive agents in this process in which beliefs in interaction with some complex environment lead to the transformation of such an environment. On the contrary, it is clear that it is men who are pivotal in this process of transforming their environments as well as themselves. It is men who generate beliefs as they interact with their environments in pursuit of their interests. Thus it is man who transforms history with the aid of tools which he creates on the basis of his knowledge and in interaction with nature and other aspects of his environment.

The view defended here is that man is not a cog in the wheel of history. It is not our intention to enter into the 'determinism-freedom'. problem. It is indeed a complex metaphysical problem beyond the scope of this inquiry. It seems to us however that an admission that human beings are free moral agents as well as knowers, better explains our experience as

human beings and is more consistent with the general project of struggling for a humane social order. We would therefore accept the following proposition of Marx that "History does nothing, it does not possess immense riches, it does not fight battles. It is men, real, living men,who do all this, who possess things and fight battles. It is not 'history' which uses men as a means of achieving - as if it were an individual person - its own ends. History is nothing but the activity of men in pursuit of their ends".(3) The same idea is repeated as follows: "Men make their own history,but they do not make it just as they please, they do not make it under circumstances chosen by themselves, but under circumstance directly encountered, given and transmitted from the past"(4). Admittedly, one can hold strict determinism as a metaphysical theory and yet paradoxically assert that 'men make their own history' i.e. they are determined to make their own history. For such a determinist even our experience of freedom is itself determined. There is really no satisfactory argument against such a position, for such an argument including its counter-arguments are also determined. Therefore in generating social change, men do not operate in a vacuum. They act in a definite environment, employing certain resources, and beliefs or knowledge is such resources which shapes action or human activity. Knowledge in this sense includes both theoretical and practical knowledge. It may also be

conceived in terms of the common three-fold distinction of types of knowledge, namely: knowing how to do something, e.g. how to swim, how to repair a computer, how to ride a bicycle, etc, knowing truths of fact ie so-called propositional knowledge, e.g. that poison kills people, that medicine x cures disease y under conditions z, that the population of Kenya at the time of this writing is 17 million, etc, and finally knowing of things, places and people..

In the final analysis, however, the thesis defended here finds its strongest support in the argument that to understand why a person did something it is necessary to know a) his goals, desires, wants or pro-attitudes towards certain states of affairs, as well as b) his beliefs with respect to some related actions. The reasons why any given individual has his particular set of goals, desires, wants or pro-attitudes is complex and raises questions beyond our scope.
We will take the plausible assumption that the pro-attitudes and the beliefs with respect to some action or actions constitute the primary reason why a person does something, and that such a primary reason for an action is its cause. Davidson has given a precise statement of primary reasons as follows: "R is a primary reason why an agent performed the action A under the description d only if R consists of a

pro-attitude of the agent towards actions with a certain property, and a belief of the agent that A, under the description d, has that property. A primary reason for an action is its cause."(6) The above argument can also be conceived as a practical inference which concerns itself with purposive behaviour and intentional action generally. Such a practical inference has as premisses some goal or end of some action, as well as some means for realizing the given end or goal. The "practical" conclusion of such a practical inference following from the premisses consists in an admonition to act in the appropriate way. The following may constitute a practical inference:

1. G is in my interest
2. M is necessary to bring about G

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3. It follows therefore that relative to 1 and 2, I ought to do M.

Note that the interest here may be positive or negative. If positive, then the agent would want to bring it about and if negative to avoid it. Note also that in the above example premise 1 is a pro-attitude, while premise 2 is a belief connecting the pro-attitude and the action. The conclusion depends entirely on the pro-attitudes and the beliefs contained in the premisses. Another example may illustrate this. Consider the practical argument.

1. I have a firm appointment to meet Okata in Mombasa tomorrow morning (which I do not wish to break).
2. If I get the 7 pm train from Nairobi, I'll be in Mombasa tomorrow morning.

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3. Therefore, I ought to get the 7 pm train to Mombasa.

This has been called the modus ponens of practical reasoning. Again here as above, premiss 1 names a pro-attitude, premiss 2 some related belief, and conclusion 3 which depends on 1 and 2 may be said to be caused by 1 and 2 if action is brought forth.

The problem however for this way of thinking is that a person may reach the conclusion that all things considered he ought to do some action A (and he has indeed the means and resources to realize A) and yet in fact fail to do A. In so acting intentionally against his own best judgement, a person is said to show a weakness of the will. Such actions are also referred to as incontinent actions. Davidson defines an action that reveals weakness of the will or incontinence, as follows: "In doing x an agent acts incontinently if and only if - a) the agent does x intentionally, b) the agent believes there is an alternative action y open to him, and c) the agent judges that, all things considered, it would be better to do y than to do x."(6)

Clearly, the occurrence of incontinent actions is common enough. How can it be explained? It would appear that the weakness of the will is essentially a case of moral conflict or of intentional but irrational action. This means that it is a case of conflict in the pro-attitudes or the beliefs of the acting person with respect to some action, that is a case of conflict of beliefs or conflict of pro-attitudes. By conflict of beliefs or desires of the acting person is intended the notion of contradiction or inconsistency in the set of beliefs or desires of the acting person. Such a conflict makes it impossible to formulate a practical inference chain that is consistent by virtue of the fact that the premiss stating the pro-attitude would also contain its opposite, and that stating belief would also contain its opposite. In particular this means that from the set of a person's desires and beliefs, at least two conflicting practical arguments could be constructed each admonishing some alternative action mutually excluding the other. There could also be cases where given the set of the person's desires and beliefs, the person draws a conclusion which does not follow at all from the premisses.

It is clear that the problem of incontinent actions is a difficult one. It may however be

explained on the basis of such considerations as hypocrisy, insincerity, bad faith, unconscious desires, beliefs, motives and intentions. In some cases they may be explicable in terms of unconsious beliefs. Indeed certain cases of incontinent actions are best considered as cases for psychiatric investigation and treatment. Examples of this include cases of schizophrenia, certain irrational phobias, etc. In any case, incontinent actions are abnormal rather than normal. Nevertheless, weakness of the will is not just a problem for individual action, but may also in certain cases be viewed as a problem for collective action. For example, in a community there may be a clear case for some collective action, justified on the basis of certain interests and certain beliefs. Yet there may be a weakness of the will on the part of the decision-makers in such a community to take measures which would facilitate such action. For example in some society there may be a desire to eradicate poverty, and there may indeed be means and resources adequate for eliminating such a social phenomenon, yet the will-power to enact such a decision may be lacking. Presumably, one may also speak of society as a collective person affected with the same contradictions and therefore incontinence as the individual person. Presumably, there may also be a case for a depth-psychology and a

psychiatry of the collective person which is society - perhaps conceived at several levels, from the level of the individual ranging to that of the global society.

The existence of incontinent actions does not however imply that they cannot be explicated on the basis of some primary reason. It seems that some incontinent actions might be explicated on such a basis, the point here being that the reason given is not the best, there being stronger reasons for an alternative action consistent with the agent's beliefs and desires. Thus the logical solution to the problem of contradictory desires and/or contradictory beliefs in the same subject consists simply in his applying the normal criteria of consistency.(7) The logical level may be only one aspect, though an essential one to this problem. Another level is the psychological one whose solution too demands that the conflict at the level of beliefs and desires be resolved. Leon Festinger(8) speaks of reducing the dissonance or avoiding increases in dissonance. Be that as it may, it may be observed that contradictions appear to serve also as motors of change and movement, or as causative factors of social change. This seems to derive from the basic hypotheses in Festinger, namely:

1. The existence of dissonance, being psychologically uncomfortable, will motivate the person to try to reduce the dissonance and achieve consonance.

2. When dissonance is present, in addition to trying to reduce it, the person will actively avoid situations and information which would likely increase the dissonance.(9)

Festinger's point is simply that contradictions in one's set of beliefs or desires, what he calls dissonance, is psychologically uncomfortable and undesirable, and that there is a tendency to reduce this psychological discomfort and therefore also the logical contradictions insofar as they are consciously detected or noted. In fact such contradictions may go undetected for long periods of time. This however is not simply a problem of psychology as might appear at face value. It is really a deep problem in the philosophy of action as well as mind, as the work of Donald Davidson has clearly shown.(10)

In conclusion, it should be reiterated that contrary to the position which denies any force or role to ideas or beliefs in social change, beliefs are at the basis of social change in conjunction with other factors. It goes without saying that beliefs may and do undergo change in this process. This problem of belief change will be tackled in a later chapter.

FOOTNOTES

1. Schumacher, E.F's book 'Small is Beautiful. Londo Abacus, 1973 is only one in a series books which advocate radical thinking on the question of humane technologi

2. Kemp, D.A., The Nature of Knowledge, London, Cliv Bingley, 1976. p.101.

3. Marx, K. in David McLellan, Marx, London , Fontana Books, 1975, p.43.

4. Ibid.

5. Davidson, D., Essays on Actions and Events, Oxford Clarendon Press, 1980, p.5.

6. Ibid p.22

7. Such as for example the traditionally so-called 'laws of thought' namely the law of identity, the law of contradiction and law of excluded middle. In this work we adopt a modern presentation of these such as that discussed in Chapter 5.

8. Leon Festinger, A Theory of Cognitive Dissonance, Stanford University Press, 1957, p.3

9. Ibid

10. See for example D. Davidson, op.cit. pp.1-102.

CHAPTER 5

On the Structure of Rational Belief Systems

> "A possible world isn't a distant country that we are coming across, or viewing through a telescope. Generally speaking another possible world is too far away. Even if we travel faster than light, we won't get to it. A possible world is given by the descriptive conditions we associate with it .... 'Possible worlds' are stipulated, not discovered by powerful telescopes?
>
> S. Kripke (1980) (1)

In this chapter we turn our attention to the analysis of the logical structure of belief-systems. The structure of individual belief systems and of sets of belief systems in an environment will be considered. In doing this we shall employ the concept of 'possible worlds' as developed by Saul Kripke and K. Hintikka.(2) The concept of possible worlds has been doubtless a very fruitful tool in modern analytical philosophy as indicated for example in Bradley and Swartz's recent book (3). It however lends itself to diverse interpretations. Perhaps the earliest usage of this concept is due to Leibniz who proposed it. According to the leibnizian view of possible worlds, the actual world is only one of an innumerable number of worlds that God could have created. Each of these worlds was a possible system of nature, i.e. a possible world, but God chose to actualize only one of them i.e the actual one.

Further according to Leibniz the description of a possible world is self-consistent, i.e. non-contradictory.(4)

Another view of possible worlds is a recent one and is influenced by the leibnizian view. It is represented for example by David Lewis who writes as follows:

> "I believe that there are possible worlds other than the one we happen to inhabit. If an argument is wanted, it is this. It is uncontroversially true that things might be otherwise than they are. I believe, and so do you, that things could have been different in countless ways. But what does this mean? Ordinary language permits the paraphrase: there are many ways things could have been besides the way they actually are. On the face of it, this sentence is an existential quantification. It says that there exist many entities of a certain description, to wit 'ways things could have been? I believe that things could have been different in countless ways; I believe permissible paraphrases of what I believe; taking the paraphrase at its face value, I therefore believe in the existence of entities that might be called 'ways things could have been'. I prefer to call them 'possible worlds'.(5)

For Lewis it would appear that possible worlds exist and are just as real as the actual one. Moreover they are *different* 'not in *kind*, but only in what goes on at them. Our actual world is only one world among others. We call it alone actual not because it differs in kind from all the rest, but because it is the world we inhabit'.(6) Lewis rejects the attempt to reduce possible worlds to anything else or to conceptualise them some other way. For 'Possible worlds are what they are and not another thing' They are 'respectable entities in their own right' (7)

Other conceptions of 'possible worlds' are possible. It is not our intention to discuss them here. We wish only to adopt a conception of possible world relevant to our stated task of analysing belief systems. Taking it from Saul Kripke that a possible world is stipulated or given by the descriptive conditions we associate with it, we will conceive of possible worlds in terms of belief-systems and vice-versa.

We take it that the actual world is the only really existing world there is, but this one actual world may be perceived or conceived in a variety of ways. Such conceptions of the actual world constitute a belief system.(8) In this sense then there are a multiplicity of belief systems about the actual world. We refer to such belief systems as constituting possible worlds. It is possible that parts or some sub-sets of many belief systems correspond to the actual world. There might be even a belief-system which is isomorphic with the actual world, i.e one whose every proposition corresponds with reality as it is. This is essentially the problem of the correspondence theory of truth, and will be discussed in a later chapter.

A belief system then is here understood to be simply a set of beliefs about reality, man or society, or fragments thereof. Belief-systems include both empirical beliefs as well as axiological beliefs, and may be represented propositionally. Beliefs are the

objects of so-called propositionally attitudes, such as believing, doubting, asserting, desiring, remarking etc. Ideally, a rational belief system is a consistent and defensible description of a possible state of affairs, which satisfies all or most of the interests of the members. Thus although logical consistency may be necessary for the rationality of a belief system, it is not sufficient. Criteria of truth are also important inspite of the controversy surrounding them. Further criteria of success or of the degree of relative satisfactoriness of the belief system in everyday life are as well significant. That is to say that a satisfactory idea of rationality ought to satisfy both formal as well as existential requirements, that is logical as well as axiological criteria.

