

The Science of Religion

by
William S. Hatcher

Bahá'í Studies

Volume 2, April 1980

Published in Bahá'í Studies Vol. 2 (1980)
© Association for Bahá'í™ Studies 1980

The Science of Religion

by William S. Hatcher

Preface

Each of the three essays which together constitute the present volume was conceived independently and written at an interval of several years from the preceding one.¹ Yet, there is a unity and progression of thought which makes them coalesce naturally into a single publication. The first focuses primarily on the nature of scientific method itself and engages in a fairly detailed, at times technical, analysis of that method. The theme is that scientific method, rightly conceived, is universal in its application and that religion, rightly conceived, must conform to scientific method. In particular, reason and faith are seen as aspects of the same epistemological process rather than being in some fundamental opposition where each is viewed as representing a fixed, well-defined mode of knowing.

The second article explores further the relationship between science and religion, focussing more evenly on religion and its role as well as that of science. It is seen that while science supplies the method by which we examine and understand religious phenomena, religion based on prophetic revelation provides us with the essential experience of spiritual realities. Science can prove God's *existence*, but only prophetic religion can give man the *experience* of God for which he hungers.

The last article is devoted to scientific method in its relationship to the Bahá'í Faith itself. Indeed, it is seen at the outset that the Bahá'í Faith asserts that it is scientific in its method and that religious truth is not absolute but relative. The rest of the article may be fairly regarded as a protracted explication of how this is so. More attention is given to all aspects of religion—the aesthetic, emotional, cognitive, and social—showing them to be parts of one process.

The limitations of both positivism and existentialism are discussed. It is pointed out that, just as the subjective experience of the individual scientist is objectified through participation in a community of understanding and a framework of interpretation, so individual spiritual experience can be objectified through participation in a religious community of understanding and the accompanying framework of interpretation. The important point is that the experience on which religion is based, though often qualified as “mystic” or “spiritual”, differs not essentially but only in its particular qualities from any other type of subjective experience and in particular from that on which other branches of science are based.

All three of these essays should be viewed as very feeble attempts to seize, to the author's limited degree, the powerful insights concerning science and religion afforded by the vast revelation of Bahá'u'lláh. One cannot predict how long we must wait for Bahá'u'lláh's profound vision to become reality, but we can affirm with confidence that the day is inevitable when religion “...shorn of its superstitions, traditions, and unintelligent dogmas shows its conformity with science...” and will have become “...a great unifying, cleansing force in the world....” (cf. ‘Abdu’l-Bahá, *Paris Talks*, Bahá'í Publishing Trust, London, 1969, pp. 130-131.)

1. The first essay was published in *World Order*, Vol. 3, No. 3 (1969) pp. 7-19, and the second in the same periodical, Vol. 9, No. 3 (1975), pp. 23-29, 32-38. The third was presented at the first annual meeting of the Canadian Association for Studies on the Bahá'í Faith in January 1976, and subsequently published in Volume 1 of *Bahá'í Studies*. The essays appear here with a few modifications intended to improve their exposition.

INTRODUCTION

Most people feel that they know a certain number of true things about themselves and the world they live in. However, probably not many have thought very deeply about the process by which they have come to hold one thing true and another false. Such a spontaneous and uncritical approach to truth-seeking is reasonably successful in the practical realm of everyday life. For here, virtually everyone seems to rediscover so many of the same truths with comforting regularity: grass is green, fire burns, and unsupported objects fall downward: pain is unpleasant and the threat of pain anxiety-producing; people like to be loved and held in high esteem and dislike the opposite: people usually respond positively when treated kindly and tend to respond aggressively when treated harshly, unless they are too afraid to show their angry feelings.

It is when we try to go beyond the level of common-sense knowledge that we are forced to reflect more seriously about the process of discovering truth, for the unanimity which characterizes the world of practical truth is then rather quickly lost. We may, for example, start wondering about the inner and hidden structure of the things we observe—those forces and entities which we cannot observe directly but whose existence seems required to explain what we do observe. Or, we may ask ourselves whether there is any meaning to be found in the world and our experience of it. Sooner or later, we are led to seek some global context, some point of view, which can infuse a sense of purpose into the external events of everyday life, events which often seem to have no meaning in themselves. In sum, we seek what science calls a *theory*, a consistent set of hypotheses involving abstract concepts which describes a model of reality and which allows us to deduce and thereby explain the known facts. In religious terms, we seek a faith, which is simply a theory to which we add a high degree of personal commitment and emotional investment.

Even at this stage we can, if we choose, proceed unreflectively. We can accept a theory not because we have verified it in our experience but because we can no longer tolerate the existential anxiety resulting from our continued feeling of ignorance. Or, we may suddenly become “converted” to a faith because we feel better about having committed ourselves to something which is capable of relieving us from the oppressive self-centredness of daily practical concerns. Moreover, if the commitment to such a faith is reinforced by various practical rewards (for example, integration into a new social group in which we have new-found esteem), we may indefinitely escape feeling the need for serious examination of the bases of our beliefs.

In other words, our theories, and our belief in them, may often arise as much or more from our own inner needs as from the intrinsic validity or explanatory value of such theories. One might have expected the contrary—that the degree of conviction and commitment which a belief system is capable of eliciting would be more or less directly proportional to its degree of validity. But experience has shown that deep, sincere personal conviction and commitment to a belief system are in themselves no guarantee of its truth. We can and often do believe deeply in error.

Of course, it is not only our inclination to project our emotional needs onto reality that gives rise to disagreement and diversity of opinion on the theoretical level. The number of possible explanations for the things we experience seems virtually unlimited, and history is replete with examples of attractive and plausible theories which turned out to be quite wrong. Similarly, history has witnessed a plethora of faiths or religious belief systems.

However, the multiplicity and diversity of belief systems do not, in themselves, necessarily produce conflict. Rather, it is the distressing tendency of belief systems to drift into competition with each other which most readily leads to conflict. This tendency is greatly accelerated when, as is often the case, each separate system includes among its articles of faith the metabelief in its own absoluteness.

If this process of competition is not checked through some natural force or process, it can result in fanaticism, giving rise to persecution, oppression, and violence. Fanaticism may be said to be characterized by the conviction that the given belief system is so intrinsically important that literally anything done in its name is justified. Such fanaticism is probably more readily encountered in religion than in science since the depth of commitment to a religious belief system is generally much greater than it is in the case of a scientific theory, as well as being more easily based on emotion. Nevertheless, fanaticism has occurred in science, in politics, and indeed in virtually every realm of man's collective life.

We thus have before us some elements of the human situation which can make the successful elaboration of a valid and fruitful belief system very difficult: our tendency to project our needs and desires onto reality; the number and diversity of initially plausible theories consistent with any given set of facts; and the dogmatic tendency to become fanatically attached to a given belief system once it is formulated. Now, since all of these elements are present in the practice of both science and religion, we cannot draw from this analysis any clear basis for making a

radical separation between them. Nonetheless, we know that such a separation is often made, and so we should perhaps try to understand what has led to the apparently widespread belief that this separation is necessary.

If we consider the historical beginnings of the opposition between science and religion, as well as some of its contemporary manifestations, the issue seems to be rooted in certain widespread human attitudes towards power. The broad allegiance which a belief system can command creates a reservoir of power. If the belief system is institutionalized in such a way that this power is easily available to certain individuals or groups (for example, priests, experts of various kinds, or political leaders), the tendency may naturally arise for the favoured group to maintain its position of power by resisting new beliefs and theories, however valid, progressive or socially helpful these latter may in fact be. In other words, so-called ideological battles are often not ideological at all but only symbols for a power struggle between people. This, as I suggest in the first of the three ensuing essays, is largely what happened in the case of Renaissance science and the religion of the day. Exponents of religion perceived the emerging science as a (latent or overt) challenge to their authority and proceeded to discredit various aspects of the new science, but not from a truly rational point of view.

Following this initial split came the incredible success of the new science, a success which was clearly not attributable to the religion which had so clamorously disowned science. But the spectacular development of this increasingly materialistic science, further dehumanized by the way in which society at large has made use of its fruits, has only served to heighten a general sense of discomfort. For, secularizing science has not provided theories of sufficient depth and breadth to give adequate, satisfactory answers to many of the fundamental questions of everyday life—questions concerning meaning, death, consciousness, self-sacrifice, love, suffering, etc.

At the same time, religion has not been able to provide much comfort since its continued rejection of scientific principles of inquiry renders it incapable of giving any guarantee of the validity of its belief system. People are faced with the unpalatable choice between highly validated scientific theories of limited scope on the one hand, and unsupported metaphysical speculation on the other. Moreover, circumstances have more often than not forced people to make a choice between these extremes and to live their lives accordingly.

The dilemma described in the last sentence continues to characterize the intellectual and spiritual milieu of the late twentieth century. It was within this same milieu that I found myself struggling to come to grips with these questions as a young university student in the mid-1950's. Quite early in my own thinking I became convinced that there was no fundamental, logical or epistemological reason for this dilemma and for the radical separation of science and religion on which it is based. I tested this theory in my reading and thinking, and in discussions with both scientists and religionists. These experiences, and the reflections occasioned by them, only served to validate my hypothesis and thus to deepen my conviction of its truth.

I was astonished, for example, to see how uncritically so many theologians and religious-minded thinkers had accepted the positivist description of scientific method. In accepting the exclusion of religion from the domain of scientific method, such religionists thereby acquiesced to their inability ever to give epistemological justification to the content of their belief systems. Perhaps this attitude on their part was a vestige of the reflex of their Renaissance predecessors: their unwillingness to subject their thought to the critical methods of science represented a desire to carve out for themselves an area, however small and devoid of genuine social influence, in which they reigned with unchallenged authority, without the nagging necessity for justification and response to criticism.

Truly appalling was the spectre of the unbridled power of secularized science, a power whose ultimate limits could no longer be discerned. This power, divorced as it largely was and is from any fundamental commitment to a humanistic, much less ethical or spiritual, value system, could not fail in the end to be exploited by the basest and most selfish of human interests.

The systematic application of scientific method in certain specific areas of material development coupled with the continual refusal to apply this same method in the critically important areas of the spiritual, the ethical, the social and the political has led man to the brink of destruction. He now has the certain knowledge of how to destroy himself, but only the vaguest, unsupported speculations about how to prevent such destruction. As Carl Jung once expressed the idea: through science and the use he has thus far made of it, man has conquered nature; but he has not yet understood or conquered his own nature.

It was in this frame of mind that I became acquainted with the Bahá'í Faith through the profound writings of Bahá'u'lláh and the commentaries and interpretations of 'Abdu'l-Bahá and Shoghi Effendi. Here was pure religion, unflinchingly addressing itself to the deepest of human questions and yet not only tolerating but inviting critical study. And here was religion one of whose basic principles was the unity of science and religion.

Concerning the relationship between religion and science, the writings of 'Abdu'l-Bahá, in particular, forthrightly condemn dogmatic religion for its rejection of science. At the same time, 'Abdu'l-Bahá lays bare the inadequacies and limitations of the strictly materialistic, positivistic conception of scientific method. It is fair to say that his analysis and observations, made in the decade 1910-1920, anticipate by almost fifty years the general

realization of these same limitations on the part of the philosophical and scientific community.

The Bahá'í writings deal trenchantly with another crucial problem involved in the religion-science controversy, namely the lack of any clearly objective content to religion. With the continued development of science, religion has come to be regarded as an activity which deals essentially (and unscientifically) with the irrational, subjective, mythic, and emotional aspects of human life. Viewed in this way, a religious belief system appears as no more than a collective neurotic mechanism for dealing with the difficulties and sufferings of life: such beliefs are illusions which may give some comfort but which have no basis in any reality other than human imagination,

The Bahá'í Faith addresses this problem through its concept of progressive revelation: religion is an objective, periodic phenomenon called "revelation". The Bahá'í concept of progressive revelation furnishes a theoretical model for human history and social evolution as well as giving objective content to religion, a content independent of the subjectivity of any particular human being. In this view, religion becomes a phenomenon which can be studied, approached, and experienced scientifically without losing any of its multidimensional richness and capacity for emotional enhancement.

These, then, are some of the themes which dominate the three essays of the present collection: the flexibility and universality of scientific method, and its applicability to religion and religious phenomena: the misconceptions about the relationship between science and religion deriving primarily from the various historical contexts in which this relationship has evolved; the distortions in the conception of scientific method wrought by the historically accidental marriage of scientific practice to a dogmatic materialistic philosophy; the view of religion as an objective, periodic phenomenon with objective content.

The first essay concentrates primarily on a fairly detailed exposition of the nature and scope of scientific method, indicating both its limitations and its potentialities. This description of scientific method is personal and draws heavily on my own professional background in logic and mathematics. Nevertheless, it was written some ten years after my identification with the Bahá'í Faith, and many of its key ideas are to be found in the Bahá'í writings. The essay closes with a brief focus on the theme of religion as a periodic phenomenon.

The second essay, written several years later, quotes extensively from both Bahá'í and non-Bahá'í sources. It attempts to sketch in more detail the current status of the relationship between science and religion. Using ideas developed in the first essay, the question of the existence of God is addressed directly. It is seen that the processes and forces which science has now succeeded in laying bare already provide a model in which the affirmation of God's existence can be clearly formulated as a scientific proposition (refuting contentions by some philosophers that the question of God's existence is essentially meaningless). The question of God's existence is seen to have the same epistemological status as that of the existence of any non-observable theoretical entity (such entities abound in modern science). While science is thus seen as providing the basic framework in which the existence of God can be meaningfully formulated and discussed, religion based on revelation is seen as furnishing man the possibility of the experience of communion with God. Also, the prophetic figures, or revelators, provide an important element of empirical evidence for God's existence.

The third essay deals with these same dominant themes, relating them much more explicitly to the Bahá'í Faith itself. It is seen through direct quotations from the Bahá'í writings that the Bahá'í Faith affirms the basically cognitive nature of religion without in any way diminishing its other important aspects. As with any cognitive activity, religion cannot hold itself aloof from scientific principles of inquiry.

The positivist and the existentialist views of science and religion are each examined in some detail, and certain deficiencies in them exposed. It is seen quite clearly that positivism does not provide an adequate model for scientific practice, and that the subjectivist, existentialist view completely neglects the social dimension of religion. Rather, existentialism regards religious experience as peculiarly subjective and therefore internal to each individual in a way which renders it virtually incommunicable, nonobjective, and incapable of forming the basis of society. It is seen that science objectifies internal experience by creating a community of understanding which gives a framework of interpretation to individual practitioners of science. This enables members of a scientific community to participate in the validation of the internal experience of other members. It is suggested that the creation of a religious community of understanding can accomplish the same (relative) objectification of internal experience connected with religion. It is seen that the ultimate basis for such a community is the objective phenomenon of revelation. After a brief indication of the way that revelation has provided the motive force for social evolution in human history, the essay closes with a discussion of some elements of individual spiritual practice in the scientific spirit.

These essays represent an earnest attempt to address fundamental questions involved in the religion-science controversy which has been such a significant and persistent feature of modern life. Indeed, the basic confrontation between science and religion might be regarded as the background against which the social and political dramas of the contemporary world have been played. The essays do not sidestep the difficult questions or smooth over critical points. Rather, they attempt to focus on these points and bring to bear on them some of the insights contained in the

writings of Bahá'u'lláh, 'Abdu'l-Bahá, and Shoghi Effendi, as well as the understanding afforded by modern philosophy of science.

Nevertheless, I am keenly aware of the very relative value of my efforts and harbour no illusion of having brought any definitive answers to these important questions. I shall be happy if this work has contributed, to whatever limited extent, to clarifying these issues and stimulating others to go further.

I. SCIENCE AND RELIGION¹

“The Revelation proclaimed by Bahá'u'lláh, His followers believe, is.... scientific in its method... religious truth is not absolute but relative....”

—Shoghi Effendi

A cardinal principle of the Bahá'í Faith is that science and religion must be in agreement and harmony. In view of the conflict and confusion which have long existed on this subject, one might think that this principle would be a great rallying-point, attracting large numbers of scientists and religionists to examine deeply the tenets of the Bahá'í Faith. This has not yet proved to be the case, however. What has been true is that those people who already felt deeply the need for some reconciliation of science and religion and who chanced to examine the Bahá'í Faith were pleased to find this principle an essential part of the Bahá'í teachings.

The situation is, I feel, quite analogous to another age-long conflict, the conflict between established religious orthodoxies. The relevant Bahá'í principle here is the essential oneness of religion. Yet there has not been any marked tendency on the part of established religious authorities to look with favour on this basic Bahá'í teaching. Because each orthodoxy has been adamant in its claim to superiority over other orthodoxies, there has been no common willingness to accede to the “leveling” belief that a *de facto* unity underlies the various great religious systems. Of course, there is a contradiction between the various rites and rituals, dogmas and creeds to be found in the present form of these religious orthodoxies. What the Bahá'í Faith affirms is that these rites, creeds, and dogmas are largely *irrelevant* to the fundamental teachings, the essential purpose and meaning of religion. These teachings have, without exception, enjoined such qualities as humility, love, compassion, tolerance. Fanatics can find no sanction for their fanaticism in the recorded teachings of their founder. Present-day religious arrogance is thus seen to be a partly deliberate, partly unwitting perversion of the viewpoint which the venerated founder had originally hoped to engender in his followers. Add to this the further observation that these founders were largely venerated only after the fact and were the object of scorn, hatred, and rejection in their day, and we have a thumbnail sketch of religious history.

