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WHAT THERE IS TO READ

II NATURAL SCIENCE AND CHRISTIAN THEOLOGY

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Surprisingly enough, it is as difficult to get an overall view of science as it is of theology. Each is widely varied, each is complex, each is practised by many people, each of whom has a special experience of what it is. Each view of science and of theology seems natural, only common sense, to its practitioner. As is often said of the British and the Americans, a common language divides scientists and divides theologians as they use the same words to refer to different things. And these varying understandings and practices of science and of theology are only partially rationalized and organized by leaders and institutions, as any gathering of scientists or theologians would show.

The general public is usually a bystander to all this, to varieties of views about what science is and what theology is. It is often said that science (or theology) is too important to be left to the scientists (or theologians), and occasionally it is bravely said that everyone *is* a scientist (or theologian) even if he doesn't recognize it. But it is still true that what actually happens where concerted effort is put into science (or theology) is not much understood by the public, even those who, one way or another, support much that is done in the name of science (or theology). The public is left to enjoy the benefits—if such they be—which come, usually very indirectly, through applications of science (or theology), and 'make a difference' to life.

Peculiarly enough, the actual practitioner of some variety of science is most often simply a member of the general public, and correspondingly uninformed, so far as theology is concerned; and vice-versa, the theologian usually knows little more about science than most of the public. And what a member of the public knows about either one is largely out-of-date theory and practice—traditional beliefs and techniques to make life 'better', and the production of special effects that 'make a difference'. So the scientist's view of theology (as a member of the general public) often concentrates on received traditions and practical changes ascribed to religion, and the theologian's view of science concentrates on supposedly accomplished, solid facts, and on the dramatic effects of 'science' on individuals and society as a whole.

This picture is, of course, one of complexity on both sides (within science and theology) and of stereotyping (of both by the general public). The situation is further complicated by accepted 'traditions' about the proper relation of the two. One of these is the view that science and theology are properly to be neatly demarcated, each firmly established in its own domain, quite distinct in subject-matter and method from the other, and each having an independent value for the public to which sensible people will be won over. This tradition, born of a split between reason and faith which dates (at least in this form) from the 17th century, is proving itself unworkable: science and theology are too closely intertwined *historically*, *culturally*, and even *ultimately*, to allow it.

Historically, it is difficult to avoid the conclusion that Christian theology has affected, and been affected by, the available science through the centuries; and the same would have to be said of science. A multitude of historical studies supports this view: John Dillenberger's *Protestant Thought and Natural Science* (Collins 1961), R. Hooykaas's *Religion and the Rise of Modern*

Science (Scottish Academic, 1972), Stanley Jaki's *Science and Creation* (Scottish Academic, 1974), C.G. Gillispie's *Genesis and Geology* (Harper 1965), as well as many more detailed studies such as Alexandre Koyre's *From the Closed World to the Infinite Universe* (Johns Hopkins 1957) and N.C. Gillespie's *Charles Darwin and the Problem of Creation* (Chicago 1979).

Equally, it seems an unavoidable conclusion that new scientific information regularly, and often radically, alters the ways in which we view the world. Though an earlier generation was much impressed by propaganda about the inevitable hostility of science and religion, and by the apparently constant erosion of Christian belief from different 'scientific' quarters, the result of this nowadays is—as we shall see—by no means necessarily detrimental to religion and theology. Indeed, theology may accord well with, and make a substantial contribution to, scientific thought. But new scientific information and technology, while not necessarily hostile to religion, still alters our understanding and situation in the world in such a way as to make theological understanding appropriate to other times and concepts seem rather dated and distant from present understanding. This provides a key problem for modern religious thought. For, if one thinks as a 'modern' person, what is the value and function to be ascribed to basic tenets of religious belief? Are they extra-scientific in nature and operation? If so, how are they related to 'ordinary' scientifically-influenced understanding? If different, allowing them to be different gives them their own integrity, but also licenses the detachment of each from the other: science becomes non-theological, and theology becomes culturally irrelevant. This problem is not discussed as much as it should be (at least not in Anglo-American thought), but William Austin's *The Relevance of Natural Science to Theology* (Macmillan 1978) gives a helpful assessment of it.