Letting Adams' concept of world-story be equivalent to a belief-system we can adopt Adams' analysis which states:

> Let us say that a world-story is a maximal consistent set of propositions. That is a set which has as its members one member of every pair of mutually contradictory propositions, and which is such that it is possible for all of its members to be true together. The notion of a possible world can be given a contextual analysis in terms of world-stories.(9)

Thus Adams' world-story is the equivalent of our belief-system. Conceiving of belief systems (or world-stories) as constituting possible worlds, i.e. as possible

interpretations of the actual world we might employ another metaphor due to Alvin Plantinga as follows:-

> "corresponding to each possible world, W,-------- there is a set of propositions that I'll call the book on W just in case the state of affairs to which it corresponds is included in W..... the book on W is the set of propositions true in W."(10)

Using this metaphor it can be easily seen that corresponding to each belief system there is some hypothetical book which includes all the propositions in the belief system. It should be noted that belief systems are possessions of persons in the actual world, or potential possessions of persons in the actual world. As a matter of fact, a belief system is the sine qua non of all meaningful human behaviour, and indeed the defining characteristic of persons. So each person could be said to possess some hypothetical book in which all the propositions he affirms, believes, is willing to accept, etc. are included, as well as his truth-valuation of such propositions, at any given time. Truth-valuation here within belief-systems is with respect to beliefs or propositions within it. Thus someone might be asked, 'Is it true that an object Y is beautiful?' and he answers in the affirmative. Or he might be asked, 'Is it true that stealing is wrong?' and he answers again in the affirmative, or even in the negative. In so far therefore as axiological values can be formulated propositionally there is no reason why they

cannot, within given belief systems, be assigned truth-values. A person's belief system at some time t_1 need not be identical with the belief system at some other time t_2, not identical with t_1. The idea of belief change affirms the fact that belief systems are not static. They do change. This is an empirical fact. There is however no logical contradiction in the idea of a static changeless belief system. Indeed the total system of truths about reality encompassing all time and all space, is an example of an absolute, static belief system. A person's belief system then is his tool for interacting with the environment, among other things. It is as already noted a means of survival and self-preservation. It follows therefore that the more effective and efficient this tool is, qualitatively and quantitatively, the more effectively and efficiently it will be for its owner to protect his interests and pursue his goals.

Clearly, belief systems are significant entities in any society, influencing the nature of society as well as the course of its history. It is therefore necessary that something about their form and structure be investigated. The first point to be noted is the relationship between single beliefs and the whole of which they are a part. It may be said here that single beliefs can only be understood in the context of the system, or sub-system of which they are a part. Similarly, the sub-system or the system itself is meaningful, or is

understandable only given the beliefs which it contains. This interaction between the whole and the part is basic to understanding the nature of a belief system. But it may be that some belief or sub-system of beliefs belongs not to just one complete belief system but to several other belief systems. This makes communication across belief systems possible.

It has already been stated that a belief system consists of the set of all its beliefs which may be formulated propositionally in some language. Such a belief system may indeed be formalizable on the basis of some such formal language as the first-order predicate calculus with identity, or with some of its extensions. It is of course still a debatable point whether all belief systems presuppose languages based on classical logic. Our view is that classical logic is normative and is presupposed by the ethics of belief.(11) Thus presupposing this logic the ethics of belief prohibit the acceptance of a proposition and its negation as both true or both false simultaneously. Thus the case where, some person A, believes that p &-p, simultaneously is considered pathological and can destroy the viability and effectiveness of any belief system. This situation admittedly occurs, for example among neurotics, schizophrenics and others. But it also occurs among normal persons in the case where contradictions are

unnoticed, not evident, or not recognized as such. The situation where both p &-p belong to a belief system is undesirable and unwanted under normal circumstances. When discovered or recognised it should normally be eliminated or minimised. The upshot of the foregoing is that belief systems are normally ordered or structured by certain consistency requirements. According to the notion of consistency, the logical consequences of a set of beliefs is some system G should not be contradictory, that is they should be logically consistent. Thus when we tell someone that what he has said is inconsistent, we usually don't mean that it is inconsistent when taken by itself. Instead we mean that it is inconsistent when taken together with what has been said previously by the person, and perhaps with other things the person would normally accept without question to be true. This is what happens, for instance, when a witness gives inconsistent evidence in a court of law, in the course of giving evidence he says something that contradicts the body of testimony he has given previously. This idea may be reformulated as follows: If a proposition p and its negation -p are both deducible from a belief set G of beliefs, or that they are both logical consequences of G, then the set G of beliefs is not consistent. (i.e. if G $\vdash$ p & -p, the the set G is inconsistent.)

We shall adopt Hintikka's rules to illustrate further the above. Accordingly, a set L of beliefs can be shown to be inconsistent if and only if it cannot be imbedded in a set M of beliefs which satisfies the following conditions:(12)

(C.$\neg$) If $p \in M$, then not "$\neg p$" $\in M$.

(C.$\wedge$) If "$p \wedge q$" $\in M$, then $p \in M$ and $q \in M$.

(C.$\vee$) If "$p \vee q$" $\in M$, then $p \in M$ or $q \in M$, or both.

(C.$\neg\neg$) If "$\neg\neg p$" $\in M$, then $p \in M$.

(C.$\neg\wedge$) If "$\neg(p \wedge q)$" $\in M$, then "$\neg p$" $\in M$, or $\neg q \in M$, or both

(C.$\neg\vee$) If "$\neg(p \vee q)$" $\in M$, then "$\neg p$" $\in M$ and "$\neg q$" $\in M$.

(C.E) If $(\forall x)\ p \in M$, then $p(a/x) \in M$, for at least one singular constant "a".

(C.U) If $(\wedge x)\ p \in M$, and "b" occurs in the formulae of M, then $p(b/x) \in M$.

(C.self $\neq$) Not "$(b \neq b)$" $\in M$

(C. =) If p is atomic or an identity, if $p(a/b) = q(a/b)$, $p \notin M$ and "$(a = b)$" $\in M$, then $q \in M$.

Thus a belief set or system M satisfies the above conditions when it satisfies the normal logical rules of non-contradiction, conjunction, disjunction, identity, existential and universal generalization, etc. Condition, one above thus holds that if someone holds a self-contradictory belief, (e.g. a belief that p and not -p) then his belief cannot be rational. Condition Two holds that if someone holds a conjunction of two beliefs p and

q, then he holds each of these beliefs separately. Sets of beliefs satisfying the above conditions have been called model sets. Smullyan[13] calls them Hintikka sets. Thus, the consistency of a set L of beliefs consists in their capacity to be imbedded in a model set (or alternatively a Hintikka set). A model set may be described in our context as equivalent to a consistent belief set. Such a belief set is consistent if and only if all that it describes could be all true together, and if all its members do not contradict each other. Such a consistent belief set constitutes a possible world. But this is only an idealization. It is doubtful whether in everyday life or in scientific activity, we can get to this level of consistency. Obviously due to human fallibility, "overall consistency in a man's whole corpus of beliefs is probably never achieved; and even large scale consistency is difficult to achieve . Consistency remains inspite of this a very necessary virtue of rational thought, though not of course the only one."[14] Nevertheless, a possible world in the above sense is required to satisfy the laws of logical possibility such as the consistency requirements demanded by a model set as above. Furthermore, a possible world as in the case of a belief set must also be possible relative to the laws of the actual objective world. Such laws of the objective world may be known or unknown.

An example here is miracles or extra-sensory phenomena. Many belief systems admit the reality of miracles as occurrences which defy natural laws, others deny their reality arguing that they are in the final analysis explicable in natural terms although at the moment we do not as yet know the laws of the objective world which make these phenomena possible. Thirdly, a possible world in the sense of a belief set is theoretically capable of being extended to completeness or maximality, that is, such a belief set is potentially extendable to a maximal consistent set of beliefs. This in effect means that given any proposition p, either p or its negation -p belongs to the belief set. This however assumes that the proposition p has been asigned a truth-value. In general then a belief set G, is maximal if it is consistent and if it contains all the beliefs it can without becoming inconsistent. Hence if another belief not already in G is added to it, it renders G inconsistent.(15) Fourthly, it should be observed that conceiving of belief systems in terms of possible worlds is only one among many other possible applications of the possible worlds semantics idiom. In particular we would support Kripke's view that, "possible worlds are stipulated, not discovered by powerful telescopes"(16), and that a "possible world isn't a distant country that we are coming across, or viewing through a telescope. Generally speaking another possible world is too far away.

Even if we travel faster than light,we won't get to it. A possible world is given by the descriptive conditions we associate with it."(17) In our context, a possible world is stipulated to refer or to correspond to a belief system as indicated above.

Fifthly, belief systems do not generally appear in isolation. Within some given environment what one finds are several variants of any one belief system in the environment. For example, in the environment of the Christian belief system or the Marxist belief system it is extremely difficult to find any two individuals whose beliefs relating to Christianity or Marxism are in every respect alike. Thus what some person A believes about Christianity may be contained exactly in a belief set X. To find another person B whose beliefs about Christianity are also contained in a belief set x equivalent with the preceding one is rare. Logically it is not an impossibility. Be that as it may, to study relationships among belief systems accessible to one another in some common environment, we shall employ Kripke's theory of model structures(18). Accordingly Kripke defines the notion of a normal model structure as an ordered triple (G, K, R) where K is a set, R is a reflexive relation on K, and G $\in$ K. It should be noted that when R is reflexive we get an M (or T) model structure, when R is in addition transitive we get an S4

model structure, and when R is reflexive, transitive and symmetrical we get an S5 model structure. When R is reflexive and symmetrical we get the Brouwersche model structure. These may be represented by the following schemas:

M. $\Box A \rightarrow A$

B. $A \rightarrow \Box \Diamond A$

S4. $\Box A \rightarrow \Box\Box A$

S5. $\Diamond A \rightarrow \Box \Diamond A$

The following interpretation of a model structure is given by Kripke. K is the set of all possible worlds, G is the actual world, and R may be interpreted to mean an accessibility relation. Hintikka refers to it as an alternativeness relation. Thus if H and H_1 are two worlds, H R H_1 means that H is possible relative to H_1, or that it is an alternative to it. This means that a proposition true in H is possible relative to H_1. But since intuitively every world is possible relative to itself, the reflexivity of R becomes a natural requirment. Thus as R is symmetric, reflexive, transitive or an equivalence relation, we have the various B-, M-, S4, and S5 model structures respectively as already noted.

Further given a model structure (G, K, R) we contruct a model for a well formed formula A, by adding

a function ϕ (P, H) whose first argument P ranges over the atomic formulae (propositional variables) in $\mathfrak{A}$, whose second argument H, ranges over members of K and whose values are the truth-values T or F. Given a model, assignments of truth-values to non-atomic formulae can be defined by induction. Thus supposing that ϕ (A, H) and ϕ (B, H) have been defined for all $H \in K$, then if ϕ(A, H) = ϕ B, H) = T, ϕ ($A \wedge B$, H) is defined to be T, otherwise ϕ ($A \wedge B$, H) = F.Similarly ϕ ($\neg$ A, H) is defined to be F iff ϕ (A, H) = T, otherwise ϕ ($\neg$ A, H) = T. The necessity operator $\Box$ is also defined as follows:

ϕ ($\Box$ A, H) = T iff ϕ (A, H') = T for every $H \in K$ such that H R H', otherwise ϕ ($\Box$ A, H) = F. That is, A is necessary in H iff A is true in all worlds H' possible relative to H.

A quantificational model structure, on the other hand, is an ordered pair consisting of a model structure (G, K, R) as above, together with a function which assigns to each $H \in K$ a set of individuals. Conditions are then specified for the valuation of formulae in each $H \in K$. The idea here is to have the logic of predicates and functions with or without identity relativised to a world and its alternatives. Thus some formula A is valid iff it is true for all $H \in K$ in the quantificational model structure.

It should be noted here in passing that Hintikka's notion of model sets is equivalent to the idea of possible worlds as already noted, and his notion of model system is defined as a set of model sets related by what he calls the alternativeness relation. This is equivalent to Kripke's R. As in Kripke's model structures, the nature of the model system is determined by R, that is whether it is transitive, reflexive, symmetrical, euclidean or whatever.

Applying the foregoing to belief systems, we might begin by noting that a single belief system is equivalent to a model set, or to a possible world, and therefore satisfying the normal requirements as described above. We also note that in any given social environment at any given time t, there may be as many belief systems (in the sense of model sets) as persons who inhabit that environment. Moreover there may be also countless potential and possible belief systems within accessibility. Obviously if such persons are to communicate at all, there needs to be certain common assumptions, agreements, certain common traditions and rules -- that is certain common beliefs in every community of communicants. Thus some beliefs are present in all of the belief systems in such an environment, some to a majority of them, some to a minority of them and some unique to each belief system. Essentially then communication presupposes accessibility of belief

systems to one another. Belief systems which are inaccessible to one nother may be said to be disjoint with respect to one another. In such a situation of disjointedness communication is not possible. Kripke's accessibility relation R, or Hintikka's alternativeness relation is in this sense descriptive of the nature and extent to which belief systems can be open to one another. It is possible, for example, to imagine two worlds W_1 and W_2 such that members of W_1 have access to W_2, but not the other way round. Here the accessibility relation R is not symmetric. Thus members of W_1 may have cars and aeroplanes, and they imagine a world W_2 in which such machines are absent. But the inhabitants of W_2 may be unable to imagine such machines in W_1. Such a situation may indeed obtain in the case of worlds ordered by say M- model structures or the S4- model structures, but not in say worlds ordered by a B- model structure or an S5 - model structure. It seems therefore that certain model structures are too weak to be able to explicate all the various types of relationships among belief systems. The system S5 on the other hand seems to be strong enough to account for these various types of relationships. William and Martha Kneale [19] and also Bradley and Swartz [20] rightly contend that "S5 is the system whose theses and rules suffice for the construction of the whole of logic

as that is commonly understood". We are as well of this opinion. The system S5 dates back to the philosopher Leibniz who held that the actual world which we inhabit is only one of a number of possible worlds which the Creator could have made. For Leibniz, presupposing S5, a proposition is necessary if it is true at all possible worlds, and possible if it is true at some and false at others.

According to the S5 model structure which is assumed here, the accessibility relation determines a family of belief systems possible relative to one another. Presumably such belief systems occur in some common environment, but this need not be the case. Such a family of belief systems constitute a model system in Hintikka's sense, and each belief system constitutes a model set. They are ordered by the S5 model structure and are therefore reflexive, transitive and symmetrical in their accessibility relations. Beliefs are then said to be true or false at worlds in the model system, i.e. at a belief system in the context of the family of belief systems which are its alternatives. Again a belief is said to be necessary in the family of belief systems if it is true at all the belief systems in the family. Where p is a belief (or proposition) and W is a possible world in a model M with an S5 model structure we write:

$$\models^{M}_{W} p$$

to stand for:

p is true at W in M.

The truth conditions for beliefs in this model are thus:

1. $\models^{M}_{W} p$ iff p is true at W in M.