I have chosen the conflict between orthodoxies as an analogy to the religion-science conflict because I suspect that it is closer than either religionists or scientists would like to admit. Orthodox religionists would dislike the analogy because they have been forced to admit the value of science after an initial resistance, and the idea that they may one day be forced to capitulate in a similar manner before the pervasive value of another religion which they initially misjudged—this would be painful. Scientists would resist the analogy in that it tends to compare science to the dogma of a religious orthodoxy, a comparison which they would regard as invidious. For if anyone is “winning” the so-called religion-science conflict, it is clearly science. Yet, it is not a novel observation that scientists are increasingly assuming the function and role played by priests in earlier societies. They are the initiated, those who explain the great mysteries to the unwashed masses.

Anyone who has had the opportunity to work in a scientific field knows how often serious scientific achievement is embellished with a liberal amount of sham and wordplay. If these are not rituals designed to charm the masses (or one's Dean or the National Science Foundation) they come uncomfortably close to it.

Of course, a scientist would object that all of this is not true science. This, he would say, is the concession which the true seeker after scientific truth must make to the ultra-pragmatic world-at-large. The many exigencies of life in the political and social market place force the scientist, as an individual, into compromises, subtle and not so subtle, with the basic principles of scientific inquiry. But, one might contend, this does not compromise science itself, for anyone can plainly see that its principles are pure and lead to excellent results when applied correctly.

Does not all this sound strangely like the well-worn apology for the failures of religious institutions? “Our institution is divine,” we are told, “but you must not judge it by the 'human element' within it or by the corruption of individual exponents who may be weak and unredeemed.”

The point is that both science and religion are human, social activities. As such, they cannot claim to be purer or more exalted than their ultimate influence on society. This does not mean that such activities do not draw on invisible sources of inspiration and power to produce their effect. It means only that the evidence for the existence of such hidden well-springs of creativity can only be measured by the ultimate, realizable effect which these activities or institutions do indeed produce.

The outline of the Bahá'í approach to the religion-science conflict now heaves more clearly into view. It is that, when the true purpose and nature of science are understood and when the true purpose and nature of religion are understood, then there is, *de facto*, no conflict. An essential unity is discovered, a unity which was there all along but

which was hidden by the aberrations in the articulation of the two viewpoints. Just as Bahá'ís make no attempt to reconcile the confusing and contradictory dogmas of different religious orthodoxies, so they make no attempt to reconcile narrow-minded pronouncements by dogmatic would-be apologists for either science or religion.

A notable feature of the religion-science controversy as it has actually existed in our recent history is this: new science came into conflict with old religion. This fact must be borne in mind by anyone honestly seeking to understand the dynamics of the problem. Modern science is, indeed, new in any historical sense of the term. Even to date it from the Renaissance is a mistake. The chief features of contemporary science appear only in the nineteenth century. Of course, its roots go deep into the past, indeed to the dawn of human intellectual endeavour. But this is true of everything. What is certain is that such a profound transformation of science was effected in the nineteenth and twentieth centuries that one can properly speak of a revolution, however revolutionary the original sixteenth-century advances may appear with respect to their prehistory.

Of course, even to date the “scientific revolution” from the Renaissance does not obscure the glaring fact that the religion with which it came into conflict was already past its prime, atrophied, and sterile. Even though it possessed strong political and social prerogatives, religion had long since assumed a position as champion of the status quo, a disbeliever in the possibility of genuine social evolution and progress in this life. No wonder that “religion” seems to have been so much on the defensive and so easy an adversary to discredit in the eyes of thinking men. Such men simply had no example of a religion which was a dynamic, creative, evolutionary force. There was nothing in their immediate experience, no analogy or example, which could easily allow them to view religion in any light other than that in which its most volatile exponents chose to present it: a reactionary social force.

But the new science also suffered from the decline of religion. Because man was socially and morally atrophied in so many respects, society tended to use science for prejudicial, unscientific, and irrational ends. Science tended to become a tool to obtain desired (but not necessarily justified) social ends, rather than an attitude toward life as a whole which, from the Bahá'í viewpoint, it should have been. Thus, we now see the specter of scientific achievements being used to destroy nations, render the earth uninhabitable, effect mass murder, disgorge a cornucopia of often useless gadgets, and even to bolster dogmatic and puerile political-social or philosophical points of view about life.

As examples of the latter, one might cite the attempt by some modern-day Marxists to use science to establish a religion of “scientific atheism” complete with dogma, rituals, and the rest, or the pseudo-philosophy of logical positivism whose inadequacy has not lessened efforts to popularize it.

Scientific Method

We now turn to a more substantive task of elaborating just how the basic unity of science, and of science and religion, is viewed in the light of the Bahá'í teachings. Our theses are, quite simply: (1) that the basic unity of science lies in its method of inquiry or epistemology, and (2) that the Bahá'í Faith consciously accepts this epistemology as its own, accepting in its wake whatever redefinitions of the terms “religion” and “faith” are consequent to it.

What, in the final analysis, is science anyway? To begin with, science is a collection of statements or affirmations which are taken as truths about reality (or some portion thereof).² To say that a statement is true means that the state of affairs which it affirms to be the case is, in fact, the case. To say that the statements of our science are “taken” as truths means that we deliberately include in science only statements which we have judged to be true as a result of a certain process. We can thus see that science involves at least two aspects, namely the process or method by which we judge statements to be true, and the collection of statements which results from this process.³ We will begin our discussion with a consideration of the collection of statements and then turn to a consideration of the process by which the collection is generated.

The statements which comprise science (or any given scientific discipline) are subject to highly complex interrelationships. These interrelationships serve to make some statements in the collection much more important than others. The two statements “this paper is white,” and the highly pregnant “ $e=mc^2$ ” are both equally true statements of physics, but these statements are not of equal importance. Let us try to make all of this a bit more precise.

The Abstract and the Concrete in Science

The statements of science have two components, an experiential (or empirical) one and a logical or theoretical one. Statements may vary with regard to their empirical and theoretical components. The theoretical component of a statement results in part from the use of *abstract* terms. These are terms which refer to entities or qualities not directly accessible to human observation. “Energy” and “mass” are examples of abstract terms while “paper” and

“white” are *concrete* terms, referring as they do to observable entities and qualities.

The theoretical component of a statement also results from the relative complexity of the linguistic structuring of the statement and of the terms which occur in it. For example, terms such as “velocity”, “light”, “mass”, and “energy” which occur in the statement “ $e=mc^2$ ” are complex when their mathematical definitions are spelled out.

In fact, the pregnant statement “ $e=mc^2$ ” has such a high theoretical component that it takes years of concentrated effort to assimilate its meaning. This statement is far removed from simple, direct physical observations like the whiteness of paper. On the other hand, “this paper is white” has such a simple linguistic structure involving the use of concrete terms that its meaning might even be conveyed by the one word “white” accompanied by appropriate gestures toward the physical object in question. It is inconceivable to think of conveying the meaning of a highly theoretical statement in this manner.

Of course, even a statement like “this paper is white” has some theoretical content. It involves abstractions which are not innately given to us and which develop in normal children only after several years of life experience. Also, a highly theoretical statement has some empirical component. When all of the abstractions and definitions hidden in “ $e=mc^2$ ” are spelled out, the result will be an affirmation which says something about human experience on some level. We should thus be careful to view the experiential and theoretical components of statements as being a matter of degree.

A statement with a high empirical component and a low theoretical component corresponds to the popular notion of a “fact”.

The Implication Relation between Statements

Often, but not always, the important statements of science are statements with a high theoretical component. However, what makes a statement important is not only its internal structure and meaning, but its relationship to other statements. The basic relationship between statements is that of “implication”, which means that if certain statements are admitted as true, then certain other statements must also be admitted as true, these latter being “logically implied” by the former. The nature of the necessity (the “must”) involved in implication has received detailed analysis. Avoiding such details as being beyond the scope of this article, let us say that the necessity results primarily from the way in which we use words. To take a traditional example, we say that the two statements “all men are mortal” and “Socrates is a man” together imply that “Socrates is mortal.” We mean by this that the very signification of the first two statements is such that the last statement is true if the first two are. Another way of expressing this would be to say that the single statement “if all men are mortal and if Socrates is a man, then Socrates is mortal” is logically valid. This statement has a sort of general form: “if all A is B and if X is an A, then X is a B.” We would call this a logically valid form meaning that no matter what names we might substitute for A, B, and X in the form, the resulting sentence would turn out to be true. For example we would accept as true the statement “if all dogs are cats, and if Descartes is a dog, then Descartes is a cat.” Notice, dogs are not cats and Descartes is neither a dog nor a cat, but rather what the statement asserts is that if certain conditions are fulfilled, then certain other conditions follow, and this total statement is true. The truth of this whole statement, then, depends essentially on the way we use words like “if, then...”, “and”, etc. The structure of a sentence in terms of these and other such logical words determines whether or not a sentence has a logically valid form.

Beyond this cursory analysis, we will have to trust the reader's intuitive understanding of the notion that a statement or statements may logically imply another statement (or statements).

Now, the complex interrelationships between the statements of a science result precisely from the fact that the truth of a given statement may logically imply the truth of other statements. A given statement is thus related to many other statements, both statements which the given statement implies, and statements by which the given statement is implied. The totality of this relationship determines the “position” or “importance” of the statement in the total context of science.

We might try to define the *weight* of a statement in the following way: The weight of a given statement of our science is the number⁴ of other statements now accepted to be true but which would be in doubt if we ceased to accept our given statement as true.⁵ Thus, if we dropped “ $e=mc^2$ ” from our list of truths, many statements come into doubt; but if we drop “this paper is white” from our truths, then few statements, if any, are affected (depending, of course, on the reason for our initial misstatement concerning the colour of the paper).

Generally speaking, statements with great weight are important statements of science.

There are two further points worth making here. The first concerns the way we have treated the individual statement as if it were an independent, meaning-bearing entity. Actually this is an oversimplification. A statement, just like a word or phrase, depends on the total context of its usage for its complete meaning. It is wrong to think of a statement as having a meaning in isolation from the context of its usage and its relationship to other statements.

The second point concerns the relationship between the statements of our science and the given phenomenon they seek to describe. It has become increasingly clear from observation of the practice of science that this relationship is often mediated via certain abstract structures or models. A model is an image or chart which we have conceived with our minds and whose structure reflects in part the way we expect the world (or that portion of the world which constitutes the phenomenon being investigated) to behave.⁶ We say that the model is *abstracted from* reality and that the phenomenon in question is an interpretation of the model. To say that such a model is abstract means, among other things, that it does not attempt to capture all of the phenomenon as we experience it.⁷ Whenever a model is involved in our study of a phenomenon, some of the statements of our science will be directly true not of reality but of the model. They become true of reality only when (and if) the model is properly interpreted in the phenomenon. Thus, whereas a given statement true of a model always remains so, it can be variously true or false of reality depending on the way the model is interpreted.⁸ Of course, relative to any model and/or any interpretation of that model, a given statement will be either true or false and not both. A given science may be conveniently thought of as the statements which make it up plus the model (or models) of reality they describe, but we do not insist on this as a comprehensive definition.

As sketchy as this analysis admittedly is, we have gotten some idea of why some statements of a science are much more important than others. Generally speaking, statements with a high theoretical component and statements with high weight are more important than statements with a low theoretical component and with low weight. (Nothing excludes the possibility that a statement could have a low theoretical component and still have high weight.)

Although it may seem surprising at first, it is quite possible for one statement to imply another statement without our being aware of it. This means that we actually discover relationships of implication by a process of examining the logical connections between statements. It also means that, contrary to popular conception, observation and experimentation are not the only processes involved in discovering scientific truth. We often discover new truths by discovering that a previously doubtful statement is implied by some of our known and accepted truths. Often this discovery takes place not as a result of any direct or immediate observation of the world but as a result of our intuition and subsequent proof of the existence of a relationship of implication.

It follows that it is wrong to consider that science is a “collection of facts”, though this is a frequently expressed popular view. We have already noted that “factual” statements are simply statements with a low theoretical component and these comprise only part of our scientific statements, and sometimes the least important part.

The Relativity of Knowledge

We can also see from our preceding analysis that scientific knowledge is relative. Scientific inquiry brings into play a host of human faculties such as reason, intuition, and experience, and these on different levels of profundity and objectivity. One cannot, however, explain in any simple manner the way in which these faculties interact to produce a given statement of science. The statements of science are arrived at by a process of repeated application of these human faculties, and by many different human beings. Years of experimentation (organized experience), theorizing (conscious reasoning and intuition), and discussion lie behind the one statement “ $e=mc^2$ ”.

It would be a mistake to say that we hold such a statement to be true *because* of reason, or *because* of intuition, or *because* of experience. In the final analysis, we hold something as true only because of everything else which we accept as true, that is, because this something is consistent with our experience and understanding of life as a whole. No statement can be held absolutely to be true, for no statement is independent of other statements and facts which may come to our attention at some future date. Nor is it independent of the meaning of other statements, a meaning which may be altered either by subtle shifts in the way we use words or by a change in explicit conventions and definitions. A combination of such factors can result in a change in the implication relation and thus a change in the truth value of some statements. Our knowledge, then, is relative. It is relative not only to time but to the whole body of our present knowledge which forms the context in which the statement has meaning in the first place.

In short, no scientific statement can ever be held to be immune from possible revision, forever beyond the possibility of modification. Insufficient appreciation by logical positivism of this fact has been one cause of the lack of acceptance by the scientific community of this pseudo-epistemology. A classic example is the case of Newton's laws of mechanics and his theory of gravitation which were in fact considerably modified in later centuries. One of the confirmations of the modification came as a result of experiences (experiments with subatomic particles) which Newton could not possibly have induced in his lifetime. This simple but dramatic example should serve as an object lesson to anyone disinclined to take seriously the relative nature of scientific knowledge which we have described above.

Because statements have meaning only in the total context of their usage, there is a residue of subjectivity

inherent in any statement. Though parts of the total context of science may involve highly articulated objectifications, the ultimate roots of understanding are always collective human subjectivity and so there is always “room for argument”. Total objectivity is not possible. Suppose, for example, that we try to eliminate the subjective element of the notion “red” by agreeing that the term shall be applied only to those objects which give a reading of thus-and-so on a spectroscope. Once this agreement is made, we may still argue sometimes about whether or not the needle really is quite on thus-and-so, and the unbeliever will go away saying that the definition was all wrong in the first place.

Our analysis of the nature of science and scientific statements has allowed us to appreciate several aspects of scientific knowledge. We have seen that science is much more than a “collection of facts” or an amassing of factual statements. We have seen that scientific knowledge is relative. And we have seen that total objectivity is impossible since man, the subject, is after all the developer of science.

Knowledge, in short, is *human* knowledge, because it is human beings who are the knowers. All of our discussion should be understood with this in mind. I emphasize this seemingly trivial point here, because failure to understand it often leads to some unfortunate emotional reactions to the otherwise clear points which we have summarized above. Some people feel that to assert that knowledge is rooted in human subjectivity or that knowledge is relative is to argue that the world “out there” is unreal or perhaps a figment of our imagination. There is, however, no such implication. Nothing we have said implies that there is no reality which operates independently of our will and our subjectivity. We have pointed out only that our understanding of this objective reality (whatever it ultimately turns out to be) is relative because our relationship to it is relative.

The Process of Knowledge

“But how,” one might ask, “does a statement come to be accepted as true in view of this incredibly complex situation you have sketched out for us?” Let us say that something like the following is involved: our subjectivity is bombarded with stimuli. In order to make sense out of this experience, we begin to make certain simplifying assumptions. These assumptions, if they are made unconsciously and without reflection, become embodied in what we call “common sense”. The child “knows” that getting hit by a car will hurt, because he has fallen down before and experienced the effects of sudden acceleration. This is clearly a learned and not an innate response. But the child cannot articulate any principles of acceleration or velocity and “prove” that he will be hurt.

Now if, on the other hand, our simplifying assumptions are made explicitly and consciously (or if we make explicit those assumptions which were previously unconscious) then we have the beginnings of science. We continue to build the science by examining the logical relations between our assumptions and their consequences (mathematics, theorizing) and testing our assumptions (experimentation, i.e., the willful bringing about of experience). This leads us ultimately to a well-organized “body of knowledge” which describes a model of reality, or a portion thereof. The collection of statements which make up this body of knowledge are the statements of our science. As we have already stressed, this body of knowledge and the model (or models) it describes will be continually revised in the light of new experiences, new assumptions, and newly-discovered logical relationships.

Simply put, it is the conscious, explicit organization of knowledge which makes it scientific. Science is organized knowledge. Or, to paraphrase the words of W. V. Quine, “science is common sense which has become self-conscious.”⁹ When we begin to organize our experience (experimentation), rather than simply profiting from fortuitous experiences, to direct our reasoning (mathematics and logic), rather than being satisfied with common-sense deduction, and to train our intuition (reflection and meditation), rather than relying on occasional flashes of insight—then we are engaging in scientific inquiry as opposed to common sense or unscientific (or, perhaps, prescientific) inquiry.

