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THE ROLE OF PARADIGMS[*]

Ian BARBOUR[**]

Abstract. The study approaches, in addition to parallels in the structures of scientific and religious inquiry, also the role of imaginative models, and investigates several interesting similarities in the role of paradigms in the two fields. There are as well identified important differences that must be explored. The investigation looks successively at paradigms in science, in religion in general, and then in Christian thought.

Keywords: scientific research, religious inquiry, Christian thought, imaginative models, the role of paradigms.

In addition to parallels in the structures of scientific and religious inquiry, and in the role of imaginative models, there are some interesting similarities in the role of paradigms in the two fields. There are also, of course, some important differences that must be explored. We will look successively at paradigms in science, in religion in general, and then in Christian thought.

1. Paradigms in science

Thomas Kuhn defined *paradigms* as "standard examples of scientific work that embody a set of conceptual and methodological assumptions." In the postscript to the second edition of his book he distinguished several features that he had previously treated together: a research tradition, the key historical examples through which the tradition is transmitted, and the metaphysical assumptions implicit in the fundamental concepts of the tradition. The key examples, such as Newton's work in mechanics, implicitly define for subsequent scientists the type of explanations that should be sought. They mold assumptions as to what kinds of entity there are in the world, what methods of inquiry are suitable for studying them, and what counts as data. A paradigm provides an ongoing research community with a framework for "normal science." Science education is an initiation into the habits of thought presented in standards texts and into the practices of established scientists.

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[*] Religion and Science Harper Collins Publishers, San Francisco, 1997, pp. 125-136.

[**] Professor PhD, specialist in the relation between science and religion.

Kuhn describes a major paradigm shift as a *scientific revolution.* A growing list of anomalies and *ad hoc* modifications within an existing paradigm produces a sense of crisis. Instead of simply acquiring further data or modifying theories within the existing framework, some scientists look for a new framework, which may involve a questioning of fundamental assumptions. Within the new paradigm, new kinds of data are relevant and the old data are reinterpreted and seen in a new way. The choice between the new and the old is not made by the normal criteria of research, Kuhn maintains. Adherents of rival paradigms will try to persuade each other. "Though each may hope to convert the other to his way of seeing his science and its problems, neither may hope to prove his case."[1] Kuhn analyzes several historical "revolutions" in some detail. For example, he describes the radical change in concepts and assumptions that occurred when quantum physics and relativity replaced classical physics. Three features of Kuhn's account are of particular interest.[2]

1. All data are paradigm-dependent. We noted earlier that there is no observation-language independent of theoretical assumptions. All data are theory-laden, and theories are paradigm-laden. The features of the world considered most important within one paradigm may be incidental in another. Kuhn claimed initially that paradigms are "incommensurable" (that is, they cannot be directly compared with each other). However, his later writings acknowledged that usually a core of observation statements exists on which the protagonists of rival paradigms can agree, a level of description that they can share. These common data are not free of dieoretical assumptions, but some assumptions can be shared even by adherents of rival paradigms. If data were totally paradigm-dependent, they would be irrelevant to the choice of paradigms, which has not been the case historically.

2. Paradigms are resistant to falsification. Comprehensive theories, and the even broader paradigms in which they are embedded, are very difficult to overthrow. Discordant data, as we have seen, can usually be reconciled by modifying auxiliary assumptions or introducing special *ad hoc* hypotheses, or they can be set aside as unexplained anomalies. Paradigms are not rejected because there is contradictory evidence; they are replaced when there is a more promising alternative. Research can proceed when the theories of a paradigm do not fit all the data, but systematic research cannot proceed in the absence of a paradigm. Commitment to a research tradition and tenacity in developing its potentialities and extending its scope are scientifically fruitful. But observations do exert some control over a paradigm, and an accumulation of *ad hoc* hypotheses and unexplained anomalies can undermine confidence in it. Without persistent concern for fidelity to the data, science would be an arbitrary and subjective human construction.