2. $\models^{M}_{W} \neg p$ iff not $\models^{M}_{W} p$

3. $\models^{M}_{W} p \wedge q$ iff $\models^{M}_{W} p$ or $\models^{M}_{W} q$

4. $\models^{M}_{W} p \vee q$ iff $\models^{M}_{W} p$ or $\models^{M}_{W} q$

5. $\models^{M}_{W} p \rightarrow q$ iff if $\models^{M}_{W} p$ then $\models^{M}_{W} q$

6. $\models^{M}_{W} \Box p$ iff for every W' in M, $\models^{M}_{W'} p$

7. $\models^{M}_{W} \Diamond p$ iff for some W' in M, $\models^{M}_{W'} p$

We might then say that given belief systems B_1, B_2, B_3, ... B_n in a family of belief systems (F B) containing them, a belief is fundamental or basic if it is true at all belief systems in the family (F-B). Otherwise the belief in question is non-basic. However a belief may not be fundamental but if it is true in a majority of the members of F-B then it is a significant belief in F-B. For purposes of our analysis it is assumed that a belief includes all of its logical consequences. So if a rational person believes that p and it is known that p $\longrightarrow$ q, it is to be understood that such a

person would also be forced by the ethics of belief to accept that q. This means that were some fragment of the system to be axiomatized in the form of a finite and decidable set of axioms generating a bigger set of theorems, an acceptance of the axioms would entail also an acceptance of the resulting theorems.

It seems however that a belief system consists of several subsystems, each subsystem being more or less autonomous but with general connections to the whole. Thus in a belief system, there may be a subsystem on religion, a subsystem on politics and ideology, a subsystem on the physical structure of the world, say from the perspective of modern physics, chemistry, astronomy, etc., a subsystem on the structure of the human world - say from the perspective of modern sociology, psychology, economics, etc, a subsystem on human ethics, i.e. what ought to be the case. That these subsystems influence each other as well as the whole is to be expected. Thus one's religious beliefs are highly likely to affect one's ethics and one's ideological orientation as well as one's cosmological views, etc. The same goes for one's a-religious or anti-religious commitments. A belief system is like a net or web, with every part connected to every other. This idea has been expressed in a somewhat different context by Quine as follows:

"The totality of our so-called knowledge or beliefs, from the most casual matters of geography and history to the profoundest laws of atomic physics or even of pure mathematics and logic, is a man-made fabric which impinges on experience only along the edges. Or, to change the figure, total science is like a field of force whose boundary conditions are experience. A conflict with experience at the periphery occasions readjustments in the interior of the field. Truth-values have to be redistributed over some of our statements. Re-evaluation of some statements entails revaluation of others, because of their logical interconnections - the logical laws being in turn simply certain further statements of the system, certain further elements of the field. Having re-evaluated one statement we must re-evaluate, some others, which may be statements logically connected with the first or may be the statements of logical connections themselves. But the total field is so underdetermined by its boundary conditions experience,that there is much latitude as to what statements to re-evaluate in the light of any single contrary experience.(21)

Subsystems of belief systems within a family of belief systems may be analysed and compared in the same way as belief systems. Again as in the case of the belief systems there will be at least three types of beliefs:

a) beliefs which are true in all the subsystems of all the belief systems within a family (F-B).

b) beliefs which are false in all the subsystems of all the belief systems within the family (F-B).

c) beliefs which are true in some subsystems and false in some subsystems of all belief systems in some family (F-B).

But supposing that the total human family consists of families of belief systems FB_1, FB_2, FB_3 .....FB_n, the same procedure could be continued. All that this would mean is that the circle of possible worlds has been

extended from some given model system to sets of model systems or to a class of models. The concept of truth involved in this discussion is a relative one in the sense that truth is here relativised to a world in model, or to a model in a class of models. Necessity is likewise relativised to the extent of the accessibility relation. But this concept raises the question whether there are several competing truths. The solution that is offered is the following: In any given model there are several worlds, all such worlds are relative to the actual objective world. Now assuming that there is a possible world whose belief content is isormorphic with the actual objective world, such a world will be said to possess truth simpliciter. This is the idea of truth intended in the correspondence theory of truth. But the identification of such a possible world whose belief content is isormorphic with the actual objective world is no easy task. The correspondence theory itself does not supply any criterion to solve the problem. Neither does the coherence theory presupposed in the foregoing possible world analysis. This leads us to the pragmatic theory as necessary together with the coherence in supplying an aid to the search for truth in this correspondence sense. This then sets the basis for the discussion of this problem in the last chapter.

FOOTNOTES

1. Kripke, S. Naming and Necessity, Oxford, Basil Blackwell 1980, p.44

2. In Kripke, S. 1980 op.cit. and 'Semantical considerations on Modal logic (1963) in Linsky, L. ed. Reference and Modality, Oxford, o.u.p, 1971, 1977. pp.63-72.
and Hintikka, K.J.J. Knowledge and Belief, Ithaca & London, Cornell University Press, 1962.

Hintikka, K.J.J., Models for Modalities, Dordrecht - Holland, D. Reidel Publishing Co. 1969.

3. See Bradley, R. & Swartz, N. Possible Worlds, Oxford, Basil, Blackwell, 1979, pp.62-64.

4. Britton, G.G. Kant's theory of Science, Princeton, N.J. Princeton, University Press, 1978, pp.17-19.

5. Lewis, D, Counterfactuals, Oxford, Basil Blackwell, 1973, p.84.

6. Ibid. p. 85

7. Ibid.

8. By 'actual world' is meant the really existing world, which is objective and independent of our ideas. Thus the supersensible 'entities' of religion are part of the actual world if they have objective existence in the above realist sense. Otherwise they could still be part of some belief system and yet lack any correspondence to real phenomena in the real, actual world. There is

also a sense in which axiological beliefs have a basis in the actual world, they need not however be reflected there if their concern is with what ought to be the case.

9. Adams, R.M. 'Theories of Actuality' Nous XVII, 1974 p.225 (211-31),

10. Plantinga, A., God, Freedom and Evil, London , George Allen & Unwin, 1974, p.36.

11. By classical logic is meant a system of logic containing the traditional laws of thought e.g. law of identity, law of non-contradiction and law of excluded middle, among others. This is opposed to the so-called deviant logics including intuitionistic logic. See for example Susan Haack's Deviant Logics Cambridge, C.U.P. 1974 for a full discussion of this. The ethics of belief are based on such a logic. See for example Hilpinen's discussion in his 'Scientific Rationality and the Ethics of Belief' unpublished paper.

12. As for example in Hintikka, 1962, op.cit. chapters 3 & 6.

13. Smullyan, R.M. First-Order Logic, New York, Springer Verlag, 1968. pp.27 - 57.

14. Geach, P.T. Reason and Argument,Oxford, Blackwell, 1976, p.6

15. The concept of maximality is generally a formal and theoretical concept without immediate practical applications to belief-systems. It only sheds light on our idealized belief-systems, i.e. on the notion of consistency in them. Thus a maximally consistent set is set which is saturated, and cannot be taken in any more

without becoming inconsistent. Theoretically every consistent set can be extended to a maximally consisten set. That is the essence of Lindenbaum's lemma. See for example Smullyan, 1968, op.cit. or Chellas, B, Modal logic, Cambridge, C.U.P. 1980 for a detailed discussion of this.

16. Kripke, S. 1980, op.cit. p.44

17. Ibid.

18. As in Kripke, S, 1963, op. cit.

19. Kneale W & M, The Development of Logic, Oxford, Clarendon Press, 1962. p 563 (pp 555 - 566)
Hintikka concludes "The system S5 ... seems to be the best ... our logic of ... " (The Modes of Modality: Philosophical Review pp. 230.

20. Bradley & Swartz, op. cit. p. XVII

21. Quine, W.V. From a logical Point of View, Cambridge, Mass, Harvard Univ. Press, pp.42-44.

CHAPTER 6

Rationality and Irrationality in Belief Systems.

It has already been argued that belief systems presuppose certain environments and certain interests. In particular belief systems are products of attempts to solve certain problems arising out of certain environments in the context of the struggle to satisfy certain interests. Often new beliefs (or rather new knowledge) arise out of attempts to solve specific problems, and sometimes as is well known simply out of curiosity to know. And since life is full of problems, one's belief system may indicate one's capacity for solving certain problems and does in fact reflect one's experience in problem-solving. As J. Kekes has it - "Problems show that our understanding of the world is deficient. We may want to do something, but given what we think we know, we cannot do it, or something happens which on our existing view should not or could not happen, or we may have ideals and the means we have for achieving them actually frustrate their realization. In all such cases, we need an explantion to reconcile what we take to be the case with what is the case. Theories offer these manifold reconciliations"(1) Kekes continues,

"Problems constitute the fundamental link between theories and the world. Problems occur when people, as it were, bump into reality. Since the point of theories is to solve them, naturally the ultimate test of their adequacy is whether or not problems are solved. A theory offering

a possible solution is worthy of serious consideration, one providing a successful solution is worthy of acceptance. The role of arguments in this context is to decide which theory presents a possible solution and to choose the best of all available solutions."(2)

Theories (being essentially subsets of belief systems) are thus solutions to problems. There are those theories geared to the solution of practical problems and those geared to the solution of theoretical problems. There is of course an interaction between these two problem areas, in the sense that practical problems may give rise to certain theoretical problems and also in that solutions to certain practical problems may be the basis for solving certain theoretical problems. Further certain theoretical problems may give rise to certain practical problems. But as well what counts as a problem may be dependent on the theoretical framework. Thus the problem of evil is only a problem for someone who believes in the existence of God who is both omnipotent, omniscient, good and loving.(3) A Christian would therefore need to come to terms with this problem whereas a Marxist hardly needs to be bothered by it. In the same way, witchcraft is a pseudo-problem for someone who accepts the modern scientific explanatory model.

In considering the question of this problem-solving enterprise in human living, one cannot evade the question of rationality, which appears to be at the root of the whole enterprise. Rationality in this sense consists in the use and application of certain standards, methods

and norms in assessing, evaluating and approaching both the problems themselves and the solutions to these problems. Furthermore, rationality in this sense involves the problem of choice among alternative solutions to some problem on the basis of certain principles and values. The focus of attention here will be the question of rationality and irrationality in belief-systems, but the question of the rationality and irrationality of actions will also be briefly treated. Jarvie , I.C. and Agassi, J. writing on this matter proceed as follows:

"Let us attribute rationality to an action if there is a goal to which it is directed, let us attribute rationality to a belief if it satisfies some standard or criterion which has been adopted, such that it is based on good evidence, or is beyond reasonable doubt, or is held open to criticism, etc. When we attribute rationality to a person we can mean either: he acts rationally, or he believes rationally, or both. Let us call the rationality that consists in a person acting rationally the weak sense of rationality and the rationality that consists in a person acting rationally on the basis of rationally held beliefs the strong sense of "rationality".(4)

While accepting the above distinctions - rational action, rational belief, and rational person - it may be added that rational action is not only directed to some goal or end, but that it is the action which most effectively and at least cost secures that goal, due consideration being given to all relevant values. Similarly rational belief satisfies the relevant criteria of rationality in an optimal way, that is to say, compared with its competitors it ranks first on the basis of the criteria. Thus a rational person is one who acts rationally on the basis of rational beliefs. On this view it is

the basis of rational beliefs. On this view it is clear that a rational belief system is a pre-condition for rational action. In another sense rational beliefs, insofar as they are grounded on rational knowledge - producing activities, could be said to presuppose rational action.

But what is it for a belief system to be rational? Clearly the first requirement for a rational belief system is that it be consistent, that it satisfies the laws of logic, or that it does not tolerate logical contradictions. A system that tolerates within it, for example the insistence upon a proposition p, on occasion the argument that p entails q, and somewhere the assertion that it is not the case that q, is clearly contradictory. To retain its plausibility and rationality, the ethics of rational belief require that contradictions be eliminated in the system. F. von Kutschera has formulated the foregoing somewhat as follows:

"Die Rationalitat wird dabei allein mit einem logischen Masstab gemessen, und man geht von folgenden grundlegenden Prinzipien fur einen rationalen Glauben aus:

G1 : Gilt p analytisch, so gilt auch G (a, p).
— Analytische Wahrheiten werden geglaubt.

G2 : $G(a, p \rightarrow q) \wedge G(a, p) \rightarrow G(a, q)$.
Jeder glaubt die Sachverhalte, von denen er selbst glaubt, daß sie Konsequenzen eigener Annahmen sind.

G3 : $G(a, p) \rightarrow \neg G(a, \neg p)$
Man kann nicht zugleich p und nicht p glauben.

G4 : $\bigwedge x G(a, Fx) \rightarrow G(a, \bigwedge x\, Fx)$.
Wenn a von jedem Ding glaubt, daß es die Eigenschaft F hat, so glaubt a auch, daß alle

Eigenschaft F hat, so glaubt a auch, daß alle Dinge diese Eigenschaft haben.

G5 : $G(a, p) \rightarrow G(a, G(a,p))$.
Wenn die Person a glaubt, daß p, so glaubt sie auch, daß sie es glaubt.

G6 : $\neg G(a, p) \rightarrow G(a, \neg G(a,p))$.
Glaubt die Person a nicht, daß p, so glaubt sie auch, daß sie das nicht glaubt."(5)

(i.e. Rationality is only measured by means of a logical standard. The following basic principles of rational belief are taken as a starting point:

B1 : If p is analytically valid, then B(a,p) is also valid.
i.e. Analytical truths are believed.

B2: $B(a, p \rightarrow q) \wedge B(a,p) \rightarrow B(a,q)$
Everyone believes states of affairs, which he believes to be consequences of their own premises.

B3 : $B(a,p) \rightarrow \neg B(a,\neg p)$
One cannot believe p and $\neg p$ simultaneously.

B4 : $\bigwedge x B(a, Fx) \rightarrow B(a, \bigwedge x\, Fx)$
If in the case of everything a believes it has the property F then a also believes that all objects have this property.

B5 : $B(a,p) \rightarrow B(a, B(a,p))$
If the person a believes that p then he also believes, that he believes it.