Lastly, there can be little doubt that very basic, even 'ultimate', issues in science are closely intertwined with those in theology: the search for a deeper and more comprehensive understanding of the Universe, even in the face of the deep divisions in man's understanding and life which were left by the loss of the mediaeval synthesis of science, philosophy and theology; the attempt to establish canons of correct reasoning and standards for genuine knowledge; the attempt to determine the status of concepts and theories in relation to reality; and amongst the community of mankind, the attempt to discern the nature and reliability of experience; the correct use of language, etc. It is also a question how such issues of 'pure' science and theology are related to those of 'practical' science and theology, with which they are naturally intertwined: is there an *intrinsic* relation of the 'pure' and the 'practical', or only an *extrinsic* one (where they are brought into relation by someone)? The answer deeply affects the organization and right direction of scientific and religious activity—how they are managed, evaluated and redirected if need be.

In 'pure' questions, there has for a long time been a strong temptation to demarcate science and theology, allowing scientists (or scientists so inclined) to pursue epistemological, linguistic, cosmological and metaphysical questions, but debarring theologians from them. Not a few theologians have been frightened off such 'scientific' questions, and confined—partly because of a post-Reformation pietism—to insights derived from 'existence', 'religious experience', or 'revelation'. Hence, during an important era of questioning about the foundations of science, and indeed of all truth (of which R. Harré has produced very helpful analyses in such books as *The philosophies of Science* and *Scientific Thought 1900-60*, (Oxford 1969 and 1972), theological activity was on quite a different track, exploring the characteristics of personal existence, religious experience and (later) revelation, with rather little regard for the emerging scientific discussion. Important examples of this were, respectively, the works of Soren Kierkegaard, John Baillie's *Sense of the Presence of God* (Oxford 1962), and Karl Barth's *Church Dogmatics* (T. & T. Clark). In 'practical' issues, there was another kind of demarcation, which saw science as monopolizing objective knowledge and value-free truth, both natural knowledge and knowledge of people's activity and values, but not itself ascertaining value. This left science with a concern for knowledge and practical activity (e.g. research), but not with standards for evaluation of them. Such standards, if there were to be any, had to be drawn from and

exercised by extrascientific sources and methods, developed humanistically (for example by appeal to 'evolved' human nature, in Paul Kurtz, ed. *The Humanist Alternative* (Pemberton 1973) or religiously. That task corresponded nicely with a long-standing tendency in Western religion to protect itself against the supposed incursions of science into the religious realm (by its 'monopoly' of objective truth) by locating religion in the practical and subjective. Hence theologians were ready to be consulted in matters of morality; and one sees comment readily forthcoming from religious idealists and existentialists (see Karl Heim's, *Christian Faith and Natural Science*, Harper 1957, or Rudolf Bultmann, *Faith and Understanding*, SCM 1969).

It is to the ongoing discussion of these questions, seen in the literature of science and theology, that we must direct our attention in this article. For in this discussion science and theology are brought into relation most fruitfully during the twentieth century. This is not, of course, to say that the conclusions of scientific inquiry and of theology about all manner of things (cosmology, the physical order, evolution, culture, and so on) have not been brought into relation. But the most concerted discussion has been of the issue of how they, science and theology as disciplines, are to be related. This has often been the underlying issue where it has been difficult or impossible to reach agreement about the relation of specific scientific discoveries to theology.

The literature mentioned so far by no means represents the depth and extent of the changes (they are often called 'revolutions' by those who know them) which have been taking place in science and in theology, pure and practical, during the past fifty years and more. There is very little doubt that human understanding—scientific, social-scientific, theological—is undergoing a profound transformation whose exact consequences are not fully known as yet, but whose ramifications seem endless for all aspects of thought and life.