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[1] Kuhn, *Structure of Scientific Revolutions*, p. 147.
[2] See Barbour, *Myths, Models and Paradigms*, chap. 6.

3. There are no rules for paradigm choice. A paradigm change is a revolution, achieved more by "persuasion" and "conversion" than by logical argument. Kuhn initially maintained that criteria for choice are themselves paradigm-dependent. In response to his critics, he said that the decision to choose a certain paradigm is not arbitrary or irrational, since reasons can be given for the choice. He acknowledged that there are values common to all scientists and shared criteria of simplicity, coherence, and supporting evidence; but the way the criteria are applied and their relative weight are matters of personal judgment, not rules to be followed. The decision is like that of a judge weighing evidence in a difficult case, not like a computer performing a calculation. There is no court of appeal higher than the judgment of the scientific community itself. The presence of shared values and criteria allows communication and facilitates the eventual emergence of scientific consensus.[3] Kuhn thus qualified his more extreme claims.

In recent decades there has emerged what Harold Brown calls "the new philosophy of science." Brown describes the move from empiricism to a more historical view of science as itself a paradigm shift in the philosophy of science. He describes the contributions of Toulmin, Polanyi, and others, along with Kuhn, in the emergence of this new view that draws heavily on the history of science. Brown gives this summary:

Our central theme has been that it is ongoing research, rather than established results, that constitutes the life blood of science. Science consists of a sequence of research projects, structured by accepted presuppositions which determine what observations are to be made, how they are to be intepreted, what phenomena are problematic, and how these problems are to be dealt with.[4]

Brown gives examples of "normal science," in which work was conducted within an accepted framework, and he describes several scientific revolutions that involved alternative presuppositions and "fundamental changes in the way we think about reality." But he maintains that a revolution shows continuity as well as discontinuity: For the most part, old concepts are retained in altered form, and old observations are retained with new meanings. The continuity provides the basis for rational debate between alternative fundamental theories… Thus the thesis that a scientific revolution requires a restructuring experience akin to a gestalt shift is compatible with the continuity of science and the rationality of scientific debate.[5]

Brown takes up the charge that the new view makes science appear subjective, irrational, and historically relative. To be sure, science does not fulfill the empiricists' definition of objectivity as reliance on strict empirical verification or falsification, nor its definition of rationality as the application of impersonal

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[3] See also Polanyi, *Personal Knowledge*.

[4] Harold Brown, *Perception, Theory and Commitment: The New Philosophy of Science*, Chicago, Univ. Of Chicago Press, 1977.

[5] H. Brown, *op. cit*., p. 167.

rules. But science does conform to more appropriate definitions of objectivity and rationality. Objectivity should be identified with intersub-jective testability and informed judgment in the community of qualified scientists. It is rational to accept a paradigm if it solves important problems and provides a guide to further research. Brown holds that "crucial decisions as to how a conflict between theory and observation is to be resolved, or how a proposed new theory is to be evaluated, are not made by the application of mechanical rules, but by reasoned judgments on the part of scientists and through debate within the scientific community."[6]

We can summarize our conclusions about scientific paradigms in three sentences. The first half of each sentence represents a *subjective and historically relative* feature of science that was neglected in the earlier empiricist accounts. The second half of each sentence represents a reformulation of the *objective, empirical, and rational* features of science that prevent it from being arbitrary or purely subjective:

1. All data are paradigm-dependent, but there are data on which adherents of rival paradigms can agree.

2. Paradigms are resistant to falsification by data, but data does cumulatively affect the acceptability of a paradigm.

3. There are no rules for paradigm choice, but there are shared criteria for judgment in evaluating paradigms.

Compared to empiricist accounts, then, Kuhn gives a much larger role to historical and cultural factors. He insists that a theory is judged within a network of theories and against a background of assumptions, in terms of its success in solving problems in a particular historical context. Kuhn is a con-textualist, in contrast to the earlier formalists, but I do not think that this makes him a subjectivist or an unqualified relativist, for in his view the data do provide empirical constraints, and the presence of shared criteria does represent a defensible form of rationality.