B6 : $\neg B(a,p) \rightarrow B(a, \neg B(a,p))$
If it is not the case that the person a believes that p, then he also believes, that he does not believe it))

What the von Kutschera conditions G1 - G6 spell out are some key logical requirements for a rational belief system. The suggestion by von Kutschera in the above quotation that rationality is measured only by such logical criteria is a debatable point. The argument to be made here is that such criteria are necessary but not sufficient for specifying the nature of a

rational belief system. For clearly a belief system may satisfy these criteria and fail to be rational. A belief system that accommodates apartheid or Nazism can hardly be termed rational, however consistent it might be. Nazism or apartheid could be very consistent theoretical systems, but on value-rational grounds they turn out to be irrational. They might even maximise the interests of the members in the short-run, but in the long-run they can only lead to self-destruction, as we might gather from history. Furthermore a belief system that does not supply an adequate basis for rational action may be considered irrational. One has in mind. here a belief system which has a deficient knowledge of nature. Such a belief system is likely to lead to much frustration in action and to much human suffering. Thus someone who believes that he can fly (without any technological devices whatsoever) or that he can jump from a 30 storey building to the ground without any injuries, is considered irrational or mad. Of course this belief would be considered irrational even if it belonged to a consistent set of beliefs. In view of this it is necessary to advance the view that the rationality of a belief system is a function of the consistency of the beliefs in it as well as their effectiveness or success in promoting the interests of those who subscribe to it. The point made by E. Valberg in his Rationality and

Self Deception can only be accepted on our view if these two aspects of rationality mentioned above are duly borne in mind. He holds that:

"A rational belief is one which is based on what a person takes to be the facts, which he in turn takes to be evidence for (or against) his beliefs, whether or not what he takes to be facts are facts and whether or not they are evidence. The rationality of a belief, then depends on other beliefs, and is therefore both subjective and relational: relational in the sense that it is determined by the relation between the belief and other beliefs and hence not intrinsic to the belief, subjective in the sense that the things in relation to which it is determined are things in the believer's mind, viz. some other beliefs of his."(6)

The rationality of a belief system is therefore subjective and relative. One can however also talk of rationality as being intersubjective within the context of a family of belief systems. In the discussion on truth, it will be argued that the question of objective rationality and the question of objective truth are inextricably intertwined. A solution to the one will also be a solution to the other.

It seems however that the logical criteria of rationality, i.e. those based on consistency requirements may be considered universal in the sense that we would expect all rational belief systems to embody them. But the values or interests determining or influencing knowledge-claims or rationality for that matter are relative and context-dependent. Steven Lukes(7) refers to the two types of rationality

criteria as rationality 1 criteria and rationality 2 criteria. The former are universal and the latter are relative. But given the relative nature of rationality in general, it would appear that any full view of rationality must take into account both the rationality 1 and the rationality 2 criteria. In any case both rationality 1 and rationality 2 criteria have to be relativised to belief systems. Out of this framework they lose their relevance and application. But for ontological reasons, such as reasons from the structure of the world, or from the structure of language, and the fact that human communication makes certain general presuppositions, it seems plausible to hold that there must be universal categories in human belief systems and thought reflecting certain universal categories of language and of the world which make communication and common understanding possible among human beings as has been suggested for example by Chomsky in his work on language. A recent approach to the problem of rationality which takes account of these two aspects of rationality is the expected utility or Bayesian model of rationality. This model is motivated by some analogies between decision problems and problems which have to do with making choices among alternative beliefs. This has led to extensive use of the conceptual tools of

decision and utility theory in the analysis of problems of belief and knowledge.(8) According to this approach, the major aim of rationality is the maximization of expected utility. A rational choice being the one that chooses an alternative that maximizes expected utility. In the case of belief the aim of the decision maker is to maximize "epistemic utilities."(9) Thus the decision maker takes into account two dimensions of the problem - a utility or evaluation function on possible consequences and a subjective probability function reflecting his beliefs about the state of nature. In his paper of Feb.20, 1978 delivered at the I.U.C., Dubrovnik, Yugoslavia on "The Limits of Rationality". Patrick Suppes of Stanford University writes: "The intuition back of the expected utility model is one that is widely accepted. When, as individuals, we are forced to make decisions, especially consequential ones, we must deal with two main factors: first our beliefs about what is going to happen and, second the value we attach to each of the possible consequences of our possible decisions. It is important to recognise that both beliefs and values are essential ingredients of the expected utility model. A person with beliefs but no values does not know what to choose, and a person with values and feelings but no beliefs can easi easily choose foolishly."(10)

Of course among the epistemic utilities or values that a decision maker will want to maximize in the area of beliefs are truth, high information content, high explanatory power, relevance and applicability to problem solving, consistency with the priorities of the subject as well as his prior beliefs, simplicity, economy, elegance, among others. Thus the major consideration is not just truth as is commonly believed, since not all truths are important, selection must be made among truths on the basis of other criteria. Moreover truths may be interpreted differently depending on the perspective and priorities involved. In this sense then a rational belief system is one which on the agent's view meximizes his epistemic utilities. That is, acting on its basis the agent is able to secure his ends or objectives, at least as well as, if not better than on any other belief system.

We will not go here into the question of decision making in epistemic contexts under certainty and under uncertainty, as this is beyond the scope of this enquiry. It can however be mentioned that the expected utility model of rationality or Bayesian decision theory as it is often called takes good care of these situations. The element of uncertainty is the basis for introducing the subjective

probability function on one's beliefs as well as the utility function on possible consequences. There is also however a question on how the rationality of one's interests (ends, desires, needs, wants, etc.) is to be assessed or evaluated. This is essentially one of the central questions of ethics. It cannot be fully discussed here. It may however suffice to suggest that rational ends should be consistent with the goal of securing the good life for man, or with the promotion of human welfare in its diversity. Thus actions leading to ecological imbalance or promoting human conflict and dehumanization would be considered irrational or presupposing irrational ends. So also belief systems tolerating these ends, would be considered irrational. But again the question of the rationality of ends is extremely controversial given the plurality or diversity of value systems. The question as to whether there is any one single value system, universal and absolute, valid for all men at all times and in all places remains open.

A major implication of the above position is the view that rationality is value relative or interest relative. According to this view, rationality is very much dependent on the values of a given community, and that therefore its form or expression may vary from one historical period to another, or from one society to another. A.J. Richards in his A Theory of Reasons

for Action makes the interesting and valid observation that "one cannot fully specify the principles of rational choice until he has presented an account of the principles of morality"(11) An alternative approach to the problem of the rationality of a belief system, which does not in any way contradict the foregoing account is based on the concept of justification. As already noted such justification is always relative to a theoretical framework, that is, to a belief system or family of belief systems. Thus a rational belief is one that is grounded or based on sound, warranted evidence. The evidence here consisting in other beliefs already held and already considered reliable, or believed to be true, hence warranted and sound.

There are generally two approaches to justification - the deductive and the inductive approaches. We consider consider them here briefly. In the deductive approaches. to justification the key notion may be said to be that of consistency. Thus it is held in deductive inference that if the premises of an argument are true, the inferred conclusion from the premisses must also be true. That is, such a conclusion must not be inconsistent, or contradict its supporting premisses. The so-called offending combination results when from true or warranted premisses, a false or unwarranted conclusion is derived. This is the mark of deductive

invalidity. In a valid deductive argument therefore the conclusion is said to follow necessarily from the premisses. If the premisses are true, the conclusion is said to follow necessarily from the premisses. If the premisses are true the conclusion cannot fail to be also true in a valid deduction. It can be said that in deductive inference, the conclusion is already contained in the premises. Deductive rules of inference are in this sense validity or truth-preserving, in the sense that if the premisses which are the basis of the inference are true, they ensure that the conclusion is also true. In the deductive approach to justification one progresses naturally from beliefs to beliefs. Its distinguishing feature is that the belief to be justified. i.e. the critical belief, is shown to follow logically from other beliefs held to be true or reliable. In this case the premisses constitute the beliefs believed to be true, or assigned some other truth-value. They act as the supporting ground or evidence for the conclusion - the critical belief - which is to be justified. In other words the truth-value of the conclusion is always dependent on the truth-value of the premisses. This approach however leaves open the question how in real life the problem of truth is to be settled. This means that we cannot expect an answer to this problem from the tools of deductive inference which may be said to be limited

to questions of logical consequence and the inferential flow between statements or sets of beliefs. Inductive justification on the other hand is not truth-preserving, that is, it does not guarantee the truth of the conclusion even when its supporting premisses are all assigned the truth-value- truth. As already noted by Risto Hilpinen "even if the premisses are true, the conclusion may nevertheless be false. Inductive arguments may be termed content-extending arguments ... the conclusion yields information in excess of that provided by the premisses. The conclusion of an inductive argument is not said to follow from the premisses, but the premisses are said to give support to, or to confirm the conclusion"(12) In distinguishing between deductive and inductive arguments, Hilpinen uses the notion of degree of confirmation. On this he writes: "Variations occur in the degree to which premisses of an argument may confirm the conclusion, in demonstrative (deductive) arguments, it is maximal (logical certainty), and in the case of strictly inductive arguments it is non-maximal."(13) Thus although inductive arguments may be useful, they offer no guarantees about their results, unless one makes certain assumptions about reality, or society, or whatever. Thus such assumptions as those of the principle of the uniformity of nature, or the self-correctiveness of the principle of induction, etc. are usually made. But such assumptions are problematic in that they may in turn invoke the same principle

they are supposed to defend, to justify themselves. To justify induction on the basis of induction is question begging. It may also be mentioned that the utilitarian or pragmatic justification of induction does not establish the objective validity or truth of the principle in question. Utility, success or high frequency are not in themselves criteria of objective truth or validity as David Hume and Karl Popper after him have shown. (14) Indeed Bertrand Russell has observed that "induction is an independent logical principle, incapable of being inferred either from experience or from other logical principles, and that without this principle science is impossible." (15) It could be added moreover, that the fundamental principles of deductive reasoning, such as those of consistency, or the principle of non-contradiction cannot be justified or proved without presupposing the very same rules. That is, we cannot justify these rules in a fundamental way, for we cannot even begin to ask any question without assuming these principles. If we cannot justify the rules on which the rationality of justification depends, then surely our basis ofr certainty or for dogmatic claims to truth is ultimately in a certain sense irrational. Rationality cannot itself be justified without begging the question. This problem at the root of the rational enterprise has been very well articulated and summarised by Hans Albert as follows:

"Man kann namlich offenbar nur wahlen zwischen: 1) einem infiniten Regress, der sich aber als nicht durchfuhrbar erweist. 2) einem logischen Zirkel, der ebenfalls zu keiner Begrundung fuhren kann, und 3) einem Abbruch des Verfahrens an einem bestimmten Punkt, der sich zwar durchfuhren laBt, aber eine Suspendierung des Prinzips bedeuten wurde, deren Willkur schwerlich bestritten werden kann. Es is nun naturlich angesichts dieser Situation relativ leicht, sich plausibel zu machen, daB man die dritte Alternative zu wahlen hat, und das ist in der Tat seit Aristoteles, der ja zu diesem Zweck seine wahren and evidenten ersten Prinzipien eingefuhrt hat, immer wieder geschehen. Man spricht hier dann etwa von Selbstbegrundung, Selbstevidenz, Letztbegrundung oder von einer Fundierung in unmittelbarer Erkenntnis..."

(i.e. Evidently one can only choose among the following:

1) an infinite Regress which turns out to be not feasible

2) a vicious circle which also does not lead to any justification, and

3) breaking off the process at a certain point which, admittedly, is feasible but would amount to suspending the principle, whose arbitrariness can hardly be denied.

It is naturally in view of this situation, now relatively easy to convince oneself of the third alternative, and that has in fact been the case since Aristotle who for this purpose introduced his true and evident first principles. One speaks here then of self-justification, self-evidence, ultimate justification or of grounding in direct cognition.)

There seems to be in this sense or connection, a sense in which Peter Winch is right in considering rationality in terms of "conformity to norms"[17] and his proposal that "how precisely this notion is to be applied to them will depend on our reading of their conformity to norms - what counts for them as conformity and what does not "[18] Rationality so conceived is relative to a community and belief system. The implication of

this relativity is that it yields a host of rationality practices, some of which may be mutually exclusive or contradictory. This means that each possible world has its own rationality practices which involve conformity to certain norms obligatory and permissible in that world. There may indeed be a set of rationality practiees obtaining in some possible world, and constituting the objectively and absolutely valid and true set of rationality practices. It may also be the case that all current rationality practices are invalid in this objective and absolute sense. There seems to be no independent and absolute way of knowing it. The moral here is that we may not be entitled to claim absolute truth or objective validity for our own or any other set of rationality practices. What however seems sure is that in any belief system or community such rationality practices or norms are always tied to the interests of the given community or belief system. That is, rationality is a function of human interests. Rationality is to be preferred to irrationality simply because in the business of living success, survival, well being are more consistently connected to rationality than to irrationality. This seems to be the main argument of Whitehead's small book The Function of Reason (1929, 1958) "The function of Reason is to promote the art of life .... In fact the art of life is first

to be alive, secondly to be alive in a satisfactory way, and thirdly to acquire an increase in satisfaction ..... The primary function of Reason is the direction of the attack on the environment."[19] In this connection we could say that the rationality of a belief system consists essentially in making life possible, and in particular a better life possible given all the environmental constraints in the context of space and time. The irrationality of a belief system consists in the contrary.

FOOTNOTES

1. Kekes, J. The Nature of Philosophy, Oxford, Basil, Blackwell, 1980. p.32.

2. Ibid.

3. See for example the formulation of this problem in Plantinga, God, Freedom and Evil, London, George Allen and Unwin, 1974.

4. Jarvie, I.C. & Agassi in Wilson, B.R., Rationality, New York, Harper & Row, 1970, p.173.

5. Kutschera, F. von, Grundlagen der Erkenntnistheorie, Berlin, Walter de Gruyter, 1982, pp.3-6.

6. Valberg, E., Rationality and Self-Deception, unpublished, pp.6-7.

7. Wilson, B.R. O op.cit. pp.194-213

8. See for example the studies of Levi, I, Gambling with Truth, Cambridge, Mass, MIT Press, 1967; Jeffrey, R.C. The Logic of Decision, New York, McGraw Hill, 1965, Hilpinen, R. Rules of Acceptance and Inductive Logic, Amsterdam, North Holland, 1968, among others.