The very supposition that there *could* be a revolution in science and in theology has come as a shock. For it was not long ago that scientists took a very optimistic view of the history of science, seeing it as a success story of ever-increasing knowledge and progressive improvement of life. They assumed the virtual finality of the scientific notions of the day, in fundamental matters if not in detail, and were as literalistic in their understanding of concepts and theories as some people were (and in a few places still are) in their understanding of religious statements. But there has been a gradual shift away from this literalism, as scientists have come to realize that science itself during its history has been affected by the surrounding culture. As religious people had done, particularly during the 19th century, scientists came to recognize the *dynamic* of their activity and their convictions, and this gradual recognition underlies much recent philosophy and history of science. But there are striking differences in what scientists make of this, of their own history and achievement, just as there are amongst theologians.

Reflection on the nature and pursuit of science, as scientists have considered it, has been of considerable importance in theology during the same period, throwing a good deal of light upon its nature and pursuit. The beneficiaries of this were not those who set aside science in their concern for personal existence, religious experience or revelation (e.g. the followers of Kierkegaard, Baillie or Barth), but those trained in a discipline with a strong interest in *knowledge* and its *criteria*, whether the discipline was traditional philosophy, Calvinism or modern natural science: Eric Mascall's *Christian Theology and Natural Science* (Longman 1956) is a notable example of the first, T.F. Torrance's *Theological Science* (Oxford 1969) of the second, and Ian Barbour's *Issues in Science and Religion* (SCM 1966) and Arthur Peacocke's *Science and the Christian Experiment* (Oxford 1971) of the third.

The differences between them are sharp and pervasive, and mirror similar ones to be found amongst scientists. Interestingly enough, all of them, and most scientists as well, would lay claim to the title 'realist', perhaps because such stigma still attaches to 'idealism', even if some are deeply convinced of the importance of the preconceptions of the observer for his observations, and also emphasize the importance of creative originality and intuition in the origin of theories. But the emphasis in their realisms is very different. In the case of Mascall and Torrance, for example, the emphasis is on finding the intelligibility inherent in the universe which we as intelligent human beings may grasp

if we know properly. To fulfil this responsibility requires an expansion of natural knowledge and of conscious mind through pursuit of natural science, enlightened epistemology and a transformed natural theology, in such a way as to allow the intrinsic rationality of the field we are investigating to appear. To achieve this, Mascall makes use of the work of Bernard Lonergan, particularly his *Insight* (Longman 1957), in *The Openness of Being* (DLT, 1971); Torrance uses current science and extends the work of Barth in *The Ground and Grammar of Theology* (Christian Journals 1980). Doing this, they say, allows accounts of the world given by natural science to be complemented, in a deepening coordination, by theological accounts of creation and creature. The ground on which science and theology are to be related is not that they are alternative frameworks constructed by mankind but that the universe of space and time as explored by natural science is the universe which God created and which he made man fit to understand; the unity between science and theology is in their disciplined response to God.

In the case of Barbour and Peacocke, the emphasis is also on 'finding out the way things are', on the intention to seek for intelligibility which is common to science and theology. Each is seeking for explanation which makes the most coherent sense of data; and each does so by means of 'models' which it considers to be candidates for reality. (This is a discussion which extends the work of Ian Ramsey as seen in *Religion and Science: Conflict and Synthesis*, SPCK 1964). But there is a difference in the *application* of the enterprises; for science, explanation is applied to prediction and control; in theology, explanation provides moral purpose and personal meaning, relevant primarily to personal and social life-situations. (This view is very clearly stated in Peacocke's *Creation and the World of Science*, Oxford 1979.) Hence for Mascall and Torrance, there is much more emphasis on the necessity of being open to the intrinsic intelligibility of reality, both in science and in theology; theology, as well as science, is directed at intelligibility. But for Barbour and Peacocke, science and theology function differently, one for prediction and control, the other for meaning and moral purpose. The differences between the two views involve different suppositions about the genesis of knowledge and the nature and function of science and theology.