2. Paradigms in religion

As in the scientific case, a religious tradition transmits a broad set of metaphysical and methodological assumptions that we can call a paradigm. As in science, traditions in religion are passed on by particular communities, partly through respected historical texts and key examples. Here, too, new members enter a tradition by being initiated into the assumptions and practices of the community, and they normally work within its accepted framework of thought, which we can call "normal religion," corresponding to "normal science."

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[6] *Ibidem*, p. 167.

As in science, normal criteria are difficult to apply to major historical "revolutions" or to the choice between competing paradigms. Let us focus first on the relation of paradigm choice to religious experience, returning later to the role of story and ritual and their transmission through scriptures. Each of the three subjective and historically relative features of scientific paradigms listed above is even more evident in the case of religion. Each of the corresponding objective, empirical, and rational features of religion is more problematic.

1. Religious experience is paradigm-dependent. But are some experiences common to the adherents of rival paradigms? Religious experience seems to be so strongly molded by the believer's interpretive framework that a skeptic might claim that the experience is entirely the product of prior expectations. Religious experiences are not as publicly accessible as scientific data are, even though both are theory-laden. Yet there are common features of experience within a religious community that exert some control on the subjectivity of individual beliefs. And there do seem to be some characteristics of religious experience in diverse traditions that point beyond cultural relativism, and that make communication between traditions possible.

2. Religious paradigms are highly resistant to falsification. But does cumulative experience influence paradigm choice at all? Discordant data, we have said, does not lead directly to the overthrow of a paradigm. Instead, *ad hoc* modifications are introduced, or the data are set aside as an anomaly. Yet people may eventually modify or abandon their most fundamental religious beliefs in the light of their experience, especially if they see a promising alternative interpretive framework.

3. There are no rules for paradigm choice in religion. But are there shared criteria for evaluating religious paradigms? Some criteria were proposed above for evaluating beliefs *within* a dominant paradigm. Can these be applied to the choice *between* paradigms? Are the criteria themselves totally paradigm-dependent? I will suggest that there are indeed criteria transcending paradigm communities, though their application is a matter of individual judgment in more problematic ways than in the case of science.

Frederick Streng maintains that the idea of paradigms is applicable to Christianity but not to Buddhism. He says that the center of any religious tradition is the experience of *personal transformation and reorientation.* Religion is above all a "strategy for living." Religious conversion is a change in awareness and in mode of living. Streng holds that discussion of paradigms makes us look at systems of belief and doctrine, which are indeed important in Christianity. But Buddhism is more concerned about the transformation of consciousness to a less ego-centered awareness, and it urges nonattachment to doctrinal expressions and changing intellectual forms. It offers spiritual practices to achieve enlightened

consciousness and to release us from the attachments that cause our suffering.[7] In reply I would point out that Buddhism includes a network of characteristic *concepts and beliefs,* including the doctrine of "no-self," which imply ontological claims as well as existential commitments. Moreover, major historic changes have taken place in Buddhist thought as well as practice, such as the emergence of Mahayana from Ther-avada Buddhism. Buddhism may urge nonattachment to doctrinal forms, but it does not seem to have dismissed them entirely.

3. Paradigms in Christianity

Hans Rung has applied the concept of *paradigm change* to the history of Christian thought. He cites five major historical paradigms: Greek Alexandrian, Latin Augustinian, Medieval Thomistic, Reformation, and Modern-Critical. Each paradigm provided a framework for normal work and cumulative growth (comparable to "normal science"), in which the scope of the paradigm was extended and major changes were resisted. As in the scientific case, Rung shows, each new paradigm arose in a period of crisis and uncertainty - for example, the challenge of gnosticism in the Hellenistic world, or the rise of science and biblical criticism in the modern period. In each case, conversion to the new paradigm involved subjective factors and personal decisions as well as rational argument. These paradigm shifts involved both continuity and discontinuity.[8]