9. Hipinen, R. 1968, op. cit. p.148.

10. Suppes, P., "The Limits of Rationality' unpublished paper p.7.

11. Richards, D.A.J., A Theory of Reasons for Action, Oxford, Clarendon Press, 1971, p.48.

12. Hilpinen, R, 1968, op.cit. p.7

13. Ibid.

14. See Hume, D., A Treatise of Human Nature, 1739, 1969, Penguin Books and Popper, K, Objective Knowledge, Oxford, o.u.p. 1972

15. Russell, B. A History of Western Philosophy, London, George Allen and Unwin, 1961, p.647.

16. Albert, H. Kritische Vernunft und menschliche Praxis, Stuttgart, Reclam, 1977, pp.35-35.

17. Wilson, B.R., op.cit. pp.99 - 100

18. Ibid.

19. Whitehead, A. The Function of Reason, Boston, Beacon Press, 1929, 1958, pp.6-9.

CHAPTER 7

The Problem of Belief Change

"The struggle for existence holds as much in the intellectual as in the physical world. A theory is a species of thinking, and its right to exist is co-extensive with its power of resisting extinction by its rivals.(1)

T.H. Huxley

Having looked at the logical structure of belief-systems and the problem of rationality and irrationality within them, in the last two chapters, attention is now directed at the phenomenon of how belief-systems do change. Obviously any given belief-system can either change or remain constant. It seems that all actual belief-systems do change. Only the possible belief system which is synonymous with the whole or total system of truths in all time and in all space remains constant. Four types of belief-change have been distinguished by Isaac Levi.(2) If B_o is a person's or an agent's original system of beliefs, and if B_1 is the belief system after some change in B_o, the shift from B_o to B_1 may be characterised as follows:

Expansion - B_o is a proper subset of B_1

Contraction- B_1 is a proper subset of B_o

Replacement- B_1 is obtained from B_o by replacing some b in B_o by its negation.

Residual shift - any shift not of the above type.

A belief system is a dynamic entity experiencing both internal and external pressures in complex and varied environments as noted in an earlier chapter. It is apparently these external and internal pressures which contribute toward the occurrence of belief change. Given that belief change results from an attempt to adapt to changing circumstances, it may be suggested that belief change is only justified if it is in the interests of the agent, that is if it is rational (in the sense of value-rationality and logical rationality together). As already noted by John Kekes[3] belief systems are essentially 'solutions' to problems - problems of life and problems of reflection. Thus a belief is held or accepted because it is thought to solve some given problem better than any known alternative belief within the context of the age. Thus "if problems of life are not solved the agent is damaged. The damage may be fatal, or merely destructive. At any rate, solving problems of life is required for the survival and well-being of people. Problems of life are common to all members of the species, but their solutions, of course, are extremely varied. Because there are different and occasionally conflicting ways of dealing with problems of life, it is necessary to choose between alternative solutions. Making such choices requires reflection and this yields another type of problem: those of reflection. The fundamental problem of reflection is to find a method

of choosing the most suitable among many solutions without actually trying out the rival candidates in practice.The The point of reflection is to minimize the risks involved in acting inappropriately."(4) Thus the domain of the bio-primary interests described earlier constitutes one problem-area with its cluster of problems of life which create problems of reflection. Similarly the domain of the social-relational interests is another problem - area with its cluster of problems of life creating other problems of reflection. The two sets of problems of reflection are the basis of what the Germans call "Naturwissenschaften" and "Geisteswissenschaften" (i.e. the sciences of nature and the sciences of man (spirit/ mind) .

Problem-solving, then, seems to be at the centre of belief change. It is the external motivation for belief-change and in the final analysis the most crucial factor. The internal motivation for belief change is connected to the logical structure of belief-systems as analysed earlier. This internal factor is however, justified by the external one relating to successful problem-solving. A failure to attend to these internal factors leads to a failure in problem-solving, more often than not. Generally then a belief system must come to terms with such internal standards as logical consistency, conceptual coherence, explanatory power or inability of the belief to be criticised.

Some of these ingredients of belief change will be referred to again below.

Belief change is often seen in terms of the growth of 'knowledge'. This however already implies a value-judgement on the nature of belief change. The term 'knowledge' is not used here in the sense of chapter 1 as indefeasibly justified true belief but in its general everyday sense as explained in Chapter 2. In this connexion Karl Popper's suggestion that "the central problem of epistemology has always been and still is the problem of the growth of knowledge"(5) is plausible. This problem necessarily raises the question of the ethics of belief, for example the question as to what principles or values ought to govern belief change, that is, when is one justified to accept, reject, or withhold accepting or rejecting a new belief or belief system. This problem also involves the clarification and investigation of the process through which belief systems (or our theories) change. In discussing this problem we shall take a careful look at two very influential models of belief change in recent times. We shall consider first the theory of belief change developed by Thomas Kuhn and then that developed by Karl Popper.(6) It is hoped to evaluate these two theories and attempt formulating a unified theory of belief change based on these two.

Thomas Kuhn's position of belief change centres around the notion of "paradigm". He considers this notion to be "the central philosophical aspect of my book"(7) Kuhn's position is essentially developed in the context of understanding the nature of science and its practice. But science is studied only as an example of a belief system which can help us understand not only scientific activity but other rational activities as well, which presuppose belief systems. The idea here has been best stated by Karl Popper as follows: "The central problem of epistemology has always beena and still is the problem of the growth of knowledge. And the growth of knowledge is best studied by studying the growth of scientific knowledge."(8) Kuhn's position may be seen in this light. A paradigm then in Kuhnian usage refers to "constellations of group commitments" and in the context of science to "what the members of a scientific community share and conversely a scientific community consists of men who share a paradigm"(9) It is the paradigm which defines what is normal and what is abnormal for a given community. Such a paradigm may be characterised by strongly held convictions that are prior to research.
In the context of science then Kuhn argues that: "scientific education inculcates what the scientific community had previously with difficulty gained -- a deep commitment to a particular way of viewing

the world and of practising science in it. That commitment can be, and from time to time is replaced by another, but it cannot be merely given up. And while it continues to characterise the community of professional practitioners, it proves in two respects fundamental to productive research. By defining for the individual scientist both the problems available for pursuit and the nature of acceptable solutions to them, the commitment is actually constitutive of research. Normally, the scientist is a puzzle-solver like the chess-player, and the commitment induced by education is what provides him with the rules of the game being played in his time. In its absence, he would not be a physicist, chemist, or whatever he has been "trained to be"(10). Kuhn's central argument in the above quotation is that the game of science presupposes a paradigm and generally consists of puzzle solving. However, when the possibilities for solving problems or puzzles on the basis of a paradigm are exhausted, a revolution sets in which eventually overthrows the reigning paradigm, replacing it with a new one. The paradigm however determines how problems are approached, evaluated, solved, and indeed what a problem consists in. Indeed the determination of significant fact, the matching of facts with theory, and the articulation of theory all depend on the current paradigm. This also implies that observations are not theory - neutral. All bservations are

theory-laden and presuppose the paradigm. The paradigm is therefore the criterion for the choice of problems. "To a great extent those are the only problems that the community will admit as scientific or encourage its members to undertake. Other problems, including many that had previously been standard, are rejected as metaphysical, as the concern of another discipline"(11) Indeed a paradigm can be blind to certain problems, not admitting them at all, that is "a paradigm can for that matter, even insulate the community from those socially important problems that are not reducible to the puzzle form, because they cannot be stated in terms of the conceptual and instrumental tools the paradigm supplies"(12) A paradigm then consists of a strong network of commitments - conceptual, theoretical, instrumental, and methodological (13) which generate rules and norms for guiding research and as a basis for practical activity in the domain of the paradigm. Paradigms might also be looked at from a psychological point of view. Piaget's theory of child development may be interpreted as indicating the formation of paradigms or 'knowledge-frameworks' in the young and how such paradigms do change.

How then does knowledge grow in the context of the paradigm? Obviously knowledge growth is here governed by the paradigm. It consists in the solutions and explanations given to various problems and questions on

the basis of the paradigm. Thus what Kuhn calls puzzle solving generates new knowledge within the framework of the paradigm and on the basis of rules and methods permitted by the paradigm. Nevertheless there may be unsolved puzzles or problems within a given paradigm. Indeed intractable problems may increase and pose a threat to the paradigm itself, defying explication and solution on the basis of the reigning paradigm. This situation may lead to a revolution or change of paradigm. This involves a change of the predominant commitments which begins to set in when the prevailing paradigm is subjected to a crisis, or when a breakdown of the normal technical puzzle solving activity obtains. Revolution is the resulting transition to a new paradigm. The change from one paradigm to another is likened by Kuhn to a "gestalt switch" or a "religious conversion". Thus in the same way "political revolutions aim to change political institutions in ways that those institutions themselves prohibit" so the choice "between competing paradigms proves to be a choice between incompatible modes of community life. Because it has that character, the choice is not and cannot be determined merely by the evaluative procedures characteristic of normal science, for these depend in part upon a particular paradigm, and that paradigm is at issue. When paradigms enter, as they must, into a debate about paradigm choice, their role

is necessarily circular. Each group uses its own paradigm to argue in that paradigms defence"(14). Hence this change appears somewhat irrational, for no argument can be "logically or even probabilistically compelling"(15). Examples of societies or individuals changing their religious or political beliefs in history as in the Islamization, Christianization or colonization of Africa appear to correctly illustrate this phenomenon. Again the change of belief resulting from military conquest and domination, or due to a natural catastrophe may be of this nature. It should be mentioned in passing that there is a certain similarity between this Kuhnian thesis and that of certain French thinkers notably Gaston Bachelard, J. Piaget and Louis Althusser (16). These thinkers for example refer to the Kuhnian transition in terms of an "epistemological break" or of "rupture". Such a break or rapture being characterised by a proliferation of competing articulations, the willingness to try anything, the expression of explicit discontent, the recourse to philosophy and debate over fundamentals(17). It could be added that generally most established paradigms only disappear after exhausting their possibilities, and that the conditions for the existence of a new paradigm mature in the womb of the old paradigm. In a related vein Marx observed that "mankind always takes up only such

problems as it can solve, since looking at the matter closely, we will always find that the problem itself arises only when the material conditions for its solution already exist, or are at least in the process of formation"(18)

Kuhn's picture of belief change in the context of a paradigm using the model of scientific knowledge is open-ended and may be represented as follows:

normal science ⟶ crisis ⟶ revolution ⟶ new normal science ⟶ new crisis ⟶ revolution, etc.

This model of belief change in science can be generalised to cover the picture with respect to other belief systems. After all science is itself a system of beliefs, and a paradigm is only an embodiment of some particular conceptual framework or basic assumptions, or presuppositions on the basis of which reality is viewed, described, experienced and a particular way of matching it with nature. Kuhn thus views the evolution of belief systems as fundamentally discontinuous, although prior to its rejection a belief system undergoes continuous evolutionary growth. But such change which is fundamentally revolutionary with non-revolutionary periods in between, is progressive in the sense that presumably the new belief system not only solves the puzzles and problems the old one could solve, but also solves new puzzles and problems which could not be solved on the basis of

the old paradigm. It would appear however that in the final analysis the choice between belief systems is a pragmatic as well as subjective choice reflecting at the same time one's dominant values or interests. Hanson and Toulmin [19] may be said to have developed models of belief change similar to Kuhn's in many fundamental aspects.[20]

We now turn to the Popperian model of belief change. As opposed to Kuhn's model of belief change, Popper's model is individualistic, objectivistic, impersonal, anti-authoritarian and anti-tradition. Clearly, as already noted, Popper lays fundamental important on the problem of belief change. Thus he writes: " the fundamental problem of the theory of knowledge is the clarification and investigation of this process by which it is here claimed our theories may grow or progress"[21] He states further in his Logic of Scientific Discovery[22] that "the growth of knowledge can be studied best by studying the growth of scientific knowledge. I do not think the study of the growth of knowledge can be replaced by the study of linguistic usages or linguistic systems"[23]. Popper's account begins with a vigorous attack on the logical tenability of an inductivist epistemology, somewhat in the classical Humean vein. This negative attack of inductivism and the principle of verification and their replacement by deductivism and falsificationism is one side of his purported

solution to the problem of induction in terms of an evolutionary epistemology. Karl Popper has argued that no number of confirming instances can prove with certainty or categorically the truth of any synthetic or empirical proposition. Such statements are in any case always theory - laden. Indeed the observation statements which may be the basis for any such inductive generalization are also theory-impregnated. Accordingly Popper has argued that verification is logically impossible and that falsification or testability is on logical grounds the only way of admitting a system as scientific, or of making preferences between theories. Alternatively, Popper suggests the criterion of criticisability as guaranteeing the rationality of a theory. Accordingly a dogmatic, infallible theory is an irrational theory. Naturally such a dogmatic, infallible theory is closed to change and growth. It is static. For Popper, theory precedes observation and "the fundamental role of observations and experimental tests is to show that some of our theories are false and so to stimulate us to produce better ones"(24). However Popper believes that problems are primary. One does not start from observations but from problems - practical problems or theoretical problems. Such problems call forth solutions -

practical solutions as well as theoretical solutions. In this respect then "the growth of knowledge proceeds from old problems to new problems, by means of conjectures and refutations"(25). Knowledge growth or belief change is therefore based on continual modification, alteration or rejection of theories and solutions to problems in the light of critical discussion of them. This is essentially a method of trial and error elimination, common to man and animal alike. Thus our knowledge at any one particular historical moment, is taken to be those hypotheses and theories which have survived in their struggle for recognition and acceptance against competition from rivals. The Popperian model of belief change is in essence evolutionary. It may be referred to as the natural selection hypothesis of belief change. It has been formulated as follows: "the growth of our knowledge is the result of a process loosely resembling what Darwin called "natural selection", that is,the natural selection of hypotheses our knowledge consists at every moment of those hypotheses which have shown their (comparative) fitness by surviving so far in their struggle for existence, a competitive struggle which eliminates those hypotheses which are unfit"(26). It is to be noted that for Popper the fittest hypothesis is not necessarily the one which helps our own survival, but the one which best solves the problem it was designed to solve,

and which resists criticism better than competing hypotheses. Preference between theories is thus "not due to anything like an experiential justification of the statements composing the theory, it is not due to a logical reduction of the theory to experience. We choose the theory which best holds its own in competition with other theories, the one which, by natural selection proves itself the fittest to survive. This will be the one which not only has hitherto stood up to the severest tests, but the one which is also testable in the most rigorous way. A theory is a tool which we test by applying it, and which we judge as to its fitness by the results of its applications"(27). New knowledge depends on acts of personal decision making, on choice, on selection of theories which solve our problems in a manner consistent with our standards, values and expectations. Knowledge in this Popperian sense remains however conjectural, open, evolutionary, consisting in learning by trial and error, and from our mistakes. The Popperian model of belief change has been summarized as follows:

1. All organisms are constantly, day and night, engaged in problem solving.
2. These problems must be viewed in an objective sense.
3. Problem solving always proceeds by the method of trial and error, wherein new reactions, new forms,

new organs, new modes of behaviour, new hypotheses are tentatively put forward and controlled by error-elimination.