Notice that it is this conscious direction and organization of our inquiry which alone enables us to generate truths of high weight, that is, important statements. Science is not just a matter of discovering true statements, for every human being knows an unbounded number of trivially true statements: grass is green, fire burns, etc. In sum, human thought is bound to go on in any case, and human thought is bound to evolve (change as a function of time). Science, as a positive value, intervenes by giving certain directional principles so that we may profit more effectively from this evolution.

At bottom, the criterion for truth in science is essentially pragmatic. “Does it work the way it says it will?” is the question to be answered. If the theory says that such and such a thing must happen, then does it happen? It is by repeated application of this pragmatic criterion, interlaced with intervening theory, that we gradually build up our model of reality, our collection of true statements.

In closing this discussion, we might try to formulate a general criterion of scientific truth in somewhat the following manner: We have a right to accept a statement as true when we have rendered that statement considerably

more acceptable than its negation. Proof, in scientific terms, means nothing more than the total process by which we render a statement acceptable by this criterion. The possibility, even the notion, of “absolute proof” of anything is simply not within the domain of scientific method (again, contradictory to popular notions).

Similarly, we may formulate a summary definition of scientific method in the following terms: Scientific method is the systematic, organized, directed, and conscious use of our various mental faculties in an effort to arrive at a coherent model of whatever phenomenon is being investigated.

Knowledge and Conviction

The reader who may be reflecting on these things for the first time might well have an immediate reaction of the following sort: “If knowledge really is relative, as you say, then where does the sense of certitude which I possess come from?” The fact is that we do have seemingly deep-seated “feelings” of certitude about many things. In particular, the sense of our own existence or self-identity, and the sense of the objective reality of the physical world are two feelings which seem to be quite universal. Yet, the mentally ill frequently lose their sense of identity and existence. Even normal people have moments in which they have a sense of “unreality” about things. After all, we really could be dreaming and the world may be a monstrous illusion. The belief in the unreality of our existence or of the physical world is unscientific since scientific inquiry has led us to feel that the assumption of the reality of these things is considerably more acceptable than the contrary. Yet, if we are honest, we cannot rule out the possibility of having to revise our assessment in the future. How far it is from our everyday common-sense experience of matter (from which our sense of physical reality is largely derived) to the rational and scientific view of matter as energy, protons, electrons, etc.!

Thus, the “feeling” of certitude which we have is a psychological state. Our convictions may not really be as deep as we perceive them to be, and we may lose them in the future even though such a thing be inconceivable to us at the present moment. The feeling of certitude is not equivalent to knowledge, for knowledge is the process we have described in some detail above, but a sense of certitude can be had even when there is no knowledge.

I think that we can say something like the following concerning the relationship between knowledge and conviction: If our intellect accepts a concept as true, then our emotions begin to organize themselves around the idea, focussing on it, and “depending” on it. When this happens, the concept ceases to be a mere intellectual hypothesis or assumption. It becomes part of the way we live and expect things to behave.

Of course, an intellectual concept may be new or it may be an explication of a principle previously assumed on an unconscious level. Thus, there may already be considerable emotional orientation around a principle before we are able to make the principle explicit even to ourselves. Progress in knowledge frequently occurs when unconsciously assumed hypotheses are made explicit.

For example, from infancy our experience of the world leads us to expect unsupported objects to fall. This common expectation which we make in a more or less unconscious way can be explicitly formulated in the theory of gravitation. But the purely intellectual part of this theory does not express the emotional upset we would feel if suddenly it happened that an unsupported object did not fall. It would be only the most objective scientist who, observing an instance in which a dropped object did not fall to earth, could overcome his natural emotional reaction to the event and consider it merely as an intriguing counterexample to the present theory of gravitation.

There is nothing unscientific about this emotional and subjective dependence on our assumptions. Psychologists have shown this dependence to be so great that even a slight physical environmental change, such as being plunged into total darkness, can result in psychotic behaviour in a short period of time. We are so constructed that dependence on our assumptions is an inextricable part of our makeup. Our freedom lies in being able, through independent inquiry, to obtain knowledge and thus modify our conceptions and ultimately our emotional orientation. The very depth of this emotional attachment to our concepts serves as a pressure to force us to keep our concepts as close as possible to reality, because we are in for emotional shocks if our expectations are not fulfilled.

Knowledge and Faith

We need a good word to sum up this process of organizing our emotions around our assumptions, and religion has provided us with the word: faith. We can define an individual's faith to be his total emotional and psychological orientation resulting from the body of assumptions about reality which he has made (consciously or unconsciously). Of course, his faith may change with time as he has new experiences and modifies his concepts.

We can see from this analysis that faith is not some vague thing possessed only by a few religious mystics. Every human being has faith just as surely as he has a mind and a body. We are not free to choose not to have a faith any more than we can choose whether to be born. However, the quality of people's faiths differs considerably depending on the degree to which the basic assumptions on which a given faith is based are justified. Faith is the

process of organizing our emotional life around our assumptions, and so the quality of faith is directly proportional to the validity of the assumptions (again, conscious or unconscious) on which faith is based. We can see, now, why the Bahá'í Faith enjoins a scientific outlook on life as being essential. The scientific approach does not guarantee us absolute knowledge, this being beyond the possibilities of man in any case, but it does guarantee that our concepts will be as functional and as close to reality as possible.

We have already indicated that change and reappraisal characterize knowledge and faith. But what is also true is that we seem to be more suited to gradual, smooth transitions than to sudden, violent, cataclysmic ones. The latter tend to overstimulate us to the point of shock, rendering a new and pragmatic response difficult. This is to say that living is basically a serious business, and that it behooves us always to maintain a certain alertness in order to be able to modify our conceptions gradually, thus avoiding rude awakenings where we find that our faith has been totally blind and misguided.

In short, when our concepts are grossly unscientific, our faith becomes blind and unreal. We come to expect the wrong things and to be upset when they do not happen as we wish. We become hardened and adamant in our faith. Even when presented with clear contradictions in our conceptions we resist change, for we sense that even though the purely intellectual effort necessary to reconstitute our thought may be small, the emotional reorientation necessary to assimilate the new truth will be great. Thus, we may be led, by our emotions, to act against our own interest. How scientifically did Jesus say, "As a man thinketh, so is he," and how scientifically did Paul say, "The good I would do I do not." The more we persist in our blind faith the greater the inertia against acceptance of a truer picture of reality, and the greater the pain when the larger conception forces itself upon us, and we can avoid it no longer.

Our discussion here touches upon yet another common misconception about science and its relationship to religion. This is the idea that there is an intrinsic opposition between faith and reason. Rather than being in opposition, the two are part of the same process of knowing and living, as we have seen. Faith must be rational, and reason always operates within the context of our basic assumptions, that is, our faith. Our assumptions, when made explicit, are the purely intellectual component of our total faith.

I wish to close this section with two brief comments. The first is for the philosophically minded individual who may feel he sees a contradiction in that I make an absolute principle of the relativity of truth. This, I do not do. The reason for accepting scientific method is that it works. The statement "the scientific method is a good one" is to be evaluated by the same pragmatic criterion as any other statement. I admit the possibility that later experience may force me to revise my evaluation even of that statement. I thus do not make an absolute out of relativity.

The second comment is this: Though the nature of knowledge and of man's own limitations makes relativity an essential feature of knowledge, it may be that in practice most statements can be rendered either very acceptable or very unacceptable, thus reducing the existential component of "undecidability". The theoretical uncertainty remains even with the surest of statements, *but it is our explicit awareness of this uncertainty which is our greatest asset in adapting to our human situation*. Once we accept humbly the limitations imposed on us, it becomes practically possible to resolve a good many issues and to make real progress in formulating a meaningful and practical understanding of reality.

The Phenomenon of Revelation

Suppose that a certain phenomenon occurs in our corner of the universe precisely every two billion years. What is the chance that we will ever discover the rational basis for this phenomenon and the principles which govern its occurrence? Clearly the chance is small, almost non-existent. If we happen to be the generation that observes the phenomenon, then it will appear to us as a miracle since we will have no record of its having occurred in the lifetime of any man in our recorded history. We will be able to do no more than record the phenomenon ourselves. If our record survives for two billion years until the next occurrence, then perhaps some scientific genius will begin to see some relationship and even intuit an answer to the question. But more than likely the tendency will be to doubt the validity of a two-billion-year-old record. Moreover, we ourselves, as observers of the phenomenon, will probably begin to doubt that it ever happened. Since the infrequency of the phenomenon will not allow us to incorporate it easily into our existing rational and scientific framework, our natural tendency will be to attempt to explain away or to discredit the phenomenon. Of course, if this recalcitrant phenomenon is itself the cause of other important phenomena, then we will have to find some way to integrate it into our model of reality or we will fail to be scientific in our approach.

There is one physical science which is actually in this position to some extent. This is astrophysics. Of all the physical sciences, astrophysics is perhaps the most dependent on records kept by scientists two or three hundred years ago, for the observations of the planetary motions which can be made within one generation or by one man

may not suffice to observe certain important tendencies.

Though the original example of a periodic phenomenon having a period two billion years in length was hypothetical, it is quite possible that there are certain important phenomena which occur regularly at long intervals and whose pattern we have not succeeded in understanding.

If we consider the great religious systems of which there still exists some contemporary expression or some historical record, we will see that most have been founded by an historical figure, a unique personage. Islam was founded by Muhammad, Buddhism by Buddha, Christianity by Christ, Judaism (in its definitive form) by Moses, Zoroastrianism by Zoroaster, and so on. These religious systems have all followed quite similar patterns of development. There is a nucleus of followers gathered around the founder during his lifetime. The founder lays down certain teachings which constitute the principles of the religion. Moreover, each of these founders has made the same claim, the claim that the inspiration for his teachings and his influence was due to God and not to human learning or human devices. Each of these founders claimed to be the exponent on earth of an invisible, superhuman reality of unlimited power, the creator of the universe. After the death of the founder, an early community is formed and the teachings of the founder are incorporated into a book (if no book was written by the founder). And finally a great civilization grows up based on the religious system, a civilization which lasts for many centuries.

All of the statements in the above paragraph are statements with high empirical content and low theoretical content. These are a few facts about religious history. Of course, these facts are based on records and observations of past generations. We can try to dispute these records if we choose, but we must be scientific in our approach. In particular, the records of the older religions are of validity equal to any other record of comparable date. If, for example, we refuse to believe that Jesus lived, we must also deny that Socrates lived for we have evidence of precisely the same validity for the existence of both men. The records of Muhammad's life are much more valid than these, and are probably beyond serious dispute. Moreover, if we choose to posit the unreality of the figures whose names are recorded and to whom various teachings and influence are attributed, we must, at the same time, give an alternative explanation of the influence which these religious systems, elaborated in the name of these founders, have had. This is more difficult than one may be inclined at first to believe.

The major civilizations of history have been associated with the major prophetic religious systems. Zoroastrianism was the religion of the "glory of ancient Persia", the Persia that conquered Babylon, Palestine, Egypt, and the Greek city-states. Judaism was the basis of the great Hebrew culture which some philosophers, such as Jaspers, regard as the greatest in history. Moreover, Jewish law has formed the basis of common law and jurisprudence in countries all over the world. (It seemed very hard for a Russian to answer when I asked why they closed some shops on Sunday. Certainly, I surmised they did not believe in the nomadic stuturer named Moses who proclaimed the principle three thousand five hundred years ago to a bunch of ignorant wanderers in a desert.) Western culture, until the rise of modern science, was dominated by Christianity. The great Muslim culture invented algebra and preserved and developed the Hellenistic heritage. It was the greatest culture the world had seen until the rise of the industrial revolution began to transform Western culture.

We are, however, very much in the same position with respect to past revelations as we would be with regard to our phenomenon having a period two billion years long. We were not there to observe Jesus or Muhammad in action. The contemporaries of these people were certainly impressed by them, but these observations were made years ago and are liable, we feel, to embellishments. Even though it may be unscientific to try to explain away the influence of these religious figures, there is still a certain desire to do so. We are put off by certain obvious interpolations, and we are not sure just what to accept and what to reject.

The Bahá'í Faith offers the hypothesis that man's social evolution is due to the periodic intervention in human affairs of the creative force of the universe. This intervention occurs by means of the religious founders or Manifestations. What is most significant is that the Bahá'í Faith offers fresh empirical evidence, in the person of its own founder, that such a phenomenon has occurred, Bahá'u'lláh (1817-1892) claimed to be one of these Manifestations and He reaffirmed the validity of the past revelations (though not necessarily the accuracy of all details recorded in the ancient books). Here is a figure who walked the earth in recent times and whose history is documented by thousands of records and witnesses. There are, at the time of this writing, persons living who knew Bahá'u'lláh. Of course, even the death of these people will not make the historicity of Bahá'u'lláh less certain. Moreover, the teachings of Bahá'u'lláh are preserved in His manuscripts and so we are faced with a record of recent date and one of which there can be no serious doubt.

The only way we can judge Bahá'u'lláh's fascinating hypothesis that social evolution is due to the influence of the Manifestations is the way we judge any proposition: scientific method. This is the only way we can judge Bahá'u'lláh's claim to be one of these Manifestations. We must see if these assumptions are consistent with our knowledge of life as a whole. We must see if we can render these assertions considerably more acceptable than their negations. In the case of Bahá'u'lláh, we have many things which we can test empirically. Bahá'u'lláh made

predictions. Did they come true? Bahá'u'lláh claimed Divine inspiration. Did He receive formal schooling and did He exhibit power or knowledge not easily attributable to human sources? He insisted on moral purity. Did He lead a life of moral purity? In His teachings are found statements concerning the nature of the physical world. Has science validated these? He also makes assertions concerning human psychology and subjectivity and invites individuals to test these. Do they work? He engaged in extensive analysis of the nature of man's organized social life. Does His analysis accord with our own scientific observations of the same phenomena? The possibilities are unlimited.

Of course, the same criteria can be applied to other Manifestations, but the known facts are so much less authenticated and so restricted in number that little direct testing is possible. This does not disturb Bahá'ís because they believe that, essentially, there is only one religion and that each of the successive revelations is a stage in the development of this one religion. The Bahá'í Faith is thus the contemporary form of religion and we should not be surprised that it is so accessible to the method of contemporary science. Christianity and Islam were probably just as accessible to the scientific methods of their day as the Bahá'í Faith is to modern scientific method.

Each religious system has been founded on faith in the reality of the phenomenon of revelation, and those people associated with the phenomenon felt fully justified in their faith. But as the influence of religion declined and the facts of revelation receded into history, the sense of conviction of the truth of the phenomenon subsided, and this was only natural, as we have seen. It is therefore important to realize that the Bahá'í Faith offers much more than new arguments about the old evidence for the phenomenon of revelation. It offers empirical evidence for the phenomenon and it is frank to base itself on this evidence and to apply the scientific method in understanding this evidence. So much is this so, that I would unhesitatingly say that the residue of subjectivity in the faith of a Bahá'í is no greater than the residue of subjectivity in the faith one has in any well-validated scientific theory.

Exponents of traditional religions have tried to co-exist with modern science not by admitting the validity of scientific method in the approach to religion, but rather by contending that religious experience is so subjective, mystic, private, and incommunicable as to be “beyond” scientific method. The philosophy of religion based on these views is known as existentialism. In its modern form, existentialism was partly formulated in reaction to logical positivism. This latter philosophy insisted on “public verifiability” as an essential feature of scientific method. Without much thought, religionists accepted the positivistic analysis of scientific method, while applying existentialism to religion, and thus helped popularize the view that religion was hopelessly immersed in subjectivity, forever beyond the reach of scientific method. This has, in turn, led to a wide-scale rejection of religion by thinking people from all backgrounds. In closing my own discussion of these questions, I would like to correct this unfortunate view of religion.¹⁰

Let us begin with an example. A biologist looks through a microscope in his laboratory, sees a certain configuration, and exclaims: “Aha, at last I have the evidence that my theory is correct!” Question: How many people in the world are capable of looking at the configuration and verifying the findings of the biologist? Answer: Very few, almost none, probably only a few specialists in his field. The fact is that the biologist will publish his findings, and a few other qualified individuals will test his results, and if they seem confirmed, the scientific world at large will accept the theory as verified. The positivist might concede this but say: “But *if* an individual *did* go through the years of training necessary to understand everything the biologist knows, then the individual could verify the statement. Thus, I admit the statement is not practically verifiable by the public, but it is theoretically verifiable.” But even this is not enough. The fact is that the positivist will be constrained to admit that a great many people may be unable, through lack of intelligence or mental proclivity, ever, in theory, to validate the result. The fact is that the findings are not immediately accessible to the public at all. The findings can be verified only by individuals *capable of assuming and willing to assume the point of view of the researcher*.

Of course, statements with high empirical content are those most directly accessible to the public. But we have already seen that a science comprises many statements with a high theoretical component and these are not so accessible to the public. Moreover, many important statements of a science are to be found among these theoretical statements.