The proponents of these views are acutely aware of deep changes occurring amongst scientists in their conception of science. The logical positivism and logical empiricism in which many prominent scientists and theologians of today were immersed during their early years has by now met with damaging criticism, even if many of them behave as if such positions were still normative. Ironically, the problems of meeting logical-empiricist criteria, and of resisting them, have brought not a few theologians and scientists to dwell on the resemblances of their subject to culture-bound literary forms—in the use of myth and metaphor, for example—while logical empiricism has itself been undergoing challenge from within. But that is by no means the only, or even the best, way of responding to the changing situation.

The gradual emergence of the challenge to positivism and empiricism can be seen very well in some fairly informal documents coming from some participants. Karl Popper's *Unended Quest* (Fontana 1976) is a fascinating autobiographical account by a principal figure. P.B. Medawar's *The Art of the Soluble* (Methuen 1967) and John Ziman's *Reliable Knowledge: An Exploration of the Grounds for Belief in Science* (Cambridge 19) are good accounts of the new views. A more concerted overall view can be found in H.I. Brown, *Perception, Theory and Commitment* (Chicago 1979). But discussions of different aspects of the emerging 'new views' can be found in many places.

What exactly has happened? The simplest thing to say is that the basic assumptions used in logical empiricist understanding of science—the standard picture of science offered in many places even today (through books such as Ernest Nagel's *The Structure of Science*, Routledge 1961)—have been undermined by serious questioning, questioning which reveals this view as *a* view which cannot necessarily substantiate its claims. The 'planks' of this platform were (1) that there is an external world, (2) which can in principle be exhaustively described in a unified scientific language, (3) the language being a series of propositions in a one-to-one relation to factual data; (4) theories are descriptions of explanatory mechanisms of the world which can be inferred from observation,

and (5) man can experience and theorize about the world 'objectively' or dispassionately. 'One world, one ideal language, one sort of experience'—these basic assumptions have been challenged by those who maintain that there is no such firm connection between the external world and a unified scientific picture, of such a kind that theories can be dispassionately inferred from observed data. Theories, they say, are 'underdetermined' by observational data, as W.V. Quine suggests (*Ontological Relativity and Other Essays*, Columbia 1969), there are many theories which fit the data, and they are deeply affected by the interests of those who develop them.

So many present-day attitudes have been fashioned under the influence of logical empiricism that it is difficult to see that there can be any other way of looking at things than the one it suggests, or any other kind of research programme than the one it provides. And there were such positive achievements under its aegis ('naturalism' as it is sometimes called) that no one wants entirely to deny them, except perhaps those who want to subsume all science within some other world-view (Marxism, for example). But the achievements now appear to have been based on convictions too naively held and on too restricted a view of what can be done scientifically. The view, it now appears, rationalized everything which was to be 'scientific'—from physics to biology to the human sciences—but at too great a price, providing a tight-fitting straitjacket of methodology. The view also detached science from its own sources in human creativity, from the humanities and history, and from political responsibility.

The reassessment of logical empiricism has come from within and without, from those who wish to liberalize it while in substantial agreement with it, and from those who wish to contain it within a wider picture, particularly one of the development of science. Though Karl Popper as a philosopher of science and T.S. Kuhn as an historian of science are vastly different, they are alike in their awareness of the historical development of science and its connection with other interests. Popper, who is a good spokesman for himself in *Objective Knowledge* (Oxford 1972) as well as having a good commentator in Bryan Magee (*Popper*, Fontana 1973), has carried on a running corrective to logical empiricism from a standpoint that also embraces the social sciences, politics and history. This refusal to compartmentalize is one of the hallmarks of his view, even if he reintroduces some, together with his strong emphasis on the development of knowledge. Both are strikingly different from logical empiricism, even if Popper is sometimes claimed by it as an ally. He has repeatedly emphasized discovery and the growth of knowledge, analyzing how he considers that it occurs, rather than taking knowledge as a finished product to be analyzed and expressed logically. He has done so critically, and with an attempt to reduce interference by subjective and cultural factors, though he is ready enough to allow culture its place (see K. Popper and John C. Eccles, *The Self and Its Brain*, Springer 1977). He does not allow, however, that in each period of its history science has been governed by one dominant theory, or that the history of science consists in a sequence of dominant theories ('paradigm'), each supplanting its predecessor by a revolution; history is not so neat—there are many dominant theories competing. Nor does he agree with the tendency of some to relegate logic to a place of small importance.