Rung brings out some *distinctive features* of paradigm shifts in Christian thought as compared to those in science. The centrality of the scriptural witness to Christ is without parallel in science. "The biblical message," not scripture itself, is the enduring norm. Each new paradigm arose from a fresh experience of the original message, as well as from institutional crises and external challenges. The gospel thus contributed to both continuity and change. Moreover, there is always a personal dimension to the decision of faith, along with the more intellectual task of showing that a new paradigm is both responsive to the Christian message and relevant to the present world of experience and contemporary knowledge. Rung says that we can acknowledge the distinctive features of religion and yet find the comparison with scientific paradigms helpful in understanding processes of change in the history of a religious tradition. In a similar vein, Stephan Pfurtner shows that it is illuminating to consider Luther's idea of *justification by faith* as a

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[7] Frederick Streng, “Lens and Insight: Paradigm Changes and Different Kinds of Religious Consciousness” (Plenary address to second Conference on East-West Religions in Encounter, “Paradigm Shifts in Buddhism and Christianity”, Hawaii Loa College, Oahu, Hawaii, Jan. 4, 1984).

[8] Hans Küng, “Paradigm Change in Theology” in *Paradigm Change in Theology*, ed. Hans Küng and David Tracy, Edinburgh, T. & T. Clark, 1989.

new paradigm. It led to the reconstruction of prior beliefs and the reinterpretation of previous data in a new framework of thought.[9]

This leads me to ask: How large a group is a *paradigm community,* and how does one determine its boundaries? When should one consider a historical change to be an evolutionary modification within a paradigm, and when should one consider it a revolutionary paradigm shift? Thomas Ruhn's earlier writing reserved the term *scientific revolution* for the rare instances when a sweeping change took place in a whole network of assumptions and concepts. Critics felt that he had drawn too sharp a line between normal science and revolutionary science, leaving out changes of intermediate scale. Kuhn's later writing referred to more modest "micro-revolutions" and said that a paradigm community could be as small as twenty-five persons in a subdiscipline.

In religion, too, there are communities and subcommunities, and there are large and small historical changes. I suggest that the concept of paradigm shift is most helpful in understanding historical change if we use the term for relatively rare *comprehensive conceptual changes.* Clearly, the emergence of early Christianity from Judaism represents such a paradigm shift, for despite the continuities, people experienced far-reaching discontinuities in belief and practice. By the time of Paul's letters, it was evident that Christianity could not be a sect within Judaism or a movement to reform Judaism, and individuals had to choose one paradigm community or the other, focusing on either Christ or the Torah. The discontinuities in the Protestant Reformation were perhaps not as radical, but major changes took place in doctrine and practice as well as in institutional organization.

Would it be illuminating to consider all of Christianity as one paradigm and refer to "the Christian paradigm"? One could then speak of a "paradigm shift" when an individual converted to another religious tradition (or atheism) and joined another paradigm community. The parallels with science would be stretched, for there seem to be few shared data or criteria common to diverse traditions, to which appeal could be made in giving reasons for choice among them. Should we seek such shared data and criteria in a global age, or can the assessment of beliefs be carried out only within a well-defined religious tradition? We will return to the problem of religious pluralism in the next chapter.

4. Tentativeness and Commitment

In the popular stereotype, the scientist's theories are tentative hypotheses that are continually criticized and revised, while religious beliefs are unchanging dogmas that the faithful accept without question. The scientist is seen as open-

[9] Stephan Pfürtner, “The Paradigm of Thomas Aquinas and Martin Luther: Did Luther’s Message of Justification Mean a Paradigme Shift? in *Paradigm Change in Theology*, ed. Küng and Tracy.

minded, the theologian as closed-minded. Is not faith a matter of unconditional commitment? Are not Christian beliefs attributed to divine revelation rather than human discovery? Have we perhaps lost sight of the distinctive features of religious faith by tracing some limited parallels with science?