4. Error-elimination may proceed either by the complete elimination of unsussessful forms by natural selection - the theory or the animal as the case may be - or by the (tentative) evolution of controls which modify or suppress unsuccessful organs, or forms of behaviour or hypotheses.

5. Controls developed during evolution are telescoped and used in future adaptation and problem solving.

6. Using "P" for problem, "TS" for tentative solution, "EE" for error elimination, we can describe the fundamental evolutionary sequence of events as follows:

$$P_1 \longrightarrow TS \longrightarrow EE \longrightarrow P_2 \longrightarrow \text{etc.}$$

7. To give an idea of the multiplicity of tentative solutions, or trials possible, the schema could be re-written as follows:

Popper's contention is that this schema is valid for the animal world, for 'primitive' man, as well as for modern man and that it accurately describes how knowledge grows through error elimination and systematic rational criticism.(28)

In what sense can one speak of knowledge growth of progress of knowledge in Popper's model of belief change? That is, what is the criterion of progress in view of the fact that all our theories are guesses or conjectures? Popper's answer to this question is his criterion of relative potential satisfactoriness which isolates as preferable the theory with a higher degree of empirical content, which is logically stronger, which has a greater explanatory and predictive power, and which can be more severely tested by comparing predicted facts with observations. This criterion, Popper argues, should not be confused with high probability in the sense of the calculus of probability, for content increases with increasing improbability. Hence "since a low probability means a high probability of being falsified, it follows that a high degree of falsifiability or refutability or testability, is one of the aims of science - in fact precisely the same aim as a high informative content. The criterion of relative potential satisfactoriness is thus testability or improbability"(29) The two models of belief change delineated above are considered by some as incompatible. Indeed Popper himself has described the Kuhnian model as the "myth of the framework" which he considers to be a logical and philosophical mistake. He has further argued that Kuhn's position is "the central bulwark

or irrationalism in our time" and that the normal scientist as Kuhn describes him "is a person one ought to be sorry for"[30] It seems that Popper is wrong in this view, for clearly it would appear that a conceptual or theoretical framework (paradigm) is unavoidable. In fact Popper seems to suggest so at many places in his writings. Moreover no scientist can operate without it. Further Popper seems to be wrong in ignoring certain important aspects of beliefs, namely their basis in communal life, a point which Kuhn has strongly emphasized. Included here is also his attempt to defend the idea of an impersonal, objectivistic knowledge, knowledge which, in his owr words, is "totally independent of anybody's belief, or disposition to assent, or to assert, or to act. Knowledge in the objective sense is knowledge without a knower: it is knowledge without a knowing subject"[31] This idea seems to be false, for knowledge is really a very human and personal product - depending on subjective and intersubjective factors in some community. Indeed understanding the meaning of knowledge claims involves understanding the meaning of the subjective and intersubjective contexts in which they are situated.[32] For knowledge arises out of definite social and historical circumstances related to man's evolutionary struggle in history,

and is therefore tied to man's imperative to adapt to his physical, social and mental environment, in the context of the problem of human survival, self-preservation, self-realization, and the fulfilment of his diverse needs and desires which constitute his interests.

Both Popper and Kuhn are right in placing emphasis on the primacy of problems - practical and theoretical - as the pivot which is the basis for belief change. Both are also right in defending openness, fallibilism, and non-dogmatic approaches to and within belief systems. The implication of this is that they are accused of defending relativism. Thus Popper can write boldly that: "Science is not a system of certain, or well established statements, nor is it a system which steadily advances towards a state of finality. Our science is not knowledge (episteme): it can never claim to have attained truth, or even a substitute for it, such as probability ..... We do not know: we can only guess. And our guesses are guided by the unscientific, the metaphysical (....) faith in laws, in regularities which we uncover - discover"(33) Popper and Kuhn insist however that the search for objective truth or knowledge still remains the fundamental aim of science or knowledge-production. This search is however frustrated by the present acceptance of the fact that:

a) No statement is conclusively verifiable by experience.

b) No statement is conclusively falsifiable by experience.

c) No statement is immune from revision in the light of experience,

d) the criteria for deciding which statements to retain and which to abandon in the face of recalcitrance, are pragmatic ones.(34)

That is, although we may have truth as our aim in knowledge - production, there is no guarantee that our theories are growing toward truth. Our criteria for the acceptance of statements or knowledge-claims are therefore, in the final analysis, pragmatic and value-based, and as well historically and culturally conditioned. Indeed if rationality consisted in believing in nothing but only the truth, and truth is defined in its classical non-pragmatic sense, then none of us can claim or even hope to be rational. Be that as it may, it is here suggested that while rational belief change is guided by the search for truth, it is also guided by other broader human values such as those of beauty, love, justice, economy, simplicity, goodness, in whichever way these are conceived.

A question may now be posed: Is the Kuhnian model of belief change incompatible with the Popperian model of belief change? The answer we

suggest is that they are not necessarily incompatible, and Kuhn himself seems to think so[35]. Our view is that the Popperian model can be reinterpreted in the context of the Kuhnian model. A possible reconstruction is given below:

Normal belief system	:	growth along Popperian lines. Individual beliefs change through conjectures and refutations. Problem oriented. Belief--core not affected.
Crisis	:	Belief core questioned as well. Conjectures & refutations. Multiple contradictions. Call for a new belief system.
Revolution	:	Changes in belief core. Proposals for new belief system, and testing of these through conjectures & refutations.
New normal belief system	:	replacement of the old belief system, which becomes the norm, i.e. the new paradigm.
New crisis	:	etc.

Of course the time span connecting each of these stages of belief change is variable and cannot be generalised as it depends on several variables, among them, the nature of the problems and their significance, the urgency with which solutions are sought, the resources at the disposal of the agents etc.

The above reconstructed Kuhnian - Popperian theory of belief change differs from the Marxist model for example in denying place to dialectical logic.

The validity and adequacy of formal logic conceived in temporal terms is assumed.[38] In this reconstruction of the Popperian model in terms of the Kuhnian model, the inductive principle is contra-Popper retained as a self-corrective procedure. This principle is held on pragmatic lines on grouns of its usefulness, fruitfulness, and its indispensability in the rational enterprise.[36] In addition the principles of verification and falsification are retained in a weakened form, in the sense that both depend on the principle of induction which also lacks conclusive proof. While rational belief change is held to proceed along principles noted in the modified Kuhnian - Popperian unified model, it is pointed out that such change involves a dialectic between subjective and objective factors. Neither is adequate or sufficient on its own. Certainly quite a variety of psychological and subjective factors are involved in belief change, among these are those related to social traditions, cultural values, religious and moral values, aesthetic considerations and others. Such factors as curiosity and intuition belong to this category. This point leads back to the discussion on human interests and their place and role in belief-formation as well as belief change in Chapter 3.

Finally, it may be held that insofar as belief change is inevitable in human life, its occurrence need not be erratic, irrational or unjustifiable, although given the complexity of human life and the contradictions involved in human existence, that is often the case. Rather what is suggested is that belief change can be and ought to be made rational, justifiable and consistent with the sound values of the knower. That is belief change ought to be consistent with the ideal of a truly human world in which truth, beauty, goodness and justice are supreme and pre-eminent. Of course the specific content of these ideals is a hotly debatable point. Nevertheless, the point seems valid.

FOOTNOTES

1. T.H. Huxley, April, 1980, Quoted in Toulmin, S, Human Understanding, Oxford, Clarendon Press, 1972, p.319

2. Isaac Levi, "Truth, Fallibility and the Growth of Knowledge" a paper read to the Boston Colloquium for the Philosophy of Science, 1975.

3. Kekes, J. A Justification of Rationality, Albany, State University of New York, 1976. pp.118-163.

4. Ibid. p.123

5. Popper, K, The Logic of Scientific Discovery, London, Hutchinson, 1959, p.15

6. See Kuhn, T.S., The Structure of Scientific Revolutions, University of Chicago Press, 1962, 1970.
and Popper, K, 1959 op.cit.
" ; Conjectures and Refutations, New York, Harper Torchbooks, 1965
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7. Kuhn, T.S. "The Logic of Discovery or Psychology of Research" in Lakatos, I & Musgrave, Criticism and the Growth of Knowledge, Cambridge, C.U.P., 1970

8. Popper, K. 1959, op. cit. p.15

9. Kuhn, T.S., 1970, op.cit. p.176

10. Kuhn,T.S. 'Scientific Paradigms" (1963) in Barnes, B, Sociology of Knowledge, Penguin Books, 1972, pp. 80-104

11. Kuhn, T.S., 1970, op.cit p.37

12. Ibid. p. 37

13. Ibid. p. 42

14. Ibid. pp.93-94

15. Ibid.

16. See for example the discussion in Lecourt, D, Marxism and Epistemology, London, N.L.B. 1975, pp.9-19.

17. cf. Kuhn, T.S., 1970, op.cit.p.91

18. Marx, K. in Freedman, R ed., Marx on Economics, Penguin Books, 1961, p.6

19. Hanson, N.R., Patterns of Discovery, Cambridge, C.U.P, 1958
Toulmin, S, Human Understanding, Oxford, Clarendon Press, 1972

20. Kordig, C.R., The Justification of Scientific Change, Dordrecht - Holland, D. Reidel Publishing Co. 1971
and Suppe, R. ed. The Structure of Scientific Theories, Urbana, University of Illinois Press, 1977
contain lucid and excellent comparisons of Hanson, Toulmin and Kuhn.

21. Popper, K, 1972, op.cit. 35

22. Popper, K. 1934, 1959, op.cit.

23. Ibid. pp.15-16

24. Popper, 1972, op.cit. p.258.

25. Ibid. p. 258.

26. Ibid. p. 261

27. Popper, 1959, p. 108.

28. See Popper, 1972, op.cit. pp. 242-244
cf, Popper K. (1961) " Die Logik der Sozialwissenschaften' in Adorno, Th.W. et al, Der Positivismusstreit in der deutschen Soziologie, Neuwied, Luchterhand, 1969, 1972 pp.103 - 123.

29. Popper, K. 1965, op.cit. p. 219

30. Popper K, in Lakatos, 1 & Musgrave, eds. 1970, op.cit p.52

31. Popper, K, 1972, op.cit. p.108

32. cf. Polanyi, M, Personal Knowledge; London, R&KP, 1958.

33. Popper, K. 1959, op.cit. p. 278

34. See Haack, S. Deviant Logics, Cambridge, C.U.P. 1974, p. 30
and Quine W.V., Ontological Relativity, New York, Columbia, 1969.

35. See Kuhn, T.S. in Lakatos & Musgrave, eds. 1970, op. cit. pp. 1-23

36. See Russell, B., A History of Western Philosophy, London, George, Allen & Unwin, 1961, pp.646 - 647
and Mojola, A.O. A Critical Examination of Karl Popper's Theory of Knowledge, M.A. Thesis, University of Nairobi, 1977.

CHAPTER 8

The Problem of Truth in Belief Systems - a proposal for a unified theory of truth

The problems of rationality and irrationality and that of human interests raise questions, as already noted in the earlier chapters, which are best tackled in the context of the problem of truth. Thus the question has been raised whether truth is objective or subjective, or whether it is absolute or relative. Is truth independent of our interests or tied up with our interests?

This problem is a perennial one, and has appeared in various colours from time to time. In a certain sense this problem is unavoidable in scientific activity connected with the production of new beliefs (or new knowledge-claims). It has been said that truth is the virtue sought for in all belief systems, just as justice or 'the good' is the virtue sought for in all societies. This is valid in a certain sense, of course, but by no means undisputed. Thus one could interpret the debate between Hegel and Kierkegaard in terms of the above problem. In the Hegelian system, man and his passions are simply reduced to an idea within a larger structure of ideas. Indeed in this structure, the parts are

wholly dependent on the whole. For Hegel, "the real is rational and the rational is the real". Reacting against Hegel's impersonal system which sets objectivity over against subjectivity, Kierkegaard made a passionate plea for subjectivity. In his famous book Concluding Unscientific Postscript, he made a case for the position that "Truth is Subjectivity". For him "truth is precisely the venture which chooses an objective uncertainty in the passion of the infinite."(1) For Kierkegaard truth has existential dimensions and could not in fact be divorced from the life situation of men.

We do not intend to defend the position of Kierkegaard, nor criticise directly that of Hegel. It is however suggested here that one of the most significant contributions of Kierkegaard is his passionate emphasis on the place of subjectivity in the determination of what constitutes truth or knowledge. This concern with inwardness and subjectivity is thought to be connected to the problem of relativism, the idea that all knowledge claims are relative and bound to the existential situations in which they are produced. This problem extends to moral as well as aesthetic values - that is, the question as to whether they are absolute or relative values. The opponents of relativism however argue

that it involves a genetic fallacy, according to which it is assumed that the existential conditions which generate thought, determine the validity and truth of the propositions thereof. Truth it is argued rests on logical, methodological and purely epistemological criteria which are independent of existential factors - whether they be historical, geographical, cultural, ideological, biological, socio-psychological, etc. It is also argued that relativism is self-defeating in that it cannot account for itself, nor of its own truth or validity.