While partly directed against logical empiricism, Popper's work, together that of Imre Lakatos (*The Methodology of Scientific Research Programmes*, Cambridge 1978). sharply contrasted with that of some historians and social scientists. Thomas S. Kuhn's *The Structure of Scientific Revolutions* (Chicago 1962) sparked a controversy through which the divergent views became more clear (I. Lakatos and A. Musgrave, eds., *Criticism and the Growth of Knowledge*, Cambridge 1970). The controversy was itself an indication of the reduced status of logical empiricism.

Popper's views were not so easily used by theologians. He had, of course, demarcated science from non-science by the criterion of falsifiability, which was a way of assuring that scientific statements had the highest information content. From this point of view, theology seemed non-informative; Popper himself admits to a 'lifetime's dislike of theorizing about God—theology is due to lack of faith.' But Kuhn's ideas became rather fashionable amongst theologians, probably because they coincided with a new awareness of religious pluralism (plurality of religions and plurality of views in particular

religious traditions) and the function of religions in cultures. This was engendered partly by study of the history of religions (cf. Ernst Troeltsch, *The Absoluteness of Christianity and the History of Religions*, dating from 1902 in German, but only translated into English in 1971, SCM) and partly by sociological analysis (e.g. Peter Berger, *The Social Reality of Religion*, Faber 1969, B.R. Scharf, *The Sociological Study of Religion*, Hutchinson 1970); They also coincided with certain aspects of current British philosophy, such as the later philosophy of Ludwig Wittgenstein, which emphasized that the same thing can be seen by a single observer in either of two ways (the so-called gestalt switch) and that languages might funtion differently in different 'games'. Among theologians, John Hicks's *God and the Universe of Faiths* (Fount 1977) and Ian Barbour's *Myths, Models and Paradigms* (SCM 1974) shows the use to which Kuhn's and these other views are put; the view that history proceeds by paradigm-revolutions also can be seen in works of historical theology. The effect of these theological works is, it is claimed, to deemphasize the objectivity of science and the subjectivity of religion, and to show the crucial role played by the intellectual constructions of man in science and religion, as well as the consequent need for personal commitment, tolerance, dialogue and self-criticism. But, as was the case with Kuhn, rationality is the weakest part of these views: how evidence for particular views is offered and by what criteria it is judged.

Much of the emphasis in Popper's and Kuhn's work was on the process of scientific inquiry, rather than on its products (as with logical empiricism). This was continued in the writings of Stephen Toulmin (e.g. *Human Understanding*, Oxford 1972). Toulmin claims that the proper test of science is not its logical system but its openness to novel situations and its readiness to move beyond its former procedures; therefore we need a new theory of human understanding, and he attempts to develop one. His work sustains the view that neither the world we deal with, nor the concepts, methods and beliefs which we develop in dealing with the world, is invariant, and that the variety is to be welcomed because of the richness of questions and answers which it provides. (Paul Feyerabend takes a similar line in *Against Method*, NLB 1975, claiming to be a 'Dadaist—one convinced that a worthwhile life will arise only when we start taking things *lightly* and initiate joyful experiments.') Such a view of science does not necessarily eliminate religious elements, as Langdon Gilkey shows in *Religion and the Scientific Future* (SCM 1970), but it does confine them to the status of myths introducing transcendent dimensions by which human cultures may understand themselves and their destiny.