1. Tradition and criticism

Let us ask first how the scientific and religious communities each balance the importance of an ongoing tradition against the value of criticism and change. When major historical changes take place, does continuity or discontinuity predominate?

Whereas Popper identifies rationality and objectivity in science with adherence to explicit rules, Kuhn maintains that the locus of authority is the scientific community itself. Decisions rest on *the informed judgment of the community.* Shared values and criteria underlie such judgment, but the application and weighting of the criteria are not governed by logic or rules. Kuhn claims that authoritative tradition transmitted by the dominant paradigm provides the framework for thought and action in "normal science." This is a historical and social view of the process of inquiry in which the ongoing community is emphasized.[10]

As there is no private science, so also there is no private religion. In both cases, the initiate joins *a particular community* and adopts its modes of thought and action. Even die comtemplative mystic is influenced by the tradition in which he or she has lived. Paradigms in religion, as in science, are acquired by example and practice, not by following formal rules. Individual insights are tested against the experience of others, as well as in one's own life. Here, too, the historical and social context affects all modes of thought and action.

Kuhn pictures *normal science* as conservative and controlled by *tradition.* Working within the prevailing paradigm is an efficient way of solving the distinctive problems it raises. Exploring its potentialities and extending its range provide a focus for research. Within that tradition, a person benefits from the work of others, and there is cumulative progress. According to Kuhn, paradigm shifts are relatively rare and occur only when an accumulation of anomalies has produced a real crisis. One cannot speak of progress across the transitions; Kuhn describes paradigm changes in the political metaphor of revolution, which emphasizes discontinuity and the overthrow of the established order.

Kuhn's critics reply that even in *scientific revolutions* the old data are preserved (though reinterpreted) and the new concepts and theories can be related to the old (though displacing them). Moreover, shared values and criteria of

[10] Kuhn, *Structure of Scientific Revolutions*, Polanyi, Personal Knowledge, W.D. King, “Reason, Tradition and the Progressiveness of Science”, in *Paradigms and Revolutions*, ed. Gary Gutting, notre Dame, Univ. Of Notre Dame Press, 1980.

judgment persist across the change. Most scientists are familiar with other scientific disciplines and subfields, which provide continuity when their own area of specialization is in transition. A scientist has a higher loyalty to the wider scientific community and its values, which goes beyond loyalty to a particular paradigm. The critics urge us to view science as evolutionary and subject to *continual reformation,* rather than as bound by tradition except during revolutions. Nevertheless, historical studies have tended to support the view that theories are not evaluated separately but as part of networks of assumptions which sometimes change together rather radically.[11]

Normal theology does indeed show the dominance of *tradition.* The theologian is concerned to develop the potentialities of a particular paradigm. This provides focus and encourages communication and cumulation. But the process can include considerable reinterpretation, reformulation, and innovation. Scripture is unchanging, but ways of understanding and appropriating it have changed greatly, especially since the rise of historical-critical methods. Theology, we have said, is critical reflection on the life and thought of the religious community, and this implies the revisability of ideas. The Protestant Reformation was not a once-for-all revolution, but rather a vision of a church that is *semper reformanda,* always reforming. Cardinal Newman defended the development of ideas and the evolution of doctrine within the basic continuity of the Catholic tradition.[12]

Theological revolutions, such as the Protestant Reformation, or the emergence of Mahayana from Theravada Buddhism, do involve extensive and fundamental changes. Yet here, too, there are impressive continuities amid the discontinuities. There is a common loyalty to the founding leader, common scriptures, and a shared early history. In an ecumenical age, Catholic and Protestant thinkers read each others' writings and affect each other, as do Buddhists of diverse schools. Feminist theologians criticize the gender biases of Christian thought and propose major reconstruction of traditional doctrines, yet in most cases they affirm a large portion of a common heritage. The theologian, however, does not seem to have a loyalty to an overarching and universal religious community, with shared criteria and values comparable to those shared by all scientists. In a global age, could such wider loyalties be encouraged, without undermining the distinctiveness of each religious tradition?