In response to some of these problems, a thinker such as Karl Marx postulated that the proletariat would be in a position to transcend the veil of situational factors and grasp certain truths with universal validity. For Karl Mannheim, only the "socially unattached intelligentsia"(2) would be in a position to overcome ideological myopia and dogma and become bearers of truth for the social order. This is of course a debatable point. One may for example raise the question on the relationship of the "socially unattached intelligentsia" and his position that "The prevailing philosophic view which cautiously admits that the content of conduct has been historically determined, but which at the same time insists upon the retention of eternal forms of

value and of a formal set of categories, is no longer tenable"[3]. To the relativist position, these questions among others are pertinent - for example - if relativism is true, how does one know that this is so, in the absence of any universal categories? Does not relativism presuppose universals even in the statement of its case? For example in assuming the truth of its case. Is it not possible that there are certain universal structural patterns, elements or motifs which define the limits of the circle within which human persons operate as knower, as known, as homo faber, as neighbour and friend, as speaker and language-user, etc,

Subjectivity overplayed leads to subjectivism - the idea that truth is based entirely on human subjectivity. It naturally leads to relativism. At the extreme pole, is the opposing view which overemphasises the place of the object or objectivity in the structure of knowing. The overplay of this leads to objectivism or the idea that truth or knowledge is based wholly in the object and subjectivity ought to be eliminated from all considerations of truth. A version of this idea is Hegelian, but a more recent version is reflected in Karl Popper's conception of "knowledge without a knower ..... Knowledge without a knowing subject"[4]. It is however to be noted that Popper is vehemently anti-

Hegelian in many important respects, as is evidenced in his well known book The Open Society and its Enemies, a scathing critique of Plato, Marx and Hegel. The position to be prsented here will avoid both extremes in favour of a middle ground that takes seriously human subjectivity and its driving forces on the one hand, and the object of knowledge on the other - in the determination of the question of truth.

It has been said that in pausing the question: "What is truth?" (John 18:38), Pilate was ahead of his time.(5) That may be so. We do not however have his thoughts on this question. Nevertheless since the time of Pilate, several theories of truth have been proposed in an attempt to answer that question. The three which have dominated this discussion appear to be the coherence theories, the correspondence theories and the pragmatist theories - in this century.

Much earlier than Pilate, Aristotle in his Metaphysics (1,7,27) defined truth as follows: "To say of what is that it is not, or of what is not that it is, is false, while to say of what is that it is, or of what is not that it is not, is true." This dictum is one of the earliest attempts to present a correspondence theory of truth. In taking this "classical Aristotelian conception of truth" as his starting point, Tarski(6) has formulated one

of the most influential accounts of truth in this century. Tarski's theory is essentially a semantic version of the correspondence theory of truth. His aim, as he himself pointed out was to rehabilitate and elaborate the classical theory that: "The truth of a sentence consists in its agreement with (or correspondence to) reality" or that "A sentence is true if it designates an existing state of affairs"(7) As Tarski himself has stressed in his famous 1931 paper "I would only mention that throughout this work I shall be concerned exclusively with grasping the intentions which are contained in the so-called classical conception of truth ('True' - corresponding with reality) in contrast, for example, with the utilitatian conception ('true' - in a certain respect useful)"(8) But the classical Aristotelian conception of truth, although intuitively clear and satisfactory cannot be adequately defined for colloquial or everyday languages. Such an attempt Tarski argues is "confronted with insuperable difficulties" especially those connected with semantical antinomies, like the antinomies of the liar or of heterological words. The claim here is that such antinomies or paradoxes cannot be resolved given the conventions of everyday language. In particular such a language in which self-reference is possible, and for which the normal laws of logic hold, is bound to be inconsistent or lead to contradictions. To circumvent this

problem Tarski's semantic version of the correspondence theory of truth is restricted initially to exactly specified formalized languages, hence the title of his paper: "The Concept of Truth in Formalized Languages."(9) Tarski argues in this paper that the use of a "semantically open" language avoids the snare of the paradoxes or the antimonies. A language in which self-reference is possible and which employs such predicates as 'true' and 'false' as well as operating on the basis of classical logic is called "semantically closed".

Given the difficulties related to solving the problem of the truth-value of such paradoxes a. that noted in the New Testament (Titus 1:12) where Epimenides, a Cretan prophet, "even a prophet of their own," asserted that " All Cretans are always liars"- in semantically closed languages, the definition of truth is obstructed. In the above example -if "this testimony is true" of all other Cretan utterances, then it would appear that all Cretans are always liars is true if and only if it is false, or false if and only if it is true. Herein lies the paradox. A solution to this paradox and related others is crucial to any adequate solution to the problem of truth.(10) Tarski's attempted solution to this problem of truth not only attempts to circumvent the problem of the paradoxes, but also seeks to give a satisfactory definition of truth which

is both materially adequate and formally correct. Tarski's strategy consists initially in his concept of language levels. The lower level that of object language serves a role similar to that of direct speech and the higher level that of meta-language serves a role similar to that of reported speech, i.e. commenting on the object language. Consider for example the following sentences:

1. Snow is white.
2. The sentence "snow is white" is true if and only if snow is white.

In the above example, (1) is in the object larguage, and (2) is in the meta-language. Tarski has generalized sentences in the meta-language having the form of (2) to his famous Schema (T) as follows:

(T): X is true if, and only if, p.

Where X is the name of the sentence in the object language and p is its equivalence in the meta-language. According to Tarski, any adequate definition of truth must be a consequence of Schema (T). Thus following Schema (T), the assertion that - Nairobi is the capital of Kenya now in 1982, is true if and only if Nairobi is the capital of Kenya.

Further in Tarski's theory, the term 'true' is a predicate of sentences. Such sentences must be sentences of some exactly specified formalized

language L, for example as in the various systems of deductive logic. This procedure ensures clarity and precision which are demanded by the fact that: "The problem of truth obtains a precise meaning and can be solved in a rigorous way only for those languages whose structure has been exactly specified. For other languages - thus for, all natural, 'spoken' languages - the meaning of the problem is more or less vague, and its solution can have only an approximate character. Roughly speaking, the approximation consists in replacing a natural language (or a portion of it in which we are interested) by one whose structure is exactly specified, and which diverges from the given language 'as little as possible'"(11). The work of Richard Montague(12) as in his paper "English as a Formal Language", or that of Davidson, D.(13) or of Kripke(14) among others may be seen as attempts to carry forward this program of making this theory applicable to natural languages as well.

Among the consequences of the Tarskian definition of truth is the statement that all consequences of true sentences are true. Indeed the attainment of this result seems to have been Tarski's main motivation in this classic paper. Further the Tarskian definition of truth can also be obtained from the notion of satisfaction, satisfaction being understood as a

relation between arbitary objects and certain expressions referred to as sentential functions. Examples of such functions are expressions like "x is white", "X is greater than Y", X prefers Y to Z", etc. Thus snow satisfies the sentential function "x is white" since the sentence "snow is white" is true. Similarly 9 and 7 satisfy the sentential function "X is greater than Y" since the sentence "9 is greater than 7" is true. In formalized languages such sentential functions are defined by means of recursive procedures. So is also the definition of satisfaction. Under such recursive definitions, it is indicated which objects satisy the simplest sentential functions and then conditions are stated under which compound sentential functions are satisfied by given objects, assuming of course that the objects which satisfy the simpler functions are known. It follows therefore as Tarski notes that : "Once the general definition of satisfaction is obtained, we notice that it applies automatically also to those special sentential functions which contain no free variables, i.e. to sentences. It turns out that for a sentence only two cases are possible: a sentence is either satisfied by all objects or by no objects. Hence we arrive at a definition of truth and falsehood simply by saying that a sentence is true if it is satisfied by all objects and false otherwise"(15)

There is no doubt that Tarski's semantic version of the correspondence theory of truth which we adopt, is a

great achievement. It forms a basis upon which an account of truth applicable to natural languages can be constructed The work of Richard Montague[16] already referred to above is a step in this direction. In particular his paper "English as a Formal Language"[17] is part of the now so-called Montague - (or Universal) Grammar program whereby natural languages are interpreted using formal models, such that theories applicable to formal languages could be equally made applicable to natural languages. Danald Davidson for example relativises Tarski's Convention (T) to times and speakers. Thus he writes: " I am tired" is true as (potentially) spoken by p and t if and only if p is tired at t. "That book was stolen" is true as (potentially) spoken by p at t if and only if the book demonstrated by p at t is stolen prior to t.[t] Davidson recognises however the host of problems that are as yet to be tackled. Our position here is that Tarski's classical paper explicates the intuitions contained in the idea of truth as correspondence to reality, at least in such a way that the problems connected with the nature of the correspondence relation do not arise.[19] It is our view that the correspondence theory of truth as explicated by Tarski is not a criterion of truth but rather a definition of truth. That is, this theory does not tell us how to recognise or identify truth, but only what truth consists in. A criterion of truth gives a test or procedures for deciding whether a

sentence or whatever is true or false, a definition of truth only gives the meaning of the word true(20)

In this sense then the correspondence theory of truth as explained above is not incompatible with either the coherence theory of truth or the pragmatic theory of truth.We are of the opinion that these three theories of truth are in fact complimentary. Whereas the correspondence theory serves a definitional function, the coherence serves a criterial function at the level of logical justification and the pragmatic theory serves a criterial function at the level of practice. One may also see these three theories of truth as three layered - the correspondence as at a lower level, the coherence at the next level, and the pragmatic as the highest level. Thus the lower theory is contained by the one above it, at least as seen from this unified view. This in a nutshell is the basis of our unified theory of truth. The details follow below. Before an evaluation of this unified view it will be necessary to give an outline of the content of the coherence and the pragmatic theories of truth.

Now the coherence theory as it is to be understood here accepts a correspondence theory as explicating the nature of the idea of truth and treats coherence as the general condition that

must be satisfied by a set of beliefs or propositions if they are to be accepted as true. Moreover, such a set of beliefs or propositions should be both consistent and comprehensive in its coverage of the available data. As Rescher[21] notes: "The groundwork of the coherence theory has its roots in the idea of a system. Its basic insight is formulated by F.H. Bradley as follows - 'Truth is an expression of the Universe, at once coherent and comprehensive. It must not conflict with itself, and there must be no suggestion which fails to fall inside it. Perfect truth, in short, must realize the idea of a systematic whole.' The criterial nature of the coherence theory of truth may be understood along these lines. Men are not possessors of truth, they are seekers after truth. Thus in their activities of knowledge production, they are confronted with sets of beliefs which may be termed "truth-candidates". The key problem here becomes how from a multiplicity of truth-candidates, possibly incoherent and mutually exclusive, a privileged set of beliefs or one to be accepted as true or as warranted is to be selected. A coherence theory supplies in this case a test or criterion for selecting such a prividged set of beliefs from the truth-candidates.

Such a coherence screening of truth raises certain problems. For example, assuming that the data set yields more than one maximal consistent set of beliefs, how is the selection to be made among such maximal consistent sets? Rescher[22] has suggested that a choice be made by means of a plausibility index. Such an index may necessitate the partitioning of data into those which are, and those which are not, plausible. Through a system of probabilistic preference whereby probability-values are assigned to the maximal consistent sets vi. their axioms, these in turn are used as a basis for preferential selection among the maximal con istent sets (m.c.s). Although Rescher rejects a pragmatic approach to the m.c.s. preference, it is our view that a pragmatic approach is the best defensible. Francis W. Dauer's[23] defence of the coherence theory of truth is made to rest on two plausible assumptions, namely his:

v: The truth or falsity of meaningful sentences makes a publicly observable or verifiable difference.

and his:

M: As a conceptual matter, if S is an observation sentence for us, a sentence S' of another linguistic community cannot be translated by (or mean the same thing as) S if S and S' have different stimulus meanings.

Obviously the formulation of "V" and "M" owe much to W.V. Quine's terminology as in his Word and Object.[24] Dauer's rationale seems to be a desire to ground his version of coherence on observation statements or on an empirical basis. Accordingly he asserts that "The coherence theory adopts the maxim of trusting observers until there are reasons to doubt them. Thus any speaker-observer is competent (at a given moment) unless his observation statement is incompatible with those of others, When such a conflict arises, the minimum requirement is that the observation statements of those eventually judged to be competent are consistent with one another."[25] Given the centrality of observation statements in Dauer's position, it is no surprise that for him the truth of non-observation statements consists in their coherence with true observation statements. Here the reliance on the actual observation statements is to avoid there being as many coherent systems as possible worlds. However in assuming as he does that "the possibility of massive conflict does not extend to observation statements, "Dauer is forgetting that observation statements are not independent of theory.[26] What one sees or one's interpretation of what one sees are dependent upon

one's theoretical framework. As Hanson, Kuhn, Polanyi and others have shown, all observations are theory-laden or theory-dependent. Or to invoke another common argument due to Quine, theory is always underdetermined by observation. This means that Dauer's assumptions and his construction of an observation base for the theory does not really avoid the problem of choice among many possible systems of propositions which could arise on that basis. Dauer merely takes it that in any given language-community, the observation basis of the theory will remove this problem. Clearly it does not.