It is a fairly consistent feature of these views—from Kuhn to Toulmin, and from Barbour to Gilkey—that they respond to logical empiricism by abandoning its pretensions to universal and necessary relevance, to being universally normative (with a heavy emphasis on logic), in favour of relativity and fallibility. But this is not the only possible response to the new situation, in science or in theology. There are those who suggest that one can still suppose an ideal unified, true and normative theory; hence questions about discovery and the construction of theories should be subordinated to the task of bringing understanding which is available into greater coherence with the nature of things. Of course, appropriate research, theory and studies of logic and language, are necessary to this task, even if they themselves require careful reworking. A notable example of such a programme is Mario Bunge's *Treatise in Basic Philosophy* (Reidel 1974-). In theology, this is the intent of those who espouse 'transcendental method' such as Bernard Lonergan (*Insight*, Longman 1957, and *Method in Theology*, DLT 1972) or Karl Rahner (*Foundations of Christian Faith*, DLT 1978), even if they are primarily concerned with knowledge (Lonergan) or existence (Rahner). Integrating his theological views very much more closely with science, T.F. Torrance has been responsible for extending and elucidating this possibility in a way quite different from the transcendentalists. As mentioned earlier, he claims a fundamental similarity of science and theology in their faithfulness to things as they are in themselves, by 'onto-relational thinking'. What emerges from this is thinking which does not reduce everything to the same 'stuff' but allows a multiplicity of levels appropriate to the way things (and people and God) are; this view is very similar to Bunge's position (T.F. Torrance, *Ground and Grammar of Theology*, Christian Journals 1980). Michael Polanyi's

writings (particularly *Personal Knowledge*, Routledge 1964) have made an important contribution to this position, in science and in theology; a recent book of essays, *Belief in Science and in Christian Life* (Handsel 1980) explores this.

In the general movement away from a strict logical empiricism, some of the most interesting recent work has focused on the nature of scientific theory. As has already been seen, there is much stress placed on the fact that theories are 'undetermined' by data from observation. And the mere accumulation of data, converging in some kind of coherence, does not constitute a true theory: there are problems with the description of data (which is already affected by theory) and with the conditions for its coherence—problems of epistemology and history; things do not happen so simply. On the contrary, theories in science are much more closely tied to scientific practice. And the best which can be hoped for from this process are theories which are 'bundles' or 'networks' which are locally practicable and successful, even where they deal with the universe, ones which attract and focus the work of many scientists in research. Truth-claims cannot be universalizable or necessary. Two of the most interesting writers to explore this are Nicholas Rescher (*Conceptual Idealiam* and *Cognitive Systematization*, Blackwell 1973 and 1979) and Mary Hesse (*Revolutions and Reconstructions in the Philosophy of Science*, Harvester 1980).

If theories are as Rescher and Hesse claim, the implications for theology are considerable, and any theologian should be aware of this work; it affects the derivation and status of theological formulations, and how they cohere. Moving as it does in the direction of relativism (though neither is a relativist), their view seems to challenge the possibility of achieving truth, in science or in theology; and it is important to understand the alternatives which they offer to an out-and-out relativism. In general, they argue that natural science should be integrated into a wider framework which embraces human purpose and the human sciences. Against this background, theological claims (as Hesse suggests; Rescher does not consider them) are seen to be comparable to comprehensive theories in the human sciences, which are 'ideological' because including fact-constrained (but not fact-determined) evaluations. Scientific cosmologies, where they serve as frameworks for social communication, are similar. Placing comprehensive theories which have a communicative function together—scientific, theological, antitheological—and seeing that they are not precluded by a monopolistic view of scientific truth, opens a debate between them as social creations; but there is no way to validate one ideology as opposed to another. There is no way to move beyond an ideological commitment (which is necessary for practical decisions) to asserting its truth for all. At many points, this view of theological claims resembles the position put forward by Arthur Peacocke which was described earlier (*Creation and the World of Science*, Oxford 1979).