The moral of all of this is that the objectivity of science does not reside in the public accessibility of the majority of scientific statements. Science is not primarily a collection of facts or factual statements. Such statements taken in isolation are useless. Empirical statements are useful primarily for the relationships and models about reality that they suggest, i.e., for the theories that they tend to affirm or deny. The objectivity of science resides in the method we have described, for this method is what allows for the continual reassessment of our faith (our assumptions) which is so necessary to maintaining a functional view of reality.

Thus when I say that the Bahá'í Faith accepts the scientific method and that the faith of a Bahá'í has no greater residue of subjectivity than any other scientific theory, I mean just that. The empirical facts concerning the Bahá'í Faith are just as publicly verifiable as any empirical facts. And the deeper, theoretical truths are subject to the same degree of verification: Any individual capable of assuming and willing to assume the point of view of a Bahá'í can

verify the findings of a Bahá'í.

Conclusions

Working scientists have tended to be skeptical of religion because they have examined only the older religions where, as I have suggested, facts are few and theory is perverted by years of unscientific thinking. Few such scientists have undertaken an objective study of the Bahá'í Faith. They cannot, therefore, presume that they would not validate the finding of Bahá'ís until they have examined this most recent evidence for the phenomenon of revelation. A modern scientist would ridicule someone who judged modern science by studying the science of 500 or 2000 years ago. Yet these same scientists judge all religions without examining the modern form of religion which is the counterpart of modern science.

The truth is that scientists are human and that human beings, even scientists, can suffer from subtle but disastrous prejudices. When great scientists such as Albert Einstein and Julian Huxley have undertaken to write about scientific religion, they have been scorned by the scientific community. Most biologists began to regard Huxley as a senile old man when he undertook to write in this vein. Yet Huxley's thoughts on the subject are not only profound but they also constitute the true culmination of his scientific career. We, as individuals, can do nothing more than to apply the scientific method in our own life and to maintain a scientific faith. We must not allow false conceptions about science to mar the beauty of scientific method any more than we let false conceptions of religion mar the beauty of religion.

-
1. This essay has been revised for this compilation. The original is reprinted by permission from *World Order*, 3, No 3 (Spring 1969), 7-19. Copyright ©1969 by the National Spiritual Assembly of the Bahá'ís of the United States.
 2. We will use the term *phenomenon* to refer to a circumscribed portion of reality. Notice that it is the knowing subject who determines (perhaps unconsciously) what portion of reality he seeks to understand. He thereby contributes an element of his own subjectivity to the phenomenon, even though reality (other than the realm of the knower's own internal states) exists independently of him and of his needs.
 3. The point is that a statement can be true (or false) without our knowing it to be so. Moreover, the subsequent analysis in the present article will show that scientific method provides only relative rather than absolute criteria for determining truth. This means that we may unwittingly include some false statements in our science. However, it is one of the fundamental characteristics of science that we commit ourselves to the discipline of a method which reduces the possibility of falsehood as much as possible. Moreover, we reject from our science any false statement as soon as its falsity becomes apparent.
 4. Modulo logical equivalence.
 5. This can be made precise via the notion of finitely axiomatized theories.
 6. A deep philosophical question asks whether or not these models are, in some instances, part of objective reality, i.e., whether they exist independently of our minds. Plato gave a strong affirmative answer to this question, and the discussion of it continues in our time with regard to modern scientific practice. For a treatment of this philosophical problem in relation to the concept of scientific method of the present essay, see my "Platonism and Pragmatism", presented to the seventh annual meeting of the Society for Exact Philosophy, held at McGill University, June, 1979.
 7. If, for example, we are interested in counting books on a bookshelf, our model will consist of the abstract set (collection) of the books. In particular, this model totally ignores such things as the size of the books, their shape, their colour, their contents, etc.
 8. Thus, $1+1=2$ is eternally true of adding numbers (our model). It is also true of reality if we interpret adding as "physically putting together" and the numbers as counting, say, stones or apples, but false if we interpret the numbers as counting piles of sand or drops of water (while keeping the same interpretation of adding).
 9. See W. V. Quine, *Word and Object*, Technology Press of M.I.T., Cambridge, Mass., 1960. p. 3.
 10. See the third of the three essays of the present collection for a more thorough discussion of this question.

II. THE UNITY OF RELIGION AND SCIENCE¹

Of all the conflicts which exist in contemporary society none is more destructive both for individual and social life than the conflict between religion and science. For the individual, religion is the expression of a need for self-transcendence, a need to feel a purpose which is God-given and not self-created. For society, religion represents the need for unity, love, harmony, and co-operation. Science, by contrast, represents the need to know, to understand, to gain mastery over ourselves and our environment. This is true both for the individual who needs knowledge in order to function in his own life and for society which needs organized knowledge in order to progress.

Returning for the moment to the individual's viewpoint, we might say that the religious urge is an urge *to be encompassed*. It is an urge to feel oneself a part of something greater. The scientific urge is an urge *to encompass*. It is an urge to manipulate, control, direct, and dominate. There is no contradiction in these two urges since it is clearly possible for us to be in control on one level of our functioning while, at the same time, being controlled or encompassed on another level. Indeed, since our knowledge is always relative, we are in fact constantly in the position of having a relative mastery over part of our environment (including the self) while being encompassed by that part which we do not know. Moreover, the further we make progress in knowledge, the more we realize just how great our ignorance is. There is an increasing realization of being encompassed by the unknown which accompanies the extension of the boundaries of the known, for new knowledge also reveals the existence of hitherto unsuspected unknowns. Greater knowledge gives greater mastery and, at the same time, greater humility before the ever-increasing vastness of the unknown which lies before us.

Basically, then, the religious urge and the scientific urge are complementary, as each reinforces the other.

Of course, the thrill of first mastery which the adolescent experiences gives him a sense of omnipotence and an exaggerated pride in his knowledge. Some people never outgrow this immature response to knowledge and, therefore, become blind or insensitive to the vastness of their ignorance. This is the state of an individual or a society in which the scientific urge prevails while the religious urge is excluded.

In such a case people have a sense of being in absolute control, when, in reality, their control is very limited and relative. This is the situation which largely characterizes modern Western technological society. Western man has given in almost totally to the scientific urge, the urge to dominate, manipulate, control, and direct. Because he has lost his humility before his ignorance, he has gradually overproduced, overdirected, and overcontrolled. The results of this immoderation are to be seen everywhere. It has led to pollution and destruction of the natural cycle, as we begin to discover, perhaps too late, just how much damage we may have unwittingly done. It has led to manipulation of the public through mass media. It has produced engines of war of unimaginable destructive power.

On the personal level, the use of the social science of psychology, without the counterbalance of religion, has resulted in a painful self-consciousness for the individual as he enters an increasingly vicious circle of self-analysis and introspection in a futile attempt to encompass himself with his own mind.

We might say, then, that modern society is *adolescent* in that it is characterized by the false sense of omnipotence that comes from having abandoned itself to the scientific urge to the exclusion of the religious urge. Let anyone who feels that science alone can provide the basis for human progress ask himself whether, at this moment, the future of society stands in greater danger from science and its fruits or from religion and its fruits.

What happens when society abandons itself to the religious urge to the exclusion of the scientific urge? Since there will be a common feeling of humility before the unknown, there will be a strong sense of unity within such a society. People will be drawn together by the shared awareness of being encompassed by and submitted to unknown (generally nonhuman) forces. The *feeling* or *sense* of unity will be strong, but if the scientific urge is neglected, the concrete realization of that sense of unity will be very limited.

For example, without the means of organization, education, communication, and transportation, which come only from a certain mastery of the environment, the gathering of large groups of people will be difficult as will be the communication between the physically separate groups. It will, therefore, be difficult for people to share ideas, languages, history, and the like. Society will remain organized in small villages, each with its particular expression of the intuitively-perceived unity and with its particular history. There will be many different dialects and religious experiences. Because of the relative lack of mastery of the environment, inhabitants of different villages will be limited in the degree to which they can share their experiences. This will make it difficult for them to go beyond superficial differences and realize the basic similarity underlying various types of experience.

The dominant feature of such a society will be its *dependence* on the unknown forces. We might say, then, that such a society is *childlike* because the lack of mastery, the dependence, and the passivity with respect to the environment are all characteristics of the stage of development in the life of an individual which we call childhood,

Maturity or adulthood in the life of the individual comes with the integration and balance of these two urges. It does not come by remaining continually adolescent. The adolescent, because he is unsure of himself, needs, in his typical Western manifestation, continually to prove his independence by rebellious and exaggerated gestures. The adult, however, knows how to accept a mature and conscious dependence. The adult knows, for example, that he is dependent on society, and so he obeys its laws. The extreme form of adolescent independence is lawlessness,

To be sure, the dependence of the adult is no longer the absolute dependence of childhood. It is a dependence based on the relative mastery of the adolescent. It is a dependence which is conscious because the adult is aware of his limitations as well as of his mastery. He thus abandons his adolescent sense of omnipotence for a more realistic give and take. The giving results from the degree of mastery, and the taking from an intelligent realization of need. It is the foolish person who thinks that, because he is adult, he has no genuine needs and, therefore, does not have to take. It is the immature adult who remains in a childish state of exaggerated dependence and crippled mastery.

The Bahá'í principle of the unity of religion and science applies this same principle of complementarity, so clearly true for individuals, to human society as a whole. 'Abdu'l-Bahá has said:

Religion and science are the two wings upon which man's intelligence can soar into the heights, with which the human soul can progress. It is not possible to fly with one wing alone! Should a man try to fly with the wing of religion alone he would quickly fall into the quagmire of superstition, whilst on the other hand, with the wing of science alone he would also make no progress, but fall into the despairing slough of materialism.²

Concerning the state of religion without science, 'Abdu'l-Bahá has further stated:

Any religion that contradicts science or that is opposed to it, is only ignorance—for ignorance is the opposite of knowledge.

Religion which consists only of rites and ceremonies of prejudice is not the truth.³

And again:

All religions of the present day have fallen into superstitious practices out of harmony alike with the true principles of the teaching they represent and with the scientific discoveries of the time.⁴

Concerning the positive effects of the unity of religion and science, He says:

When religion, shorn of its superstitions, traditions, and unintelligent dogmas, shows its conformity with science, then will there be a great unifying, cleansing force in the world which will sweep before it all wars, disagreements, discords and struggles—and then will mankind be united in the power of the Love of God.⁵

Concerning the result of science without religion, Bahá'u'lláh has written:

The civilization, so often vaunted by the learned exponents of arts and sciences, will, if allowed to overleap the bounds of moderation, bring great evil upon men. Thus warneth you He Who is the All-Knowing. If carried to excess, civilization will prove as prolific a source of evil as it had been of goodness when kept within the restraints of moderation.⁶

Concerning the attempt of man to find happiness through purely material pursuits, He has also written:

Say: O people! Let not this life and its deceits deceive you, for the world and all that is therein is held firmly in the grasp of His Will. Are ye rejoicing in the things which, according to the estimate of God, are contemptible and worthless, things wherewith He proveth the means of the doubtful?⁷

In another passage He states flatly:

Your sciences shall not profit you in this day, nor your arts, nor your treasure, nor your glory, Cast them all behind your backs, and set your faces towards the Most Sublime Word through which the Scriptures and

the Books and this lucid Tablet have been distinctly set forth.⁸

Since it is the adolescent excess of the scientific urge that characterizes the modern world, the move to maturity can only come by the rebirth of religion on a mature, adult level. Man must acquire again a genuine humility and deep respect for God, the creative force of the universe. He must realize that it is only by this force, and this force alone, that all of his discoveries and technological advances have been made. In this regard, Bahá'u'lláh says:

Every word that proceedeth out of the mouth of God is endowed with such potency as can instill new life into every human frame, if ye be of them that comprehend this truth. All the wondrous works ye behold in this world have been manifested through the operation of His supreme and most exalted Will, His wondrous and inflexible Purpose.⁹

Obstacles to the Unity of Science and Religion

A half century ago, the prime obstacle to the unity of science and religion was probably religion. In 1911, 'Abdu'l-Bahá affirmed as much when he described the results of prevailing religious dissension and discord:

The outcome of all this dissension is the belief of many cultured men that religion and science are contradictory terms, that religion needs no powers of reflection, and should in no wise be regulated by science, but must of necessity be opposed, the one to the other. The unfortunate effect of this is that science has drifted apart from religion, and religion has become a mere blind and more or less apathetic following of the precepts of certain religious teachers, who insist on their own favourite dogmas being accepted even when they are contrary to science.'

Thus it was the outmoded and narrow views of religionists which initially created the opposition between religion and science.

This opposition has, if anything, worsened in the years since 'Abdu'l-Bahá made the above statement. Religious dogmatism and dissension have continued, giving rise to open religious conflict in such places as the Middle East, India, and Northern Ireland. Each of the traditional religious orthodoxies has continued to press, harder and harder, its claims to possess an absolute or final truth, excluding the possibility of reconciliation with other orthodoxies. Even such a movement as Christian Ecumenism is severely limited in that its goal is only an institutional unity of certain Christian denominations rather than a genuine move towards universal religious reconciliation.

Moreover, to the voices of traditional orthodoxy have been added a host of newer movements, each with its own claim to possess a unique or absolute path to the truth. Various cults, various forms of meditation, of spiritual and physical discipline have been put forth as the answer to man's religious quest. At the same time, a rebirth of interest in astrology, in occultism, in satanism, in witchcraft, and in other forms of supernatural experience has taken place.

Since it is clearly impossible to reconcile the absolute and exclusive claim of each of the various sects, movements, and orthodoxies in the world today, what is the rational seeker after religious truth to do? One common-sense answer, and one which many individuals have undoubtedly adopted as a solution, is to consider that there is some truth in each of these movements and that their basic fault lies precisely in the arrogant attempt of each one to erect a partial and relative vision of truth into an absolute. The historian and religious thinker Arnold Toynbee has described poignantly his own reaction to this dilemma:

It is, of course, impossible that each of the higher religions can be right in believing that it has a monopoly of truth and salvation, but it is not impossible that all of them should have found alternative roads to salvation and should have seen truth, "through a glass, darkly", in one or other of truth's different facets.... A belief in the relative truth and relative saving-power of all the higher religions alike will seem tantamount to unbelief in the eyes of an orthodox believer in any one of them.

...It lies with the orthodox, not with me, to decide whether, in their eyes, I am within their pale or am beyond it. But it lies with me, not with them, to feel the feelings I, too, feel towards those sublime figures that are revered and adored by me as well as by their orthodox followers or worshippers. No human writ of excommunication can come between those saviours and me.¹¹

One senses a strong integrity in a position such as that taken by Toynbee. Yet such a position, though helpful for the individual himself, does not solve the *social* problems resulting from the religion-science opposition. For

there is no identifiable community of the various individuals who may have arrived at a view like Toynbee's. Indeed, Toynbee himself makes a similar remark in a footnote to the above-quoted passage:

In any case, whatever light my critics may, or may not have thrown on my position, they have thrown much light, I should say, on a far more interesting point. They have brought out the truth that, at the present time, the Western World is a house divided against itself on the fundamental issue of religious attitude and belief.¹²

We may summarize, then, by saying that the first major obstacle to the unity of science and religion is the widespread feeling that there is no religious voice which recognizes the relativity of religious truth and which, at the same time, speaks with deep wisdom and authority on the spiritual questions of life which every man sooner or later must face and ask himself. There is widespread confusion in the realm of religion, and this confusion has been made worse, rather than being helped, by the multiplication of claims to absolute authority and absolute truth which are now heard from all directions.

Another major obstacle to the unity of religion and science derives from the fact that a complex of science and technology, divorced from all moral and ethical influence, has now become the dominant force in society. This all-pervasiveness of science and technology has led many to a feeling of hopelessness. People often feel that science has shown religion to be a farce, and yet they recognize that science and technology have not made us deeply happy. In fact, widespread unhappiness—unhappiness on a scale never before seen—is one of the most striking features of the contemporary scene.

In spite of this dissatisfaction with the sterility of modern technological existence, many still feel that they cannot turn with integrity to religion since, they believe, science has proved that God does not exist and that religious experience is a sham. Because religious experience is much more intensely subjective than technology, people are led to mistrust their own deepest emotions and their profoundest religious and spiritual longings. In this way does the misguided belief about technology lead to a certain self-alienation—people are led to deny the validity of their own truest needs and deepest longings. These longings are relegated to the domain of childish and immature emotions (perhaps to be “cured” by psychoanalysis).

This second major obstacle to the unity of religion and science is, then, the feeling that science has somehow proved the non-existence of God or at least invalidated spiritual and religious experience and longings.

We now want to discuss certain aspects of some of these obstacles.

The Obstacle of Scientific Materialism

The characteristic feature of science, and the basis of its unity, is scientific method. Scientific method consists in the systematic and organized use of our various mental faculties in an effort to arrive at a coherent understanding of whatever phenomenon is being investigated.