2. Central and peripheral beliefs

Popper maintains that scientific theories are held with great tentativeness and that basic assumptions should be continually questioned and criticized. Kuhn, by

[11] Mark Blaug, "Kuhn versus Lakatos, on Paradigms versus Research Programs in the History of Economics", in *Paradigms and Revolutions*, ed. Gutting.

[12] Richard Vernon, "Politics as Metaphor: Cardinal Newman and Profesor Kuhn", in *Paradigms and Revolutions*, ed. Gutting

contrast, says that there is normally great tenacity in commitment to a prevailing paradigm, which is questioned only in rare times of crisis. Imre Lakatos proposes an intermediate position in which there is commitment to a *"hard core"* of central ideas that are preserved by making adjustments in a "protective belt" of more tentative *auxiliary hypotheses.* In place of competing individual theories (Popper) or successive paradigms (Kuhn), Lakatos pictures research programs, which sometimes compete over a protracted period of time. He does not accept the formal criteria for the acceptability of theories proposed by Popper, but he offers more definite and rational criteria than Kuhn acknowledges.

Lakatos maintains that a *research program* is constituted by a hard core of ideas that is deliberately exempted from falsification so that its positive potentialities can be systematically developed and explored. Anomalies are accommodated by changes in the auxiliary hypotheses, which can be sacrificed if necessary. This strategy calls for commitment in sticking with central ideas, without being distracted from them, as long as the program is "progressive" in predicting "novel facts" (which may refer to new phenomena or to already known facts not previously related to the program). A program should be abandoned when it is stalled and not growing for a considerable period and when there is a promising alternative. The old program is not falsified but rather is displaced as a research strategy. Lakatos believes his scheme *describes* the best scientific practice and *prescribes* how scientific programs should be evaluated, namely by comparing their progress as strategies for research over a period of time.[13]

We can apply Lakatos's analysis to religious communities, which also make a *central core* of ideas immune to falsification and protect them by adjusting *peripheral beliefs.* Commitment to a core program allows it to be systematically explored without continual distraction. Rival programs may compete over long periods. The component beliefs are not verified or falsified separately in isolation; they are parts of an ongoing program that can be compared to other programs. Here progress is presumably not judged by the power to predict totally new phenomena, but by the ability to account for known data not previously considered. When anomalies arise - from historical events, from new experience, or perhaps from new discoveries in science - adjustment would be made in auxiliary hypotheses before core beliefs were abandoned.[14]

Ancient Israel held a central belief in the existence of a God of power and justice. An important but less central assumption was that God punishes

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[13] Imre Lakatos, "Falsification and the Methodology of Scientific Research Programmes" in *Criticism and the Growth of Knowledge*, ed. I Lakatos and A. Musgrave, Cambridge, Cambridge Univ. Press, 1970. Also Lakatos, *Philosophical Papers*, vol. 1, ed. John Worall and Gregory Currie, Cambridge, Cambridge Univ. Press, 1978.

[14] See William Austin, "Religious Commitment and the Logical Stastus of Doctrines", *Religious Studies* 9, 1973: 39-48.

wrongdoers. I suggest that we could see efforts to deal with the anomaly of *undeserved suffering as* attempts to preserve the central core by modifying auxiliary hypotheses. In the book of Job, the protagonist is told by his friends that he must have sinned in secret to deserve such suffering. But Job maintains both his innocence and the existence of God, at the cost of the hypothesis that all suffering is deserved. Israel faced the same anomaly on a national scale in its long exile in Babylon. Some people saw the exile as God's punishment for Israel's failure to observe the Torah rigorously, and they counseled stricter observance. Others developed new ways of understanding God's action in history, which allowed for undeserved suffering (including the vicarious suffering or suffering servant motif in Isaiah 53 and elsewhere). But even the latter "auxiliary hypothesis" is put in question by the magnitude of evil and suffering in the Nazi Holocaust. For some people this historical event required reformulation of concepts of God's power. For a few it led to abandoning theism itself. The Holocaust is an anomaly that is only partly resolved within the traditional beliefs of both the Jewish and Christian communities.