This is perhaps the closest Anglo-American views of science have come to the long-standing discussions of science in Continental circles. There is a very different tradition there, much more the product of work in the human sciences and of reflection on it, and much more closely allied with political philosophy. Generally, therefore, Continental views of science are embedded in anthropology, and provide an anthropology of knowledge of such a kind as will be useful in guiding research which will be aligned with critical work and social practice.

From this point of view, it is important to establish the proper relation between the naturalistic approach (in the natural or human sciences) and proper understanding and interpretation between human beings; naturalistic knowledge is to improve understanding between human beings. There are those in Britain and America (e.g. J.M. Ziman in *Public Knowledge: The Social Dimension of Science*, Cambridge 1968) who argue that the goal of scientific research is to contribute to the consensus of universally accepted knowledge, and that the social process of communication is essential to this. But the claim advanced in Continental discussion is the reverse, that natural understanding serves human understanding. Moreover, empirical work is to serve a critical function: empirical work in the human sciences enables critical work in the natural sciences, and also enables the criticism of ideologies to take place. This criticism is pursued in order to emancipate human beings and societies from the dehumaniz-

ing structures and forces to which they have been captive. So the wider framework within which science is to be pursued is: empirical—interpretative—critical—ethical. And all elements of the framework interact with each other. Hence there is no stage at which 'interests' and 'communication' and 'practice' do not occur, even in the most 'empirical' research.

One hardly ever sees these perspectives fully expounded here, though fragments of them have come to view in the work of such people as Karl Popper and Michael Polanyi (see above), whose broad interests coincide with the Continental tradition. And the coherentist and pragmatist tendencies seen in Rescher, Hesse and others, are similar to certain aspects of the tradition too. Perhaps the proponent best known here is Jurgen Habermas (*Knowledge and Human Interests* and *Theory and Practice*, Heinemann 1972 and 1974), and the broader contours of the tradition become evident in such books as *The Positivist Dispute in German Sociology* (Heinemann 1976). The interpretation-theory of H.G. Gadamer (*Truth and Method*, Sheed and Ward 1976) is also important in this connection. Two particularly important extensions of the work have to do with what is called 'communicative competence', the attempt to discover the conditions for communication (J. Habermas, *Legitimation Crisis*, Heinemann 1979) and for the establishment of an ideal communication-community (K-O. Apel, *Towards a Transformation of Philosophy*, Routledge 1980). Why important? Because they have to do with establishing possibilities for universal agreement about truth and the norms of collective responsibility.

A full discussion of all this would take us beyond the rather restricted view of science which we have been considering, to include all the human sciences as well. Nonetheless, these views, and the Continental tradition, has strongly interacted with theology both indirectly and directly. In literary theory (especially where related to the nature and interpretation of texts) and in social theory (for example in sociology of knowledge), they have had considerable influence; and insofar as theology touches on these matters, these influences have come into play in the dialogue between these and theology. But more directly they are known through major theological work from Germany, particularly that of Ebeling, Pannenberg and Moltmann. One sees this in Gerhard Ebeling's conception of theology (e.g. in *The Study of Theology*, Collins 1979). Even more, Wolfhart Pannenberg's *Theology and Philosophy of Science* (DLT 1976) shows a carefully worked out positioning of theology in relation to the natural sciences and the human sciences; when natural science and human understanding are emancipated from the spectre of scientific positivism, they regulate each other in a unified knowledge, and theology deals with the all-embracing totality of meaning which is implicit in them.

Pannenberg's position is somewhat reminiscent of the attempts to establish universal conditions for communication and ethics by Apel and Habermas. For him, theological statements, like other scientific propositions, belong within a framework of theoretical networks, and must be verified within the system of theological formulation. Where other scientific propositions have to do with *implicit* anticipations of the totality of meaning, theological statements are historical interpretations of *explicit* awareness of the total meaning of reality, particularly (for Christians) the explicit awareness by Jesus of the all-determining reality of God. Pannenberg's book both introduces the Continental discussion and argues for a scientific theology within this context.