Of course, every human being on earth knows things and uses his mental faculties in order to attain this knowledge. What distinguishes the method of science is the systematic, organized, and conscious nature of the process. Science is self-conscious common sense. Instead of relying on chance experiences, one systematically invokes certain types of experiences. This is experimentation (the conscious use of experience). Instead of relying on common-sense reasoning, one formalizes hypotheses explicitly and formalizes the reasoning leading from hypothesis to conclusion. This is mathematics and logic (the conscious use of reason). Instead of relying on occasional flashes of insight, one systematically meditates on problems. This is reflection (the conscious use of intuition).¹³

The practice of this method is not linked to the study of any particular phenomenon. It can be applied to the study of unseen forces and mysterious phenomena as well as everyday, common occurrences. Failure to appreciate this universality of scientific method has led many people to feel that science is really only the study of matter and purely material phenomena. This narrow philosophical outlook, plus the historical fact that physics was the first science to develop a high degree of mathematical objectivity, has led to a common misconception that scientific knowledge is inherently limited only to physical reality and material phenomena.¹⁴ Such a misconception naturally retards the unity of science and religion since religion definitely claims to have knowledge of nonmaterial aspects of reality. Once we see that the basis of science is its method and not any particular object of study, we can discard this misconception.

Physics and chemistry result when we turn scientific method to the study of the phenomena of nonliving matter. But if, keeping the same method, we turn to the study of living matter, the result is biology. If we turn to human

beings as the objects of our study, we obtain psychology, sociology, and the other “human sciences”. Bahá’u’lláh has referred to religion as the “*science of the love of God.*”¹⁵ Thus religion results when we turn scientific method to the study of the unseen creative force of the universe which we call God.

It might be objected by some that the unity of science lies not in its method but in its goal, which is to know. However, there are other disciplines such as magic and occultism, both contemporary and historical, which claim knowledge as their objective. Yet these disciplines are not compatible with science and are rejected by science because their method is unscientific. Thus to be scientific it is not sufficient to desire knowledge or to proclaim knowledge as one's goal.

Another feature of scientific knowledge is its *relativity*. Because science is the self-conscious use of our faculties, we become aware that man has no absolute measure of truth. The conclusions of scientific investigations are always more or less probable. They are never absolute proofs. Of course, if a conclusion is highly probable and its negation highly improbable, we may feel very confident in the results, especially if we have been very thorough in our investigation. But realization and acceptance of this essential uncertainty and relativity of our knowledge is important, for the exigencies of human existence are often such that we are forced to act in some instances before we have had time to make such a thorough investigation. It, therefore, behooves us to remain constantly alert to the possibility that we may, in fact, be wrong.

Such a realization is also important for the unity of science and religion, for there are many who take the materialistic personal philosophy of some scientists as indication that science has proved that God does not exist. There are even some scientists who claim that science has proved that God does not exist. Such claims are foolish and ridiculous in the light of the universally recognized relativity of scientific conclusions, and especially as no scientist or scientific discipline has ever claimed to have undertaken a systematic, scientific study of the question of God's existence and come up with the carefully validated conclusion that there is no God.

We should not be overly surprised at such contradictions in behaviour, however, since scientists are human and are subject to some of the same disastrous prejudices which afflict the generality of mankind.

There are, in fact, those who have consciously attempted to use science as a “cover” or support to buttress some particular social or philosophical prejudice, or to justify some desired (but not necessarily justifiable) course of action. We must be constantly on our guard against such false uses of science; for they corrupt science, and they block effective attempts to establish the unity of science and religion. Such false uses of science are comparable to false uses of religion, as for example, when religious institutions in the past have lent support to oppressive and immoral persecution of minorities.

It is heartening to note that, in recent years, increasing numbers of scientists have become sensitive to such false uses of science and have begun to raise their voices in public to point them out. Over the years there has been a small but persistent intellectual tradition of intelligent criticism of the false uses of science. The writings of Lewis Mumford are a strong contemporary example of this tradition. The closing paragraphs of his cogent *The Pentagon of Power* are virtually poetic in their appeal:

Reformers who would treat the campaign against environmental and human degradation solely in terms of improved technological facilities, like the reduction of gasoline exhaust in motorcars, see only a small part of the problem. Nothing less than a profound re-orientation of our vaunted technological “way of life” will save this planet from becoming a lifeless desert... For its effective salvation mankind will need to undergo something like a spontaneous religious conversion: one that will replace the mechanical world picture with an organic world picture, and give to the human personality, as the highest known manifestation of life, the precedence it now gives to its machines and computers... Of only one thing we may be confident. If mankind is to escape its programmed self-extinction the God who saves us will not descend from the machine: he will rise-up again in the human soul.¹⁶

Toynbee states a similar conclusion in more general terms:

Religion is Man's attempt to get into touch with an absolute spiritual Reality behind the phenomena of the Universe, and, having made contact with It, to live in harmony with It. This activity is all-pervading. It comprehends all the others. Moreover, it is Man's lifeline. When once a creature has acquired, as Man has, a conscious intellect and a free will, this creature must either seek and find God or destroy itself.¹⁷

Scientific Atheism

Even though science has not disproved the existence of God, there still persists a feeling that the success of science and technology, independent of any religious orientation, has undermined the credibility of such belief. Belief in God is often seen as a hangover from primitivism. Primitive man saw God, the unseen creative force, in everything. He was in awe of the forces of nature. This sense of awe of primitive man is commonly attributed to his ignorance of the basis of natural phenomena. To many, our modern scientific understanding of these phenomena seems to have taken all the “mystery” out of reality. Modern man feels guilty or childish about such feelings of awe about his need to be encompassed. Science seems to have gradually reduced the possible domain of God's existence to a vanishing point. Physics has removed God from nature, and psychology has removed Him from the human heart.

Again, further analysis reveals such an attitude as a misconception. For science has revealed to man not only “facts” and “things” but also a fascinating world of energy and unseen forces. Consider, for example, the view of matter and the material world which physics soberly presents to us for our consideration as the rational explanation for natural phenomena. The astonishing diversity of matter which we daily encounter is really due, we are told, only to different combinations of a small number of basic elements. Moreover, these elemental substances are themselves just different configurations of certain basic elementary particles which, in themselves, have no individuality. Furthermore, these basic particles are really just relatively stable forms of energy, and each of them is convertible, under suitable conditions, into energy. Thus all the stuff of everyday experience is ultimately just different configurations of energy.

And what, we may ask, is energy? We may be successful in describing some of the ways energy works—some of the effects it produces. But when we ask what energy *is*, we come up against a mystery. And if we are humble enough, we realize that this is the same mystery primitive man intuitively perceived. Our science has served only to render our ultimate ignorance more explicit by showing how truly universal is this mysterious force, for now we see everything as a configuration of this one force.

The most striking feature of this energy, this ultimate mysterious force whose existence has been so strongly confirmed by science, is its ability to organize itself in ever more subtle forms and configurations. It is easy, for example, to characterize the *direction* of biological evolution. Biological evolution represents the organization of matter (thus energy) in ever more complex units, involving greater and greater complexity and specialization, and greater interdependence among the component parts. Man is “higher” than other mammals precisely because of his relatively greater complexity of physiological organization.

Let us compare man with, say, a colony of one-celled organisms of comparable size. On the one hand, there is man with his cells specialized to form tissues which combine to make organs which combine to form systems which combine to form the human organism. This hierarchical structure enables man to function in an incredibly multifaceted way. Moreover, the continued, moment-to-moment existence of man is dependent on a host of favourable conditions. On the other hand, we have the colony of, let us say, bacteria which are capable of functioning only individually on the crudest level, each individual being virtually immortal (some bacteria can remain dormant for centuries without dying).

In particular, the human brain is the most complex physical structure known to us in the universe. Even the galaxies of stars and the movements of the planets cannot begin to compare in complexity to the subtle and highly organized human brain. The most complex computers invented to date are roughly equivalent to the brain of an ant when compared with the structure and complexity of the human brain.

Now, one well-known feature of the human organism is its self-awareness. Furthermore, scientific investigation has confirmed what man has always suspected: he did not create himself. It is not man who has organized himself in this subtle and complex way. Rather man awoke to his self-awareness and his subjectivity which he owes to the energy of which he is but a configuration.

We can thus pose the following clear question: Is it more reasonable to assume that a force capable of producing an effect (man) which is endowed with subjectivity and intelligence has also such characteristics, or is it more reasonable to assume that this force is deprived of such features? It is clearly more reasonable to suppose that such a force is at least as subtle as the effect it has produced. In fact, we *know* that energy is capable of subjectivity and intelligence because we have self-awareness and intelligence and we *are* configurations of this energy. Moreover, this force has produced other effects which man cannot produce (namely, it has produced man as well as the universe). Man has discovered himself and the universe, but he has not produced these phenomena. Thus we are inevitably led to hypothesize that this force is, in fact, even *more* subtle than man himself. Following a long-established tradition, we call this force God.

Thus an unprejudiced application of scientific method to the facts of human existence leads to the probable conclusion that God exists and that He has consciousness and intelligence. Notice, however, that although reasoning

and logic can lead us to the existence of God, they cannot give to us the *experience* of God. This is the role of religion, of which more will be said later on.

It is as if we had arrived at the conclusion, by scientific investigation, that there must be humanoid creatures on a planet which we lacked the technical means of visiting. The knowledge of the existence of these creatures would not in itself give us the intersubjective experience of their personalities.

There are several objections which are often raised against the otherwise clear conclusions we have drawn in the preceding. It is often objected that the process which has produced man is due to chance and not to any force. Let us examine briefly this contention.

In scientific observation, a phenomenon is said to be due to chance when all logical possibilities occur with equal relative frequency. When such is not the case, and more especially when such deviations occur in some consistent way, we infer the existence of a force which is said to “cause” the deviation from random behaviour. For example, it is logically possible for a dropped object to move in any direction (or not to move at all). But we observe that dropped objects do not move at random. They all move perversely in a downward direction. We infer the existence of an unseen force, called gravity, which produces this effect. The effect is, in a word, a consistent deviation from presumed equiprobability. We do not call gravity God because the effect produced by this force (the downward falling of objects) is not so marvelous as the effect we call man. Notice also that in space, when one is outside the reaches of the earth's gravity, randomly dropped objects do move in a random direction.

In scientific investigations of phenomena it, therefore, becomes important to decide what events are probable and what events are improbable. In this way we can have some idea when a phenomenon is due to an unseen force and when it is due to chance. Science has discovered such a principle, it is called *the second law of thermodynamics* or *Carnot's principle*. This principle says, simply stated, that *order* is improbable and *disorder* is probable. This is so because order represents a limited number of stable configurations whereas any possible configuration represents disorder.

Let us compare, for example, a brick house and a pile of bricks. I can transform a brick house into a pile of bricks by moving the bricks one by one *in any possible sequence*. I am free to take a top brick or a bottom brick or a middle brick first. But to build the house, it is *physically impossible* to put in a top brick before putting in any bottom brick. Only a certain limited number of possible sequences will produce the house. The house represents order, and the pile of bricks disorder (relative to each other).

Thus Carnot's principle is nothing more than a precise statement of what we all intuitively feel about chance phenomena. The nonscientist would be just as shocked as the scientist to find that the wind or a thunderstorm had transformed a pile of bricks into a well-built house (even if we had left the pile of bricks to itself for many years). But we are not at all shocked if such a storm transforms a house into a pile of bricks.

Now we have earlier on remarked that man, in particular man's brain, is the most highly ordered structure in the universe. Thus, by Carnot's principle, it is also the least probable. It is, therefore, the least likely to have been produced by a purely random process.

Biologists point out that the fundamental mechanisms of evolution are mutation, by which is meant spontaneous genetic change, and natural selection, by which is meant the superior survival rate over successive generations, and within a given population, of those genotypes whose phenotypical (physically observable or behavioural) characteristics better suit them to function within the natural milieu in question.¹⁸ Natural selection eliminates forms and organisms which are less well adapted, and thus tends to decrease variation (diversity) within a population. Mutation, however, has the opposite effect, that of increasing the genetic diversity. Evolution is a process of moving from lower (less complex) to higher (more complex) forms. Such a process necessarily involves periodic (though not necessarily regular) significant increases in variation and thus cannot depend on natural selection alone. In other words, the contribution of natural selection to the evolutionary process depends ultimately on the occurrence of mutations since if there are no mutations there will ultimately be an insufficient diversity of forms from which nature can select. But since, as we have already stressed, the direction of evolution is precisely from lower (that is, less ordered and thus more probable) to higher (that is, more ordered and thus less probable) forms, it is unreasonable to suppose that the occurrence of mutations in the evolutionary process was wholly or primarily due to chance. We cannot reason from the *fact* of mutation to the conclusion that the *cause* of mutations in evolution is chance alone. We must be careful to distinguish between the known facts of the evolutionary process and the possible theoretical models used to explain and interpret the facts.

Moreover, what is needed to explain biological evolution is not just an occasional *favourable* mutation (almost all observed mutations are unfavourable) but a consistent sequence of favourable mutations in the right place and at the right time intervals (if the first one happens in Australia and the next one in Europe there cannot be any *process* of evolution). Nor did evolution take place in an “unlimited” amount of time. Rather, the whole process occurred in a period no greater than three billion years, and the major part of it (from small, primitive animals to man) in about

one-half billion years. Thus there was not time for an “infinite” or unlimited “experimentation” to take place.

In other words, the phenomenon of biological evolution presents us precisely with a clear, consistent deviation from randomness of the sort discussed above. We must therefore conclude the existence of a force which is the cause of biological evolution. Anyone for whom this conclusion is unacceptable must decide for himself why he feels such an inference to be unacceptable here while being generally and universally acceptable elsewhere in science.

It is obviously impossible in a short article such as this to enter into extended detailed discussion of these points on which scores of books have been written. The reader who is interested in pursuing the technical side of the question can do so on his own.

In closing this discussion, let us treat one last point, however. Recent advances in biology have led to speculation that man may one day be able to reproduce life in a test tube. Such knowledge or control over the vital process would, it is sometimes said, show that God does not exist after all because man would have discovered the secret of life. But no such conclusion is logically forthcoming. After all, man already knows how to reproduce life. Babies are born every day. What man clearly did not create is the *process* by which life is reproduced. Thus, even if the human brain finally succeeds in discovering the secret of life, this will not change the *fact* that man did not create the vital process which he would then understand. Moreover, man's brain which does the understanding would itself owe its existence to this vital process which it did not create. *Discovery is not creation.*

Indeed, no discoveries that man can ever make in the future can change the eternal fact that man is not responsible for bringing into being the process which has produced his brain and its understanding. Man is not responsible for his own existence; and he depends, therefore, on something other than himself to which he owes his existence.

A Solution to Religious Dissension

False concepts and false uses of science are only one-half of the problem. For even if one is quite willing and desires to turn to religion, the question remains: where to turn? For the author of this article, and for many others on this planet, the answer to this question has turned out to be: the Bahá'í Faith. Rather than engaging in any abstract dissertation on the details of Bahá'í doctrine—which are already adequately available in other sources—we have thought better to describe in a straightforward manner those features of the Bahá'í experience which have led so many to feel that it furnishes a deeply satisfying answer to their religious quest.

First, and most important, the Bahá'í Faith renders accessible to the individual that experience of self-transcendence and mystic communion with the Spirit of God which is the heart of religion. We have previously remarked that logic and reason can prove to us the existence of God but cannot give us the experience of communion with God. Concerning proofs of the existence of God, ‘Abdu’l-Bahá has said:

...apply thyself to rational and authoritative arguments. For arguments are a guide to the path and by this the heart will be turned unto the Sun of Truth. And when the heart is turned unto the Sun, then the eye will be opened and will recognize the Sun through the Sun itself. Then (man) will be in no need of arguments (or proofs), for the Sun is altogether independent....¹⁹

In other words, the reality of the experience of communion with God carries with it a deeper conviction and sense of the reality of God than the purely intellectual acknowledgement of God's existence which comes from logic and reasoning.

How, we might well ask, is this communion obtained? How does God reveal to us something of His personal and subjective nature in a way that is accessible to us? Since, as we have already, observed, man is the most highly ordered and refined phenomenon accessible to us, it would be only logical that God might choose precisely this instrument for his Self-Revelation, it is clearly impossible for God to reveal His most personal and subjective attributes to man through an instrument such as a rock or a tree which does not itself possess consciousness. Bahá'ís believe that this act of Self-Revelation through a chosen human instrument has occurred periodically in history, (our collective experience). This is clearly necessary if the intersubjective knowledge of God is to remain constantly accessible to us, for with the passage of time the immediacy and force of such a revelation tends to be lost and dissipated.