Nancey Murphy proposes using Lakatos's methodology in Christian theology. The primary data would be the practices of the Christian community, including its devotional experience and its use of scripture. The idea of a plurality of competing *theological research programs* can both illuminate past history and offer a possible pattern for current theological inquiry. As one example, Murphy traces three forms of the doctrine of atonement, in which Christ's death is understood as a victory over the forces of evil or as a satisfaction of God's justice or as a demonstration of God's love. The first program was largely replaced by the other two historically, but it could be revived today with a new auxiliary hypothesis in which the forces of evil are reinterpreted in social and political terms.[15]

How broad a set of ideas should be thought of as *a theological program ?* An interpretation of a single doctrine, such as one view of the atonement, is perhaps too limited to consider as a "core belief" to which enduring commitment is given. Perhaps a school of Christian thought, such as neo-orthodoxy, Thomism, or process theology, can fruitfully be portrayed as a program. Alternatively, in the context of religious pluralism, one might think of Christianity as a program whose core is belief in a personal God and the centrality of Jesus Christ – with all other beliefs as auxiliary hypotheses that can be modified to maintain that core. Gary Gutting goes even further in proposing that belief in the existence of a personal God constitutes the Lakatos core to which decisive assent should be given, but this seems to me too broad to define an identifiable religious community.[16] I will

[15] Nancey Murphy, *Theology in the Age of Scientific Reasoning*, Ithaca, Cornell Univ. Press, 1990; "Acceptability Criteria for Work in Theology and Science", Zygon 22, 1987: 279-97.
[16] Gary Gutting, *Religious Belief and Religious Skepticism*, Notre Dame, Univ. of Notre Dame Press, 1982, chap. 5.

suggest in chapter 12 that *process theology* can be viewed as a theological program in which the "hard core" of the Christian tradition is taken to be belief in God as creative love, revealed in Christ, while divine omnipotence is treated as an "auxiliary hypothesis" that can be modified to allow for the data of human freedom, evil and suffering, and evolutionary history.

Lakatos's *programs,* then, are very similar to Kuhn's *paradigms,* but they offer two advantages as ways of analyzing both science and religion. First, they allow one to distinguish between the central core to which a group is committed and the peripheral beliefs that are more readily modified or abandoned—though Lakatos recognizes that the distinction is not absolute and can change historically. Second, rival programs can coexist during protracted periods, allowing for greater pluralism. We are to look at the fruit-fulness of a program in a community over a period of time, rather than evaluating a fixed set of ideas at any moment in abstraction from the ongoing life of the community.

3. Revelation, faith, and reason

Even if peripheral beliefs are tentative and revisable, are not the core beliefs of a religious community held with absolute and unconditional commitment? Job may have given up the idea that suffering is always deserved, but his basic faith in God was unshaken. No evidence could count against it: "Though he slay me, yet will I trust in him" (Job 13:15 KJV). St. Paul was confident that "neither death nor life… nor anything else in all creation will be able to separate us from the love of God which is in Christ Jesus our Lord" (Rom. 8:39). In chapter 4 we noted the existentialist thesis that faith is a matter of passionate personal commitment and decision, far removed from the dispassionate weighing of hypotheses. We also referred to the neo-orthodox theme that faith's confidence rests on revelation, which was the result of divine initiative rather than of human discovery. Can our account do justice to the importance of faith and revelation in the Christian tradition?