If Pannenberg's work contains a sustained philosophical-theological response to this different tradition of science, Jurgen Moltmann's (best seen in *The Future of Creation*, SCM 1979) is a more confessional and political one, dwelling more on the practical tasks of understanding and transformation. Accordingly, the logic of his view is somewhat different from Pannenberg's, a logic of the future made present in promises, rather than one of the unity of knowledge in universal world-history. And Moltmann's view connects less with current debates in the sciences, except in their insistence on political transformation.

It is appropriate to conclude with the comment that the views we have been considering have arisen largely in reaction to varieties of positivism—logical positivism in natural science and positivism in the human sciences. It may be that such views are too much conditioned by the tendencies which they have sought to correct,

and that their place will be taken in the future by others which reflect more the *content* of modern science and theology and less its *form*. Perhaps, for example, the new understanding afforded by modern scientists such as Einstein on relativity or Prigogine on thermodynamics, will begin to affect our view of knowledge in science and in theology. That these are real possibilities can be seen in the work of people like Gregory Bateson (*Mind and Nature*, Wildwood 1980) or Eric Jantsch (*Self-Organising Universe*, Pergamon 1979), or in the supposition that the way God *is* capacitates the knowledge which human beings may have in science and in theology.

SOME REFLECTIONS ON INDIAN SPIRITUALITY

Friedhelm Hardy

II *RETURN TO THE WORLD*

> 'This body is without essence, born of the parents' semen and blood, essentially impure, putrid and bad smelling. It is disturbed by the thieves of passion, hatred, delusion, fear and despair. It is subject to decay, and is filled with a hundred thousand diseases.'[1]

This is the driving force behind the long spiritual journey from *samsara* to *moksha*: the realization that man is contingent and not a lasting, self-contained entity. In the 'application of mindfulness', as the popular Buddhist meditation course is called from which the quotation is taken, the range of observation encompasses not only the body, feelings and mind, but the whole of empirical reality (in technical parlance: all conditioned *dharmas*). One could almost say that the stark negativism which pervades the characterizations of the body and so on, which are offered as objects for meditation, is designed to arouse a sufficiently strong energy (or 'disgust', as the Jains in particular like to phrase it) to propel the aspirant after liberation along his arduous path towards his final goal. Moreover, this brutal analysis of the human condition is meant to penetrate into the awareness of a maximum number of people—in the ideal *all* men are encouraged to become renouncers and set out to achieve *moksha*.

> Someone asked: "What is the essential meaning of Buddhism?" The Master said: "Countless dead bodies fill all the chasms and valleys."[2]

Thus logically, if everyone were to achieve liberation, humanity would be extinguished and only the corpses would remain.

This uncompromising ambition—which is by no means restricted to Buddhism—is clearly unrealistic and utopian. Even by the more optimistic reckonings, to achieve liberation will take many years of moral perfection and of meditation, years of depending on ordinary life by relying on alms for one's nourishment and other elementary needs.[3] Thus inevitably the theoretical structure of *samsara:moksha* acquires the shape of a pyramid as its real-life form; its base is constituted by the mass of humanity vegetating in *samsara*, its tip represents the liberated ones, and each layer of aspirants for liberation is supported by the spiritually less advanced. Without farmers ploughing their fields and merchants accumulating wealth, the renouncers would neither receive food nor other elementary support; yet to kill living beings (and mosquitoes and worms are included in this category!) which is unavoidable in farming, and to strive after material gain which is equally unavoidable in the life of a businessman, constitute some of the most severe infringements of the ascetic style of life. The purpose of drawing attention to this discrepancy is not to accuse the ascetics of hypocrisy, but merely to demonstrate that even in the most radical world-negating drive the realities of *samsara* cannot entirely be shut out. In the history of Indian renunciation this resulted in a fascinating kaleidoscope of solutions to the fundamental problem of how to pursue one's liberation while depending on society's support of this pursuit. In the case of long-established ascetic traditions the necessary