Bahá'ís call these chosen human instruments Manifestations of God. The Manifestations are none other than the great religious founders of history, some of whose names we know: Abraham, Moses, Jesus, Muhammad, Buddha, Zoroaster, and most recently Bahá'u'lláh, the Founder of the Bahá'í Faith. Concerning the revelation of God through these Manifestations, Bahá'u'lláh has said:

...all things, in their inmost reality, testify to the revelation of the names and attributes of God within them.... Man, the noblest and most perfect of all created things, excelleth them all in the intensity of this revelation, and is a fuller expression of its glory. And of all men, the most accomplished, the most distinguished, and the most excellent are the Manifestations of the Sun of Truth. Nay, all else besides these Manifestations, live by the operation of their Will, and move and have their being through the outpourings of their grace.²⁰

Is it, therefore, as a result of the comings of these Manifestations that man has the possibility of communion with God. ‘Abdu’l-Bahá puts it simply:

The knowledge of the Reality of the Divinity is impossible and unattainable, but the knowledge of the Manifestations of God is the knowledge of God, for the bounties, splendours, and divine attributes are apparent in them. Therefore if man attains to the knowledge of the Manifestations of God, he will attain to the knowledge of God; and if he be neglectful of the knowledge of the Holy Manifestation, he will be bereft of the knowledge of God.²¹

The primary key to maintaining this communion of consciousness with God is the daily discipline of prayer and meditation on the words of the Manifestation. Bahá’u’lláh states:

Say: The first and foremost testimony establishing His truth is His own Self. Next to this testimony is His Revelation. For whoso faileth to recognize either the one or the other He hath established the words He hath revealed as proof of His reality and truth. This is, verily, an evidence of His tender mercy unto men. He hath endowed every soul with the capacity to recognize the signs of God. How could He, otherwise, have

These words are the instrument which creates the consciousness of the presence of God: for meditation, to be successful, must have some object or focus.

Although the experience of communion with God is an individual, subjective one, there are two things in the Bahá’í experience which tend to give it a sense of universality and objectivity. First, it is repeatable for the individual. If one had only an occasional “flash” of mystic feeling, one could well doubt whether such experience was valid and was not, rather, some form of autosuggestion. But Bahá’ís find that when they practice the daily discipline of prayer and meditation on the words of Bahá’u’lláh, the experience of communion is constantly renewed, accessible, and repeatable.

In a striking statement, Bahá’u’lláh boldly promises that the experience of communion with God will always be accessible through this discipline:

Intone, O My servant, the verses of God that have been received by thee, as intoned by them who have drawn nigh unto Him, that the sweetness of thy melody may kindle thine own soul, and attract the hearts of all men. Whoso reciteth, in the privacy of his chamber, the verses revealed by God, the scattering angels of the Almighty shall scatter abroad the fragrance of the words uttered by his mouth, and shall cause the heart of every righteous man to throb. Though he may, at first, remain unaware of its effect, yet the virtue of the grace vouchsafed unto him must needs sooner or later exercise its influence upon his soul.²³

Second, the experience is general or universal. It is not reserved for some elite and withheld from others. It is not vague or uncommunicable. All Bahá’ís experience it and find that they can discuss it and share it with others with the same feeling of clarity and coherence that one naturally has about any other multisubjective experience such as seeing a red object or eating a delicious meal.

Another important feature of Bahá’í experience is the explicit acceptance by the Bahá’í Faith of the principle of the relativity of religious truth. Shoghi Effendi has said:

The Revelation proclaimed by Bahá’u’lláh, His followers believe, is divine in origin, all-embracing in scope, broad in its outlook, scientific in its method, humanitarian in its principles and dynamic in the influence it exerts on the hearts and minds of men. The mission of the Founder of their Faith, they conceive it to be to proclaim that religious truth is not absolute but relative, that Divine Revelation is continuous and

Such total and explicit recognition of the principle of the relativity of religious truth is a hallmark of the Bahá'í Faith and an important element in permitting its followers to reconcile scientific method with religious and spiritual needs.

The Bahá'í Faith is not exclusive and creates unity rather than dissension. This aspect of Bahá'í experience naturally derives from the fundamental principle of the relativity and progressive nature of truth mentioned above. Bahá'u'lláh has said that the fundamental purpose of religion is to create love and unity and that whenever it happens that a religion ceases to perform this function and creates division and opposition, then it is better for such a religion not to exist.

Some people who are otherwise attracted to Bahá'í teachings and principles sometimes hesitate to identify themselves with the movement for fear that such identification will somehow cut them off from other people. Because the Bahá'í Faith is numerically smaller than some other religious groups, or because the Bahá'í Faith is new and therefore sometimes unknown to or misinterpreted by the public, individuals perhaps fear that identification with it will subject them to similar attitudes of mistrust on the part of others.

However apparently reasonable such fears may seem, this is not the experience which Bahá'ís have. Genuine human relations are based on truth, honesty, love, and the ability to communicate deeply with others. Bahá'ís find that their Faith gives them new inner resources and tools which permit them to approach human relationships in the light of these principles. Rather than feeling “cut off”, Bahá'ís experience a feeling of vastly increased ability to communicate and indeed commune with others, be they Bahá'í or non-Bahá'í. These new personal resources compensate a hundredfold for any superficial and ignorant criticism which may, from time to time, be forthcoming. Moreover, both psychologists and philosophers have pointed out that the crowd togetherness and superficial conformities of modern life are only a poor substitute for genuine human relationships. Such genuine relationships are seen to be largely absent from modern life due to the “self-alienation” created in part by the illusion of easy togetherness which leads the individual to suppose that satisfying human relationships can be attained without a strong and conscious effort of will on his part. Once the individual pierces the veil of this illusion and accepts the fact that effort and suffering are necessary to attain deep friendship and lasting love, he will naturally seek that which will give him the resources necessary for the task. It is the experience of Bahá'ís that their Faith gives them these resources.

Moreover, because the Bahá'í Faith is a living community, and not just an abstract idea, the striving for love and unity can take place in a new context not otherwise available. It is the context of a community in which each individual member has a similar commitment to this new quality of human relationship based on communion with God, Who is the ultimate source of man's ability to love in the first place.

The Bahá'í Faith illuminates our history and our personal experience. The inclusiveness of the Bahá'í Faith is not just a passive principle of tolerance. It is experienced by Bahá'ís rather as a clarifying and ordering force which enables them to “see” the truth in other movements, perhaps even truths which orthodox followers of these movements may have missed. In talking about their Faith, Bahá'ís often find themselves in the position of defending or explaining the validity of certain teachings of past Prophets which the followers themselves have abandoned or rejected. The dedication which Bahá'ís feel to such founders of religions as Christ, Muhammad, Moses, and Buddha, is very real. It often surprises and amazes the followers of these religions, for it has even happened that Bahá'ís have vigorously defended the rights and doctrines of religious communities who have actively persecuted the Bahá'ís themselves.

Another important aspect of Bahá'í experience is that it does not tend to extremes in any form. At the basis of the Bahá'í Faith is a principle of moderation. This principle means that the individual feels continually pulled towards greater balance, calm, and integration in his life. He does not feel torn between extreme desires or called upon to become fanatical or unbalanced in his dealings with others or with himself. This sense of moderation does not imply a static or passive state or an indifference. It means rather the integration and balance among the deep emotions one feels.

A final and extremely important aspect of the Bahá'í experience is its focus on society and its goal of establishing world unity. We have seen religion as an answer to man's need to be encompassed by something greater than himself. Quite clearly the individual is already encompassed by society as a whole. Therefore, there can be no ultimate answer to man's religious quest and his religious needs unless and until society itself is spiritualized. The individual cells of a body cannot long remain healthy if the body itself is sick. Society's influence on the individual is too great and too pervasive to be neglected. Indeed, the focus on the social aspects of religion and the goal of establishing world unity constitute the most fundamental contribution of the Bahá'í Faith to man's collective religious consciousness. Shoghi Effendi states:

Unification of the whole of mankind is the hall-mark of the stage which human society is now approaching. Unity of family, of tribe, of city-state, and nation have been successively attempted and fully established. World unity is the goal towards which a harassed humanity is striving.

The unity of the human race, as envisaged by Bahá'u'lláh implies the establishment of a world commonwealth in which all nations, races, creeds and classes are closely and permanently united, and in which the autonomy of its state members and the personal freedom and initiative of the individuals that compose them are definitely and completely safeguarded.²⁵

Moreover, this consummation of human society can only be accomplished on the basis of religion:

The principle of the Oneness of Mankind, as proclaimed by Bahá'u'lláh, carries with it no more and no less than a solemn assertion that attainment to this final stage in this stupendous evolution is not only necessary but inevitable, that its realization is fast approaching, and that nothing short of a power that is born of God can succeed in establishing it.²⁶

The writings of Bahá'u'lláh contain a veritable blueprint for the establishment of this new planetary society, involving, among others, such principles as the establishment of a universal auxiliary language, a world court, a world legislature, a world police force, and universal education. The Bahá'í community is viewed as, in some sense, the spiritual embryo of this future society. Thus the common goal of working to achieve unity gives a sense of purpose to the life of each individual in the Bahá'í community, while the experience within the community itself furnishes practical opportunities for growth and for the practice of this oneness.

To anyone seriously seeking a solution to the current disunity and opposition between religion and science, the answer given by the Bahá'í Faith merits deep investigation.

Who, contemplating the helplessness, the fears and miseries of humanity in this day, can any longer question the necessity for a fresh revelation of the quickening power of God's redemptive love and guidance? Who, witnessing on one hand the stupendous advance achieved in the realm of human knowledge, of power, of skill and inventiveness, and viewing on the other the unprecedented character of the sufferings that afflict, and the dangers that beset, present-day society, can be so blind as to doubt that the hour has at last struck for the advent of a new Revelation, for a re-statement of the Divine Purpose, and for the consequent revival of those spiritual forces that have, at fixed intervals, rehabilitated the fortunes of human society? Does not the very operation of the world-unifying forces that are at work in this age necessitate that He Who is the Bearer of the Message of God in this day should not only reaffirm that self same exalted standard of individual conduct inculcated by the Prophets gone before Him, but embody in His appeal, to all governments and peoples, the essentials of that social code, that Divine Economy, which must guide humanity's concerted efforts in establishing that all-embracing federation which is to signalize the advent of the Kingdom of God on this earth?²⁷

-
1. This essay has been revised for this compilation. The original is reprinted by permission from *World Order*, 9, No.3 (Spring 1975), 22-29, 32-38. Copyright ©1975 by the National Spiritual Assembly of the Bahá'ís of the United States.
 2. 'Abdu'l-Bahá, *Paris Talks: Addresses Given by 'Abdu'l-Bahá in Paris in 1911-1912*, 11th ed., (London: Bahá'í Publishing Trust, 1969), p. 143.
 3. *Ibid.*, pp. 130-131.
 4. *Ibid.*, p. 143.
 5. *Ibid.*, p. 146.
 6. Bahá'u'lláh, *Gleanings from the Writings of Bahá'u'lláh*, trans. Shoghi Effendi. rev. ed. (Wilmette, Ill.: Bahá'í Publishing Trust. 1952), pp. 342-343.
 7. *Ibid.* p. 209.
 8. Bahá'u'lláh, *Epistle to the Son of the Wolf*, trans. Shoghi Effendi. rev. ed. (Wilmette. Ill.: Bahá'í Publishing Trust, 1953). pp. 97-98.
 9. Bahá'u'lláh, *Gleanings*, p. 141.

10. 'Abdu'l-Bahá, *Paris Talks*, pp. 143-144.
11. Arnold Toynbee, *A Study of History: Reconsiderations* (London: Oxford Univ. Press, 1961). XII, 99-100, 102.
12. *Ibid.*, XII, 101n.
13. For a more detailed and exhaustive discussion of the scientific method, see essay 1 of the present volume.
14. This is why we have used the neologism "scientistic" in the title of this section. The current materialism is scientistic in that it is generally attributed to science, but it is not *scientific* since it is not really in harmony with the principles of science. We might say that this materialism is the result of an unscientific use of the results of science.
15. Bahá'u'lláh, *The Seven Valleys and the Four Valleys*, trans. 'Ali-Kuli Khan and Marzieh Gail, rev. ed. (Wilmette, Ill.: Bahá'í Publishing Trust. 1952). p. 49.
16. Lewis Mumford, *The Pentagon of Power: The Myth of the Machine* (New York: Harcourt, 1970). p. 413.
17. Toynbee. *Study of History*, XII, 663.
18. The somewhat technical, though nonetheless important, point is that the genetic configuration of an organism is determined at conception and does not interact directly with the environment. It is rather the physical and behavioural characteristics of the organism which interact directly with the environment. Thus, natural selection can only operate on the phenotypic level, but this affects genetic diversity indirectly to the degree that such physical and behavioural characteristics are genetically based.
19. 'Abdu'l-Bahá, *Tablets of 'Abdu'l-Bahá 'Abbas*, 3 vols. (New York: Bahá'í Publishing Society, 1909-1916), 1, 168.
20. Bahá'u'lláh. *Gleanings*, pp. 178-179.
21. 'Abdu'l-Baha, *Some Answered Questions*, comp. and trans. Laura Clifford Barney, rev. ed. (Wilmette, Ill.: Bahá'í Publishing Trust. 1964), pp. 257-258.
22. Bahá'u'lláh, *Gleanings*, pp. 105-106.
23. *Ibid.*, p. 295.
24. Shoghi Effendi, *The World Order of Bahá'u'lláh* (New York: Bahá'í Publishing Committee, 1938), p. xi.
25. Shoghi Effendi, *The World Order of Bahá'u'lláh: Selected Letters*, 2d rev. ed. (Wilmette, Ill.: Bahá'í Publishing Trust. 1974), pp. 202-203.
26. *Ibid.*, p. 43.
27. *Ibid.*, pp. 60-61.

III. SCIENCE AND THE BAHÁ'Í FAITH

Abstract

Religion and science are often perceived as being, to some degree, in opposition to each other. The reasons for such a view are considered, and are seen to derive from a certain particular conception of science and of religion: On the one hand, scientific method is viewed as too rigorous and restrictive to apply to religion, while on the other hand, religious experience is viewed as peculiarly subjective. Each of these conceptions is discussed, examined, and rejected. It is seen that scientific method, rightly viewed, is universal in its scope, for this method is essentially the systematic, organized, directed and conscious application of our mental faculties. The view of religious experience as uniquely subjective is seen to be tenable only when the social dimension of religion is neglected and when the datum of religion is taken to be primarily the internal experience of the individual. But mystic experience can be objectified through participation in an appropriate community of understanding, just as other kinds of experience are objectified through participation in a scientific community of understanding. The Bahá'í Faith is seen as providing this religious community of understanding, as well as being founded on a basic datum which is external to the individual: The Revelation and Person of the Manifestation (i.e. religious Prophet-Founder). It is the objectivity and accessibility of this phenomenal point of reference which guarantees the individual's accessibility to religious experience.

Finally, some particular aspects of the most recent occurrence of the phenomenon of Revelation, that of Bahá'u'lláh (1817-1892), are examined, it is seen that the specific social goal of the Bahá'í Faith is the establishment of unity on the planetary level, that the Bahá'í Faith affirms the complete harmony of religion and science, and that it is scientific in its method. At the same time, the legitimate emotional and aesthetic aspects of religious experience are neither excluded nor over-emphasized but rather assume their natural place within the total range of religious experience and practice.

Introduction

Part of the difficulty involved in attempts to understand and clarify the relationship between religion and science is that the nature of religion seems much less clearly defined than that of science. Is religion primarily a cognitive activity like science, or is it more akin to an aesthetic or emotional experience? If religion is seen as primarily cognitive, then the main problem seems to be that of reconciling the application of scientific method to religion. In particular it is often felt that this is difficult to do without falsifying either the nature of scientific method or else the global, subjective, mystic character of religion. On the other hand, viewing religion as primarily noncognitive appears ultimately to relegate religion to an unacceptably secondary and inferior status in the range of human activities. It becomes very difficult to attribute any objective content to religious belief and to religious moral imperatives. These latter are seen at best to be expressions of various subjective, emotional, essentially irrational (and perhaps illegitimate and illusory) yearnings and desires on the part of a more or less general segment of mankind.

The Bahá'í Faith, founded in 1844 in Persia under extraordinary circumstances, is significant among the religions of the contemporary world in its clear statement both of the nature of religion itself and of the applicability of scientific method to religion. In a summary description of basic Bahá'í beliefs Shoghi Effendi (1897-1957) affirms:

The Revelation proclaimed by Bahá'u'lláh, His followers believe, is divine in origin, all-embracing in scope, broad in its outlook, *scientific in its method*, humanitarian in its principles and dynamic in the influence it exerts on the hearts and minds of men. The mission of the Founder of their Faith, they conceive it to be to proclaim that religious truth is not absolute but relative, that Divine Revelation is continuous and progressive, that the Founders of all past religions, though different in the non-essential aspects of their teachings, "abide in the same Tabernacle, soar in the same heaven, are seated upon the same throne, utter the same speech and proclaim the same Faith." His Cause, they have already demonstrated, stands identified with and revolves around, the principle of the organic unity of mankind as representing the consummation of the whole process of human evolution. This final stage in this stupendous evolution, they assert, is not only necessary but inevitable, that it is gradually approaching, and that nothing short of the celestial potency with which a divinely ordained Message can claim to be endowed can succeed in establishing it.