Basil Mitchell contrasts the *tentative hypotheses* of science with *unconditional commitment* in religion. But he goes on to qualify the contrast from both sides. He describes the tenacity of a scientist's commitment to a Kuhnian paradigm. He also insists that ultimate religious commitment is to God and not to Christianity or any other system of belief. And here the cumulative weight of evidence should be decisive. All religious ideas are open to revision, according to Mitchell. There must be grounds for accepting a claim of divine revelation in history, even if revelation shows us possibilities that we could not have anticipated. Mitchell says that knowledge of God in religious experience is also not self-authenticating, for there is no uninterpreted experience, and any particular interpretation involves claims that must be judged more plausible than the alternatives. There is thus a continuing dialectic between commitment and reflection, or between faith and reason.[17]

[17] Basil Mitchell, *The Justification of Religious Belief*, London, Mcmillan, 1973, chaps. 5-8.

In the biblical view, *faith* is personal trust, confidence, and loyalty. Like faith in a friend or faith in a doctor, it is not "blind faith," for it is closely tied to experience. But it does entail risk and vulnerability in the absence of logical proof. If faith were the acceptance of revealed propositions it would be incompatible with doubt. But if faith means trust and loyalty, it is compatible with considerable doubt about particular beliefs. Doubt frees us from illusions of having captured God in a creed. It calls into question every religious symbol. Self-criticism is called for if we acknowledge that no church, book, or creed is infallible and no formulation is irrevocable. The claim to finality by any historical institution or theological system must be questioned if we are to avoid absolutizing the relative.

Religious faith does demand a more total *personal involvement* than occurs in science, as the existentialists maintain. Religious questions are of ultimate concern, since the meaning of one's existence is at stake. Religion asks about the final objects of a person's devotion and loyalty. Too detached an attitude may cut a person off from the very kinds of experience that are religiously most significant. But such religious commitment can be combined with critical reflection. Commitment without inquiry tends toward fanaticism or narrow dogmatism. Reflection alone without commitment tends to become trivial speculation unrelated to real life. Perhaps personal involvement must alternate with reflection, since worship and critical inquiry do not occur simultaneously.

Divine revelation and *human response are* always inextricably interwoven. Revelation is incomplete until it has been received by individuals, and individuals always live within interpretive communities. The God-given encounter was experienced, interpreted, and reported by fallible human beings. In the history of Israel, crucial events were revelatory only when interpreted in the light of the prophet's experience of God. God acts in the lives of individuals and communities, especially in the life of Christ, we have said, but the records of these events reflect particular personal and cultural perspectives. There is no uninterpreted revelation.

Moreover, revelation is recognized by its ability to illuminate *present experience.* Revelation helps us to understand our lives as individuals and as a community today.[18] Special events in the past enable us to see what is present at other times but may have been ignored. The cross reveals God's universal love, everywhere expressed but not everywhere acknowledged. The power of reconciliation in Christ's life is the power of reconciliation in all life.[19] Revelation leads to a new relation to God in the present; thus it is inseparable from reorientation and reconciliation. It is not a system of divine propositions completed in the past but an invitation to new experience of God today. So revelation and experience, like faith and reason, are not mutually exclusive.

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[18] H. Richard Niebuhr, *The Meaning of Revelation*, New York, Macmillan, 1941.
[19] Paul Tilich, *Systematic Theology*, Chicago, Univ. of Chicago Press, 1957, 2: 165-68.

To sum up, there are many *parallels* between science and religion: the interaction of data and theory (or experience and interpretation); the historical character of the interpretive community; the use of models; and the influence of paradigms. In both fields there are no proofs, but there can be good reasons for the judgments rendered by the paradigm community. There are also important *differences* between science and religion, but some of them turn out to be differences in emphasis or degree rather than the absolute contrasts sometimes imagined. We have traced a number of polarities in which the first term was more prominent in science and the second in religion: objectivity and subjectivity; rationality and personal judgment; universality and historical conditioning; criticism and tradition; and tentative-ness and commitment. But some features of religion seem to be *without parallel* in science: the role of story and ritual; the noncognitive functions of religious models in evoking attitudes and encouraging personal transformation; the type of personal involvement characteristic of religious faith; and the idea of revelation in historical events. Some additional comparisons are explored in the next chapter before we draw overall conclusions.