Nevertheless, Dauer is right in emphasising the role of observation statements, or of experience in general. He is also right in situating such observation statements or experience in the context of a language or community. The missing dimension in his account is however completed by the addition of a pragmatic criterion of the theory of truth. Here the pragmatic theory is understood as complementary to both the coherence and the correspondence accounts of truth. Whereas the correspondence is understood as defining truth, the coherence and pragmatic theories are understood as together supplying a criterion or test for distinguishing or identifying truth in the

process of life's activities. Indeed the classical pragmatists do not quarrel with either the correspondence or the coherence theories. Thus William James [27] has it: "Truth .... is a property of certain ideas. It means their 'agreement', as falsity means their disagreement with 'reality'. Pragmatists and intellectualists both accept this definition as a matter of course. They begin to quarrel only after the question is raised as to what may precisely be meant by the term 'agreement' and what by the term 'reality'.....". The main concern of the pragmatic theory is with the 'fruit' of beliefs or more precisely with their consequences, especially in the realm of action. The pragmatic theory lays more emphasis on the "truth's cash value in experiential terms"[28]. For in this theory, the possession of truth is not an end in itself, but rather "a preliminary means towards other vital satisfactions". Moreover the pursuit of truth is considered a primary human duty precisely because of the utility functions of truth, utility being conceived in broader terms not just on the instrumental level. And of course included in this is the fact that truth has survival value, above all else. It promotes the art of survival, which its anti-thesis falsehood could hardly be said to promote on a consistent basis. What is implied here is knowledge of the truth,

and the conscious sometime use of falsehood for survival presupposes knowledge of truth. What is being suggested here is the idea that truth is inextricably connected to human interests in all their diversity. A knowledge of truth facilitates the means to satisfying human interests. Or as William James puts it: "In the case of truth, untrue beliefs work as profitably in the long run as true beliefs work beneficially"(29)

The pragmatic theory of truth as conceived here is therefore only part of the theory of truth and not the whole of it. It highlights the utilitarian and consequential aspects of beliefs derived from their ruth. It must be admitted that the success, utility or consequences of scientific ideas derives from their truth or approximation to truth. Clearly if these ideas lacked any truth whatsoever, we cannot imagine them having the kind of success or consequences they have had. Thus technology attests to the truth of a theory with respect to its area of application. Accordingly, modern science proves itself through the power of its technology and its success in the various fields where this is applicable, although the moral value of this practical success is doubtful. We cannot simply ignore this pragmatic dimension in the theory of truth. It may prove in the final analysis to be the most important dimension in the theory of truth. In any case, it is the testing ground of any

theory or of any belief system. As theory or beliefs and reality confront each other, true theories or beliefs are confirmed and false theories disconfirmed. As already noted such confirmation and disconfirmation is not conclusive it is tentative. This follows from human fallibilism. Nonetheless, it is the consequences of beliefs or their utilities which are the basis among other factors such as those of coherence external or internal, for their truth determination.

But what is the nature of such truth determination? Clearly the correspondence theory of truth yields an absolute, changeless concept of truth. That is, truth in the sense of this theory is indefeasible and stable through time. The human problem is how this truth can be identified absolutely and infallibly. It seems however that so far an infallible and absolute test for truth identification has not been found. The coherence theory and the pragmatist theory are fallible and relative tests for truth. Moreover they are contextual and not universal in their method of application. They are dependent, in the case of the coherence theory to a given belief system or theoretical framework, and in the case of the pragmatist theory to a given social order or community in the contexts of its interests and values, and of course in the context of its belief system and technological level. Thus although we do not accept now that the earth

is flat or that the sun revolves around our earth, we can imagine situations in which this is accepted and where on the basis of the coherence theory, contrary information such as that the earth is round and revolves around the sun is rejected offhand. This was in effect Galileo's situation when he sought to persuade his contemporaries against age-old convictions and religious dogma, that the helio-centric theory was true. Of course in introducing his theory Galileo was laying the basis for a new paradigm, or a new conception of the old relations which was in essence revolutionary. The basis for choosing Galileo's new theory in preference to the old one, was in the final analysis pragmatic and connected to the theoretical richness as well as practical effectiveness, fruitfulness and satisfac-toriness of the new theory. It of course took time of caution and waiting, weighing the consequences before the choice could be effected. In this case, the choice had less to do with the new theory's coherence with the old, although of course the various elements of the new theory had to cohere among themselves as well as with aspects of the old theory which were not affected by the change to the Galilean world-view.

It seems therefore that although the correspondence theory is most likely true given our acceptance of scientific realism, truth determination cannot in practice be based upon it. The criteria for truth-determination being in this case, the coherence theory dependent on the accepted belief system or theoretical framework, and the pragmatic theory dependent on the values and interests obtaining in the given community in the light of its belief system. Thus truth-determination on the basis of the twin criteria of coherence and pragmatism is relative in space and time to such variables as: the belief system or theoretical framework presupposed, the interests and values at stake, the tools and methodological procedures employed in this process, the cultural traditions in such a community with respect to knowledge production, the integrity and commitment of such knowledge producers. But since these variables differ from place to place the number of conflicting belief systems is high. We have referred to these earlier in terms of possible worlds. In that analysis it may be taken that at each possible world there is a certain truth conception or determinination. Such a conception may share many aspects with other possible worlds or it may not. It may be isomorphic with the one

possible world in which the absolute changeless truth concept is characterized, or it may not. At the moment we have no way of telling when such a situation obtains. It may also be noted that within some given community, there may be many conflicting belief systems at several levels. The deeper the level of conflict the more difficult the chances of harmony. Since we have only one objective world, it could be argued that differences in its perception are mainly due to differences in the worlds of the knowers, i.e. at the subjective level in terms of their interests or values. This means that essentially the conceptions of the true derive from the subjective input or contents of our belief systems or worlds. It would follow from this that a greater consensus at the intersubjective level is likely to lead to a corresponding consensus at the objective level. Accordingly a participation in a common life or common activities, in Wittgensteinian terms, a sharing in "form of life" over a period of time, is likely to lead to certain agreements, consensus and similarity of perspectives. Thus the current scientific view is rooted in some common tradition, a sharing of experiences and results, open discussion and criticism among members, communication of such discussion and results through a system of journals and books. The scientific world view is based in the world wide scientific community which

establishes agreements, controls, standards over its work through an international system of checks and controls and of course trust and inter-dependence. This makes possible an extended inter-subjectivity. If each scientist were to work in isolation, without the benefit of such an exchange with fellow workers, there might clearly be no such consensus.

All this amounts to saying that conceptions of what constitutes truth are rooted in our subjectivity and our community at some given point in time and place.(31) This in turn is influenced by its interaction with its immediate environments - physical, economic, linguistic, political-ideological, religious, belief-systemic, etc. Such conceptions broaden as the corresponding practices connected with these immediate environments are broadened. This of course also implies a broadening of the intersubjectivity base. Hence conceptions of what is true can be universal if the corresponding practices, intersubjectivity and community are also universalized. This does not however guarantee infallibilism or absolutism in the area of truth. It only widens the extent of consensus in matters of truth. That is probably the best we can hope for on this side of eternity.

FOOTNOTES

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19. cf. Darmstadter, H: "Can Beliefs correspond to Reality" in Journal of Philosophy, Vol.LXXI, No.10, 1974, pp.302-314

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30. Indeed our main assumption here is that realism is valid. It seems to us that realism is neither demonstrable nor refutable, the same holds for idealism. Nonetheless it seems that our common-sense, all our activities including scientific activity, presuppose realism. Thus Popper, K.1972, op.cit. p.40 writes: "We can then assert that almost all if not all, physical, chemical or biological theories imply realism, in the sense that if they are true, realism must also be true."

31. This point concedes Prof. Wiredu's conception of "Truth as opinion" in his paper by the same title first appearing in Universitas, Legon, March 1973 and reprinted in Wiredu's Philosophy and an African Culture, Cambridge, C.U.P. , 1980.

We do not however identify truth with opinion as we believe Prof. Wiredu tries to do. Prof. Odera Oruka in his excellent paper 'Truth and Belief' Universitas Vol.5, No.1, Nov., 1975 has ably questioned this apparent identification of truth and opinion in Prof. Wiredu's paper. We are in agreement with Prof. Oruka on this point. But to the extent that Prof. Wiredu's paper has affinities with the pragmatic theory of truth, we would see it in similar terms as indicated above. That "in such matters there is no excuse for dogmatism, and I too will continue to reflect on them" Wiredu, 1980, cp.cit. p.232), is surely an acceptable proposition.

See also my review of Prof. Wiredu's book in the forthcoming issue of Hekima, Vol.2

CHAPTER 9

Concluding Remarks.

Many workers in the theory of belief systems, for example Whorf, Ntumba, Ellis, Quine, amond others, have correctly emphasized the centrality and significance of language in the theory of belief systems. Indeed for most of these workers, belief systems are so inextricably tied up to given languages that to define a belief system is to define it on some language. That is, there is no way a belief system can be defined without taking into account the language on which it is defined. One version of this view namely the Sapir-Whorf hypothesis enunciates a linguistic relativity principle according to which belief systems are language relative, i.e. language dependent. According to this position translations between languages are not only difficult but impossible. The anti-thesis of the Sapir-Whorf hypothesis would for example completely deny the linguistic relativity principle altogether. Such a position expresses the view that for any sentence S of some natural language L, an equivalent and accurate translation of S in any other natural language L is in principle always possible by another sentence S. According to the latter view, belief systems are not language dependent.

Now although we have not fully discussed this problem of the relation between language and belief systems in the present investigation, we have nevertheless defended the view of a mutual interrelationship and interdependence between language and belief systems. This is intended as a middle position between the two extremes referred to above. Needless to say a full treatment of this matter is beyond the scope of the present investigation.

Belief systems have been here conceived as sets or collections of beliefs, which can be represented propositionally. Such beliefs constitute or correspond to possible worlds or a possible state of affairs. Obviously such belief systems are finite structures, no belief system being infinite. Theoretically therefore all the elements of any given belief system constitute an enumerable finite set. We can conceive of each individual in a community as possessing belief set, such a set being his basis for orientation, adaptation, survival potential in the objective world. The belief set is also the basis for perceiving, understanding, interpreting or knowing the world. Indeed our actions and conscious willed behaviour are to a great extent a function of some given belief system. But of course belief systems are not just subjective creations, they do in fact arise out of given environments - physical, economic, political social, linguistic, etc. as already discussed

earlier. These environments exercise significant determinative influence upon belief systems. Internal subjective factors and external objective factors all play a significant role in the determination of any given belief system. The subjective internal pole represents the reality of value or interests and the external objective pole represents some sort of Kantian reality - in - itself (Ding - an - sich). Of course this is an idealization, for we can never have access to this Kantian Ding-an-sich. Reality as we know it at any particular point in time and space, is an interplay between the subjective pole and the objective pole. Such a subjective pole is historically and culturally determined. It can never be an isolated, totally individualised reality of Descartes' Cogito. It is a social product, although it can have its own uniqueness seen in the context of the community in which it is situated. In any case it is a reflection of the existential, social conditions in which it actualizes itself. Thus in the same way that belief systems are a function of the said environments, so also is the way the environments are perceived and interpreted or even transformed a function of the belief systems.

The structure of real life belief systems is however not so simple. Thus although one can speak

of an individual within a given community as possessing a belief system, one can also speak of a community or group of people as sharing a belief system. Belief systems can be viewed singly or as belonging to some family, Belief systems within a given family share certain fundamental features or certain fundamental beliefs in common. One might even speak of sub-families of belief systems. With respect to some given belief system however, it is to be noted that it consists of several autonomous and semi-autonomous subsystems. This means that certain of these subsystems can be annexed or de-annexed to the given belief system without any significant effect to the essence of the system. For example take two of the most influential and widely accepted belief systems of our time - the Christian belief system or the Marxist belief system. These two for example fully accept the theories of modern physics, chemistry or mathematics,yet these modern theories are not essential to these belief systems. After all one can be a Christian or a Marxist without accepting any of these theories, as is the case with some African Christians, or Lysenkoist Marxism with respect to modern genetics. There is however a sense in which Christianity and Marxism, though different, share some very fundamental beliefs or assumptions about man, nature and history. Given that belief systems are not value - free, being guided by human

interests, it is a truism that belief systems are relative in time and space. Naturally it is expected that each belief system strives toward or ought to strive toward the goal of objective truth within the limits of its own existential conditions and constraints. It is this striving which gives strength to any belief system and which ought to guide its adaptation to given environments. Yet direct accessibility to truth seems impossible, for it would appear that we get to know truth indirectly via rationality. Or to put it differently, it seems that rationality conditions are the basis for establishing any truth conditions. Rationality conditions thus precede truth conditions. This does not however mean that they replace it. It only means that rationality practices are our guide to truth, at least within the context of rational belief systems. We are therefore in general agreement with B. Ellis who in his Rational Belief Systems (1979) makes a similar point as follows: "We can recognise a rational system of beliefs, or an irrational one, even where we cannot adequately specify truth conditions for the sentences in question"(1). However we do not quite agree with him when he asserts that in order to satisfy the rationality conditions: "We do not even have to believe that the sentences involved are objectively true or false"(2) and that "if a theory of rational belief systems for a language is epistemically as primitive as a truth theory, then

a truth theory may not be necessary"[3]. I think Ellis' argument is misleading because it presupposes a very limited concept of rationality, namely that of logical rationality. Now while logical rationality is basic to rationality, it does not comprehend all of rationality. This has already been noted above. The other basic and significant component of rationality consists of its satisfaction or optimization function with respect to belief systems, their owners and their utilities or interests, in some given environment. Thus a belief system can be logically rational, i.e. consistent and contradiction free and still be considered irrational because it is irrelevant to the interests of the owners or controverts their realization in a direct way. Similarly a belief system could satisfy or optimize the interests of its members and still be irrational. An example of the latter would be belief systems of the type of Nazism which lead to severe direct conflict with other groups and to self-destruction. To be rational in the full sense both the logical consistency requirements as well as the utility - optimization or satisfaction functions need to be fulfilled. Utility is understood here in a non-instrumental, i.e. non-utilitarian sense. At another level, the utilities (values, interests) themselves have to be investigated for rationality. That is, the question has to be settled

whether a given set of values is rational or irrational. The question of the rationality of given values is a most difficult one - best investigated within the framework of a study of ethics - yet a question which cannot be left outside the discussion of the problem of rationality.

Our task here is simply to point out that belief systems are best guided and evaluated on the basis of rationality conditions which further lead us to an evaluation of truth conditions. Furthermore, the rationality conditions which are the basis of knowledge-production, distribution, and consumption are inextricably connected to human interests or values. This means that our concept of truth at any given period in time, insofar as it is tied to our rationality practices, can only be a relative thing. This is not to deny that the idea of objective truth or knowledge is a reality, on the contrary, this very idea is the basis or ought to be the basis of our quest and inspiration on our activities of knowledge production, distribution, and consumption.

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