The Bahá'í Faith recognizes the unity of God and of His Prophets, upholds the principle of an unfettered search after truth, condemns all forms of superstition and prejudice, teaches that the fundamental purpose of religion is to promote concord and harmony, *that it must go hand-in-hand with science*, that it constitutes the sole and ultimate basis of a peaceful, an ordered and progressive society.² [italics added]

Further, the essentially cognitive nature of religion is affirmed by the founder Bahá'u'lláh (1817-1892), in language such as:

First and foremost among these favors, which the Almighty hath conferred upon man, is the gift of understanding. His purpose in conferring such a gift is none other except to enable His creature to know and recognize the one true God—exalted be His glory. This gift giveth man the power to discern the truth in all things, leadeth him to that which is right, and helpeth him to discover the secrets of creation. Next in rank, is the power of vision, the chief instrument whereby his understanding can function. The senses of hearing, of the heart, and the like, are similarly to be reckoned among the gifts with which the human body is endowed. ...These gifts are inherent in man himself. That which is preeminent above all other gifts, is incorruptible in nature and pertaineth to God Himself, is the gift of Divine Revelation. Every bounty conferred by the Creator upon man, be it material or spiritual, is subservient unto this.³

In other words from the Bahá'í viewpoint religion is basically a form of knowing, the object of knowledge (or basic datum) of which is the phenomenon of revelation. The other mystic and emotional aspects of religion also are affirmed in the Bahá'í Faith, but still the Faith is proclaimed to be “scientific in its method.”

Another essential aspect of religion is that of action or “good works.” Still ‘Abdu’l-Bahá (1844-1921), son of Bahá'u'lláh and designated interpreter of his father's revelation, affirms the primacy of knowledge with respect to action: “Although a person of good deeds is acceptable at the Threshold of the Almighty, yet it is first 'to know,' and then 'to do.' Although a blind man produceth a most wonderful and exquisite art, yet he is deprived of seeing it... By faith is meant, first, conscious knowledge, and second, the practice of good deeds.”⁴ He defines religion as “the essential connection which proceeds from the realities of things” or “the necessary connection which emanates from the reality of things,” again ascribing objective, cognitive content to it.⁵

The problem with all of this is that to affirm something as true does not necessarily give us an understanding of how or why it is true. My purpose in this paper then is to discuss the religion-science conflict from a Bahá'í viewpoint with the specific goal of explicating the above affirmations. It is my hope that such an effort may prove of interest and profit to those of any religious background or viewpoint.

The Nature of the Religion-Science Conflict

At the heart of the conflict between science and religion is that two essentially different views of man are associated respectively with each, at least in the popular view. In the one instance man is seen as a superevolved animal, a chance product of a material thermodynamic system. In the other he is seen as a spiritual being, created by God with a spiritual purpose given by God. Of course conflicting views of the nature of man are as old as thought itself and certainly predate the period of modern science. However, it is only in the modern period that the materialistic view has become linked to a prestigious and highly efficient natural science. This prestige of science forces people to take seriously any pronouncement that is put forth in its name.

All of this contrasts sharply with the premodern period in which the materialistic view was just one among many competing views and had no particular natural or obvious superiority over others. People simply could discredit or disregard the materialistic viewpoint without feeling any pangs of conscience or without feeling threatened.

In sum then I am suggesting that the conflict between religion and science is due essentially to the two qualitatively different views of man which are associated respectively with them, that the force of the materialistic view associated with modern science is due not to any inherent philosophical superiority of that view but rather to the immense prestige of the science in the name of which the materialistic view is put forth and that this prestige of science is due essentially to its evident technological productivity and efficiency.

One may ask in turn to what the efficiency and productiveness of modern science is due, and I believe that here there is one basic answer: scientific method. It is the method of science which has led to such remarkable results and thus to the present situation. Although some thinkers have tried to attribute the success of scientific method to one

aspect or another of Western culture or religion, it is now abundantly clear that modern scientific method can be practiced with success independently of any particular religious or cultural orientation.

Indeed we can say that science as an activity is characterized by its method, for the immense diversity of domains which are now the object of scientific study defies any intrinsic characterization in terms of unity of content. The unity of science is its method.

The importance of religion on the other hand derives precisely from its goal and its contents rather than its method. Religion treats of questions which are so fundamental for us that every human being is obliged to realize the importance of answering them. Some of these questions concern the purpose of man's existence, the possibility of life after death, the possibility of self-transcendence, the possibility of contacting and living in harmony with a higher spiritual consciousness, the meaning of suffering, and the existence of good and evil.

Once we realize that the basis of science is its method and that the basis of religion is its object of study, the essential move toward resolving the religion-science controversy seems obvious and logical: Apply scientific method within religion. But, as I already have noted, there is widespread feeling that this is not truly possible. Thus each side remains with its view of the nature of man and with a feeling that a reconciliation is not possible.

It seems to me, however, that the conviction of the impossibility of applying scientific method to religion rests on several misconceptions both of the nature of scientific method and of the nature of religion.

The ensuing discussion, though clearly incomplete, attempts to identify the sorts of misunderstanding involved.

The Nature of Scientific Method

Science is, first of all, knowledge. Moreover, it is human knowledge because it is humans who do the knowing, and the nature of human knowledge will be determined by the nature of human mental faculties. Of course every human being on earth knows things and uses his mental faculties in order to attain this knowledge. What distinguishes the scientific method of knowing, it seems to me, is the systematic, organized, directed, and conscious nature of the process. However much we may refine and elaborate our description of the application of scientific method in some particular domain such as mathematics, logic, or physics, this description remains essentially an attempt on our part to bring to ourselves a fuller consciousness of exactly how we apply our mental faculties in the course of the epistemological act within the given domain. I offer therefore this heuristic definition of scientific method: Scientific method is the systematic, organized, directed, and conscious use of our various mental faculties in an effort to arrive at a coherent model of whatever phenomenon is being investigated.

In a word, science is self-conscious common sense.⁶ Instead of relying on chance happenings or occasional experiences, one systematically invokes certain types of experiences. This is experimentation (the conscious use of experience). Instead of relying on naive reasoning, one formalizes hypotheses explicitly and formalizes the reasoning leading from hypothesis to conclusion. This is mathematics and logic (the conscious use of reason). Instead of relying on occasional flashes of insight, one systematically meditates on problems. This is reflection (the conscious use of intuition).⁷

The practice of this method is not linked to the study of any particular phenomenon. It can be applied to the study of unseen forces and mysterious phenomena as well as to everyday occurrences. Failure to appreciate the universality of scientific method has led some to feel that science is really only the study of matter or of material phenomena. This narrow philosophical outlook, plus the historical fact that physics was the first science to develop a high degree of mathematical objectivity, has led to a common misconception that scientific knowledge is inherently limited only to physical reality.

It should be stressed also that the scientific study even of material and concretely accessible phenomena involves a heavily theoretical and subjective component. Far from just "reading the facts from the book of nature," the scientist must bring an essential aspect of creative hypothesis and imagination to his work. Science as a whole is underdetermined by experience, and there are often many different possible models to explain a given phenomenon. The scientist therefore must not only find out how things are but must also imagine how things might be. Developments in all branches of science during this century have led to an increasing awareness among scientists and philosophers of the vastness of this subjective input into science.

Another feature of scientific knowledge is its relativity. Because science is the self-conscious use of our faculties we become aware that man has no absolute measure of the truth. The conclusions of scientific investigations are always more or less probable. They are never absolute proofs.⁸ Of course if a conclusion is highly probable and its negation highly improbable we may feel very confident in the results, especially if we have been very thorough in our investigation. But realization and acceptance of this essential uncertainty and relativity of our knowledge are important, for the exigencies of the human situation are often such that we are forced to act in some

instances before we have had time to make such a thorough investigation. It therefore behooves us to remain constantly alert to the possibility that in fact we may be wrong.⁹

Let us note in passing that a similar view of scientific method is expressed in several places in Bahá'í writings. In a talk delivered at the Green Acre Institute in Eliot, Maine, in 1912, 'Abdu'l-Bahá discusses the methods of knowledge or criteria of judgment available to man: "Proofs are of four kinds; first, through sense-perception; second, through the reasoning faculty; third, from traditional or scriptural authority; fourth, through the medium of inspiration. That is to say, there are four criteria or standards of judgment by which the human mind reaches its conclusions."¹⁰ 'Abdu'l-Bahá then discusses each of these criteria and shows why it is fallible and relative.¹¹

He then continues:

Consequently it has become evident that the four criteria or standards of judgment by which the human mind reaches its conclusions are faulty and inaccurate. All of them are liable to mistake and error in conclusions. But a statement presented to the mind accompanied by proofs which the senses can perceive to be correct, which the faculty of reason can accept, which is in accord with traditional authority and sanctioned by the promptings of the heart, can be adjudged and relied upon as perfectly correct, for it has been proved and tested by all the standards of judgment and found to be complete. When we apply but one test there are possibilities of mistake.¹²

In still another passage 'Abdu'l-Bahá explains the relativity of man's knowledge in the following terms:

Knowledge is of two kinds: one is subjective, and the other objective knowledge; that is to say, an intuitive knowledge and a knowledge derived from perception.

The knowledge of things which men universally have, is gained by reflection or by evidence: that is to say, either by the power of the mind the conception of an object is formed, or from beholding an object the form is produced in the mirror of the heart. The circle of this knowledge is very limited, because it depends upon effort and attainment.

But the second sort of knowledge, which is the knowledge of being, is intuitive, it is like the cognisance and consciousness that man has of himself.

For example, the mind and the spirit of man are cognisant of the conditions and states of the members and component parts of the body, and are aware of all the physical sensations.... This is the knowledge of being which man realises and perceives; for the spirit surrounds the body, and is aware of its sensations and powers. This knowledge is not the outcome of effort and study; it is an existing thing, it is an absolute gift.¹³

'Abdu'l-Bahá then explains that the Manifestations or revelators, are distinguished from ordinary men in that they have the subjective (intuitive) knowledge of all things: "Since the Sanctified Realities, the universal Manifestations of God, surround the essence and qualities of the creatures, transcend and contain existing realities and understand all things, therefore their knowledge is divine knowledge, and not acquired: that is to say, it is a holy bounty, it is a divine revelation."¹⁴ It is this unique consciousness of the Manifestations which according to him enables them to be the focal point of man's knowledge of God.

In yet another passage 'Abdu'l-Bahá puts the matter thus:

Know that there are two kinds of knowledge: the knowledge of the essence of a thing, and the knowledge of its qualities. The essence of a thing is known through its qualities, otherwise it is unknown and hidden. As our knowledge of things, even of created and limited things, is knowledge of their qualities and not of their essence, how is it possible to comprehend in its essence the Divine Reality, which is unlimited? ... Knowing God, therefore, means the comprehension and the knowledge of His attributes, and not of His Reality. This knowledge of the attributes is also proportioned to the capacity and power of man; it is not absolute.¹⁵

I will try to sum up, however inadequately, the epistemological implications of these passages in this way: Human knowledge is the truth which is accessible to man, and this truth is relative because man the knower is relative, finite, and limited. There is an absolute reality underlying the multifaceted qualities and experiences accessible to man, but direct access to this reality or direct perception of it is forever beyond man's capabilities. His

knowledge is therefore relative and limited only to the knowledge of the various effects produced by this absolute reality (the Manifestations being one of the most important of these effects). However, if man uses systematically all of the various modes of knowledge available to him, he is assured that his knowledge and understanding, such as they are on their level, will increase.¹⁶

Positivism and Existentialism

The main purpose of this brief discussion of scientific method is to suggest that a misconception of the nature of scientific method—namely, that it is applicable only to more or less concretely accessible material phenomena and only in a relatively narrow way—has led to the general conclusion on the part of many religionists and scientists that scientific method is not applicable to religion.¹⁷ Depending on what further assumptions are made, one is led to two basic positions which I have labeled positivism and existentialism. There are many variants to each position, and so these labels must be understood in a very general, heuristic way.

On the one hand we may add to the narrow view of scientific method the assumption that scientific method (so construed) is the only valid method of knowledge. One then concludes that religion is not a form of knowledge at all but rather an institutionalized form of superstition, emotionalism, fanaticism, togetherness, or what have you. On the other hand we may conclude that there are methods of knowledge other than the scientific one which are appropriate to religion. Religion in this view is so deeply private, mystical, and subjective as to be “beyond” scientific method. It is of course the first of these views that I have labeled “positivism” and the second “existentialism.” I would like now to discuss briefly each of these positions in an attempt to show exactly why I hold them to be mistaken.

Basically the positivistic position regards religion as too hopelessly lacking in objectivity to be accessible to scientific treatment. It is true of course that the subject matter of religion is more complex than that of, say, physics because it includes more parameters. In the same way biology is more complex than physics, psychology more complex than either, and religion the most complex of all. In this sense religion is indeed more “subjective,” for the presence of many more parameters makes objectivity harder to obtain since the effort to make all parameters explicit is correspondingly much greater. Indeed this is quite clearly reflected in the historical development of science in which first physics was developed to a fairly high level of objectivity, followed by chemistry, then biology, and now increasingly psychology and sociology.

But it is important to realize, as I mentioned in the foregoing, that there is an essential part of subjectivity involved in the application of scientific method in any context. Suppose, for example, that we try to eliminate the subjective element of the notion “red” by agreeing that the term shall be applied only to those objects which give a reading of thus and so on a spectroscope. Once this agreement is made we may still argue sometimes about whether or not the needle really is quite on thus and so, and the unbeliever will go away saying that the definition was all wrong in the first place.

Thus subjectivity is involved in science even on the most basic, observational level. It is obviously involved even more on the theoretical level where the entities discussed are not directly observable and where many of the statements are not directly testable empirically. Though parts of the total context of science may involve highly articulated objectifications, the ultimate roots of understanding lie always in collective human subjectivity, and so there is always “room for argument.”

Besides appealing to explicit conventions, formal logic, and the like, positivists have tried to discredit the application of scientific method in religion by insisting on public verifiability as an essential aspect of scientific method. However, a little reflection will show easily that this restriction is arbitrary and in no wise a criterion of scientific method. I offer the following paradigm as an illustration of this point.

A biologist looks through a microscope in his laboratory, sees a certain configuration, and exclaims: “Aha, at last I have the evidence that my theory is correct!” Question: How many people in the world are capable of looking at the configuration and verifying the findings of the biologist? Answer: Very few, almost none, probably only a few specialists in his field. The fact is that the biologist will publish his findings, and a few other qualified individuals will test his results, and if they seem confirmed the scientific world at large will accept the theory as verified. Although the positivist might concede this, he would say: “But if an individual did go through the years of training necessary to understand everything the biologist knows, then the individual could verify the statement. Thus, I admit the statement is not practically verifiable by the public, but it is theoretically verifiable.” But even this is not enough. The fact is that the positivist will be constrained to admit that a great many people may be unable, through lack of intelligence or mental proclivity, ever, in theory to validate the result. The fact is that the findings are not verifiable by the public at all. The findings can be verified only by individuals capable of assuming and willing to assume the point of view of the researcher. In most instances this group is a very select one indeed, drawn from those who are members of a community of understanding and who participate in a certain framework of interpretation applied to

all those subjective experiences which fall within a certain category. More will be said of this later.

At bottom the criterion for truth in science is pragmatic. "Does it work the way it says it will?" is the question to be answered. If the theory says that such and such a thing must happen, then does it happen? It is by repeated application of this pragmatic criterion, interlaced with intervening theory, that we gradually build up a model of reality, a collection of true statements. We may formulate a general criterion of scientific truth as follows: We have a right to accept a statement as true when we have rendered it considerably more acceptable than its negation. Proof in scientific terms means nothing more than the total process by which we render a statement acceptable by this criterion. Such a proof remains always relative, for it depends on the total context of the statements involved, the implicit and explicit conventions concerning the meaning and operational use of symbols, the experiential component of these statements, and so on. All of these things have their ultimate roots in human subjectivity and are therefore liable to possible revision in the future.

In practice of course it often happens that revision comes either from strikingly new and different experiences which demand that we revise our conceptual framework in order to account for them or from some unexpected conclusions which are deduced within the framework itself and which contradict known experiences (the most radical case being that of logical contradictions). But nothing excludes the possibility that revision may come from some subtle interaction of all of these factors in a way which is totally inconceivable to us at present.

In short, I maintain that any sort of formulaic, pseudoobjective characterization of scientific method such as that attempted by various positivistic-minded philosophers cannot truly capture scientific method.¹⁸ Our description of scientific method must remain scientific, i.e., pragmatic, relative, open, etc.

Without any such closed, exclusive formula characterization of scientific method there is no basis on which to exclude the application of scientific method to religion. Of course this does not mean that everything that passes for religion is scientific: nor does it allow us to say what we will find if we do apply scientific method to religion. My essential contention is simply that no known positivistic formulations of or restrictions on the nature of scientific method which exclude *a priori* the applicability of scientific method to religion seem to be justified by the nature of scientific method itself. Furthermore, the nature of scientific method does not appear to lend itself to such formulations or restrictions.

The existentialist position derives its character more from its view of religion than from its view of scientific method. The existentialist might well accept, even readily, that scientific method cannot be applied to religion. But such a contention would not bother him (as it does me) because it only serves to heighten the difference and cleavage between science and religion. For him the very importance of religion derives from its being unsystematic, even chaotic, subjective, private, uncommunicable, emotional, etc. For him the knowledge that religion brings is a mystic or occult knowledge, communicable only to a limited extent and primarily through myth, symbol, art, and other forms of nonverbal activity.

One extreme form of this position would be to accept completely the positivistic contention that religion is not a form of knowledge and to view religion primarily as an aesthetic experience of some sort. Otherwise if religion is viewed as a form of knowledge it is a form totally different from science, with its own methodology (or lack of methodology), symbols and experiences.

Perhaps in the last analysis the difference between the existentialist and the positivist lies not so much in their respective views on the nature of religion and of science as in their difference in attitude toward these perceptions. The positivist values science above religion and sees his narrow interpretation of scientific method, with the consequent exclusion of religion, as purifying science from the unwanted trash of emotionalism and irrationality. The existentialist values religion above science and is just as glad to see religion separated from what he feels to be the soul-stultifying dryness, uniformity, formalism, and mechanization of science. While the positivist is impressed primarily by the efficiency and achievements of science, the existentialist is impressed by the potential richness of subjective experience. This richness he sees as constituting that which is most truly human and which deserves to be most thoroughly and strenuously developed in man. Since, as he supposes, scientific methods cannot be used to develop this richness, religion must develop methods of its own different from those of science, it is to the development of such methods that the existentialist bends his efforts, and it would never occur to him to try to reconcile religion and science, something which he would regard as impossible in any case.

My sketch here of what I have labeled the existentialist position is consciously exaggerated at some points, but the logical thrust is clear: The existentialist grants that science cannot be applied to religion, that religion is peculiarly subjective and mystical in a way that makes it necessarily unsystematic and thus inaccessible to science, and he values this subjective aspect of religion above science and its method. He is therefore not upset by the cleavage between religion and science (except that he may have existential difficulties living in a world which is currently dominated by science and its fruits!).

Now I am as impressed as anyone by the richness of subjective experience, and I certainly feel that if the

practice of science, or anything else, is going to lead ultimately to a progressive impoverishment of it, then such practice is dehumanizing and should be abandoned. But I feel that the existentialist position and its variants fall into their particular view of internal experience only by neglecting seriously the collective and social dimension of religion, in short, by considering religion as something which is purely internal to the individual. It is only within such a framework that the subjective aspect can be isolated from the rest of religion and made to seem inherently separate from other types of subjective experience, in particular from that involved in the practice of science itself.

We already have had occasion, in the foregoing, to appreciate the fact that subjective experience is involved intimately and irrevocably in the practice of science at all levels. Clearly it is more reasonable then to view subjective experiences as being ranged on some sort of continuum from less intense to more intense, or from less profound to more profound, or yet some other characterization. As different as may be the experience of seeing a red object on the one hand and that of mystical ecstasy on the other, they are generically instances of subjective experience before they are specifically anything else. Moreover, the practicing scientist and the mystic, when confronted with the problem of building and communicating conceptual models of their experience, face essentially the same logical difficulty on their level of experience. For everyone, including the scientist, knows that no amount of explication, verbal or otherwise, can ever exhaust all of the subjective richness of the experience of "red." Our previous example of the spectroscopist shows the nature of the problem involved, and we must further remember that during the long years of science's evolution such sophisticated conventional devices were not at hand.

Science has overcome this barrier by creating a community of understanding. Each individual scientist must undergo training of a sort which enables him to participate in the validation of the subjective experience of other members of the scientific community when this experience falls within a certain range determined by the nature of the particular scientific discipline in question. As we have seen in the example of the biologist and his microscope, subjective experience is never publicly verifiable. It is verifiable only by those capable of assuming and willing to assume the point of view of the one who has the experience. By maintaining a growing discipline of education and training in science a community of qualified individuals capable of assuming and willing to assume a certain point of view is evolved. This community generates a framework of interpretation for the individual practicing scientist, and it is the framework of interpretation which alone enables his own work, however brilliant or insightful, to become truly illuminating. No matter how far above the common lot of scientists an Einstein or a Newton may be, he can function significantly only in the context of such a community of understanding. If these same individuals had been born in a desert or in a tropical rain forest, their subjective experience would have fallen within another framework of interpretation and would certainly not have had the same result (though it may have been just as illuminating in its own context).

This model of the objectification of internal experience through creating a community of understanding and a consequent framework of interpretation is borne out by observation and experience not only of the history and development of science but also of individuals. For example, case histories of individuals blind from birth who were given sight after reaching maturity indicate, as one would expect, that perception is not immediate but has to be painfully and slowly learned. Their first experience is a chaos of sensations with no discernible objects, forms, etc. Gradually, through participation in the framework of interpretation given by the community, perception is born, and order is brought out of chaos.¹⁹

The neglect of the social dimension of religion is only one aspect of the weakness of the existentialist position. Another aspect comes into focus when we further examine the comparison between the scientific view of subjective experience and the existentialist view. While our discussion of scientific method has led us to acknowledge a certain irreducibility of the subjective input into the epistemological act, it is nevertheless equally clear that our experience, however subjective, of anything, say a red object, is still an experience of something. Even the chaos of sensation that the previously sightless person experiences is a reaction of his subjectivity to something "out there." It is not simply the mind's experience of itself (which might be likened to the sensations of images one has during sleep or when one's eyes are closed). But the existentialist glorification of the subjective amounts to treating the internal experience of the individual as the datum of religion. Religious experience is thus not viewed as an experience of anything, at least not anything other than the internal self of the individual. Insofar as religion is scientific it thus would be indistinguishable from psychology, and this again explains the tendency to emphasize the unsystematic, unpredictable, irrational, mythic, and aesthetic aspects of religious experience, for these are the only aspects which from such a standpoint can be viewed as properly and specifically religious.

If such a view of religion and religious experience is to be refuted one must face and answer the basic question, "Of what is religious experience an experience?" What is religion about? If scientific method can be applied to religion, then what is the datum of religion? How can we ascribe objective content to religion?

The Bahá'í Faith

The answer which the Bahá'í Faith offers to this central question is, or so it seems to me, particularly cogent, clear, and direct. For Bahá'ís the datum of religion is the phenomenon of revelation. Religion is that branch of knowledge which takes this phenomenon as its special object of study. The objective content of religion derives from this external, phenomenal datum. Religious experience in this view is a response to the spirit and teachings of the revelator or Manifestation.

The Bahá'í Faith offers the scientific hypothesis that revelation is a periodic phenomenon for which the period (i.e., the average time interval between two successive occurrences of the phenomenon) is fairly long.²⁰ The large number of generations intervening between two occurrences of revelation poses obvious problems for the study of this phenomenon. However, we cannot refuse to study something simply because the study is hard or because the data associated with it are in some instances accessible only with difficulty. Other natural sciences, such as astrophysics, also study periodic phenomena whose periods are much greater than a thousand years and for which the accessibility of data is likewise a problem. Simply, allowances have to be made for the fact that, because of the periods involved, careful records must be kept since the observations which a given individual scientist can make in his lifetime are too limited to form in themselves a basis for the furtherance of the science.

Let us take a brief look at the phenomenon of revelation as it presents itself to us in history, which is man's collective experience.

If we consider the great religious systems of which there still exists some contemporary expression or some historical record, we will see that virtually all of them have been founded by a historical figure, a unique personage. Islam was founded by Muhammad, Buddhism by Buddha, Christianity by Jesus, Judaism (in its definitive form) by Moses, Zoroastrianism by Zoroaster, and so on. These religious systems have all followed quite similar patterns of development. There is a nucleus of followers gathered around the founder during his lifetime. The founder lays down certain teachings which constitute the principles of his religion. Moreover, each of these founders has made the same claim, namely, that the inspiration for his teachings and his influence was due to God and not to human learning or human devices. Each of these founders claimed to be the exponent on earth of an invisible, superhuman reality of unlimited power, the creative force (creator) of the universe. After the death of the founder an early community is formed, and the teachings of the founder are incorporated into a book (if no book was written by the founder). And finally a great civilization based on the religious system grows up, a civilization which lasts for many centuries.

All of the statements in the preceding paragraph have high empirical content and low theoretical content. These are a few facts of religious history. Of course they are based on records and observations of past generations. We can try to dispute these records if we choose, but we must be scientific in any approach we make. In particular the records of the older religions are of validity equal to any other record of comparable date. If, for example, we refuse to believe that Jesus lived, we must also deny that Socrates lived, for we have evidence of precisely the same validity for the existence of both men. The records of Muhammad's life are much more valid historically than these and are probably beyond serious dispute. Moreover, if we choose to posit the unreality of the figures whose names are recorded and to whom various teachings and influence are attributed, we must give at the same time an alternative explanation for the tremendous influence which these religious systems, elaborated in the name of these founders, have had. This is more difficult than we may be inclined at first to believe.

The major civilizations of history have been associated with the major prophetic religious systems. Zoroastrianism was the religion of the "glory of ancient Persia," the Persia that conquered Babylon, Palestine, Egypt, and the Greek city-states. Judaism was the basis of Hebrew culture, which some philosophers such as Karl Jaspers regard as the greatest in history. Moreover, Jewish law has formed the basis of common law and jurisprudence in countries all over the world. Western culture, until the rise of modern science, was dominated by Christianity. The great Muslim culture invented algebra and preserved and developed the Hellenistic heritage. It was probably the greatest civilization the world had seen until the rise of the industrial revolution began to transform Western culture.

We are, however, very much in the same position with respect to past revelations as we are with regard to any phenomenon of long period. We were not there to observe Jesus or Muhammad in action. The contemporaries of these people were certainly impressed by them, but these observations were made years ago and are liable, we feel, to embellishments. Even though it may be unscientific to try to explain away the influence of these religious figures, there is still a certain desire to do so. We are put off by some obvious interpolations, and we are not sure just what to accept and what to reject.

Bahá'ís believe that man's social evolution is due to the periodic intervention into human affairs of the creative force of the universe by means of the religious founders or Manifestations. What is most significant is that the

Bahá'í Faith offers fresh empirical evidence, in the person of its own founder, that such a phenomenon has occurred. Bahá'u'lláh claimed to be one of these Manifestations, and He reaffirmed the validity of the past revelations (though not necessarily the accuracy of all the details recorded in the ancient books). Here is a figure who walked the earth in recent times and whose history is documented by thousands of records and witnesses. Moreover, the teachings of Bahá'u'lláh are preserved in His manuscripts, and so we are faced with a record of recent date and one of which there can be no serious doubt.

The only way we can judge Bahá'u'lláh's fascinating hypothesis that social evolution is due to the influence of the Manifestations is the way we judge any proposition: scientific method. This is the only way we can judge Bahá'u'lláh's claim to be one of these Manifestations. We must see if these assumptions are consistent with our knowledge of life as a whole. We must see if we can render these assertions considerably more acceptable than their negations. In the case of Bahá'u'lláh we have many things which we can test empirically. Bahá'u'lláh made predictions. Did they come true? Bahá'u'lláh claimed divine inspiration. Did He receive formal schooling, and did He exhibit power and knowledge not easily attributable to human sources? He insisted on moral purity. Did He lead a life of moral purity? In His teaching are found statements concerning the nature of the physical world. Has science validated these? He engaged in extensive analysis of the nature of man's organized social life. Does His analysis accord with our own scientific observations of the same phenomena? He also makes assertions concerning human psychology and subjectivity and invites individuals to test these. Do they work? The possibilities are unlimited.

Of course the same criteria can be applied to other Manifestations, but the known facts are so much less authenticated and so restricted in number that much direct testing is not possible. This does not disturb Bahá'ís because they believe that essentially there is only one religion and that each of the successive revelations is a stage in the development of this one religion. The Bahá'í Faith is thus the contemporary form of religion, and we should not be surprised that it is so accessible to the method of contemporary science. Christianity and Islam were probably just as accessible to the scientific methods of their day as is the Bahá'í Faith to modern scientific method.

This relative inaccessibility of data concerning the older religions should not be taken as lessening in any way their importance or value relative to the Bahá'í Faith. The Bahá'í view is that of the absolute unity of religion, not the superiority of one religion over another for whatever reason.²¹ Nevertheless, if one is talking about applying scientific method to religion, problems such as that of the authenticity of ancient records must be faced frankly and seen in their true light. They must be neither exaggerated nor swept under the rug as if they did not matter. Indeed the best of modern biblical scholarship, both Christian and Jewish, has been undertaken in this scientific spirit, if it has resulted in some instances in the undermining of certain traditional beliefs, it has more fundamentally served to clarify and enlighten the faith of truly informed students of religion. If the doubtfulness of a few passages of the Bible has been exposed, the validity of the basic text has been vindicated (e.g., the corroborative version of Isaiah in the Dead Sea manuscripts).

Each religious system has been founded on the faith in the reality of the phenomenon of revelation, and those people associated with the phenomenon felt fully justified in their faith. But as the influence of religion declined and the facts of revelation receded into history the sense of conviction of the reality of the phenomenon subsided, and this was only natural as we have seen. It is therefore important to realize that the Bahá'í Faith offers much more than new arguments about the old evidence for the phenomenon of revelation. It offers empirical evidence for the phenomenon, and it is frank to base itself on this evidence and to apply the scientific method in understanding the evidence. So much is this so that I would unhesitatingly say that the residue of subjectivity in the faith of a Bahá'í is no greater than the residue of subjectivity in the faith one has in any well-validated scientific theory. As in the example of the biologist and the microscope, the findings of a Bahá'í can be verified by anyone willing to assume and capable of assuming the point of view of a Bahá'í.²²

According to Bahá'u'lláh the social purpose of religion is to create an adequate spiritual basis for the progressive unfolding of an ordered social life for mankind. Indeed, as one examines the history of mankind, one can perceive the gradual ordering and reordering of man's collective life on ever higher levels of unity, each new level maintaining the integrity of the previous ones and at the same time calling forth from the individual a correspondingly greater degree of altruism and other-centeredness. The family, the tribe, the city-state, and the nation can be seen as significant steps in this social evolution. The first two of these successive stages can be identified in large measure with the respective revelations of Abraham and Moses, while the latter is due essentially to Muhammad, the founder of the nation of Islam.²³ Bahá'u'lláh explains that besides the general mission of renewing the spiritual life of men and society, each religion has a specific mission which accomplishes a definite step forward in the total evolution of mankind. He views his own revelation as being the most recent in this succession and as having the unification of mankind as a whole for its specific mission.²⁴

As one thinks about this progressive unfoldment of human society one comes to see certain aspects of its mechanism. It is clear that unity on one level can eventually become disunity on another; the unity of the family can coexist with disunity between families, for example. When the new level of unity is first attained it represents a positive step, but the very accretion of power and the increased mastery resulting from the reorganization of society on this higher level ultimately can lead to tensions among these higher-order units themselves. This may happen years or centuries or millennia later, but when it does happen the suffering caused by these tensions becomes increasingly unbearable and serves as one of the factors generating the motivation to accomplish the next stage of unity. That is, the individuals participating in the social system in question develop a strong sense of and a need for the higher unity.²⁵

This higher unity is effected not by the suppression of the existing units but by their being harmoniously organized into a still higher unit—the unity of the tribe is the unity of families, the unity of a race that of tribes, the unity of a nation that of races. Indeed the attainment of unity on the lower level has been a necessary prerequisite to its establishment on the higher one. In the same way Bahá'u'lláh envisages world unity as being a unity among nations, with a world government, a world tribunal, a single auxiliary universal language, and a world economic system.

Just as a tree must push its roots deeper as it grows higher, so must each external step forward have an internal concomitant. The individual at each stage must become less self-centered. He must give his loyalty to and identify with an ever-widening circle of his fellow humans. Whereas “brother” first meant physical brother, it gradually came to mean fellow Jew, fellow brother in Christ, fellow countryman, and ultimately must mean fellow world citizen. There is, in short, a gradual increase in the consciousness of the individual, and it is this new consciousness which alone allows the new unity, the new external step forward, to take place on a spiritual basis. This new depth of individual spiritual awareness also serves to increase the quality of unity at all levels. In this way the creation of the new unity is not a superficial juxtaposition of parts or a purely formal restructuring but a renewal of the whole of the society, indeed the only way the society can be so renewed at that given stage in its development. Thus Bahá'u'lláh teaches that the establishment of world unity will lead to the perfecting and deepening of the quality of life at all levels of society.

This model also explains why we cannot wait for the lower levels of society to become perfect before working on the establishment of world unity (such an objection to the Bahá'í goal of establishing world unity is frequently heard). The interdependence of the part and the whole is too great for such a piecemeal approach to succeed. Bahá'u'lláh explains that mankind is like a body whose cells and organs are the individual human beings and the smaller social units. If the whole body is ill every single cell will be affected in some way. At the same time the whole body suffers to some extent from even a few unhealthy cells.

Thus in the teachings of Bahá'u'lláh there are provisions for the organization and restructuring of society on a world level, and there are provisions for the perfecting of social organization on the local and intermediate levels as well as manifold spiritual aids for the individual in his own effort to spiritualize his life and attain to a new, more universal consciousness.

Indeed the individual aspect of religion is just as essential as the global, social aspect. This individual component was the point of departure for my whole discussion, and so I would like to return to it in closing this essay.

In the Bahá'í world view the essential purpose of religion for the individual is to provide him with the tools necessary to acquire a true and adequate understanding of his own nature.²⁶ For Bahá'is the individual, internal aspect of religion is a direct response to the datum of the Manifestation, his spirit and teachings. It is not simply the mind's experience of itself or some form of autosuggestion. This is why scientific method can be applied even in this aspect of religion. In the Bahá'í Faith the individual component of religion takes the form of daily prayer, communion with God, meditation on the words of Bahá'u'lláh and a constant effort to express one's developing spirituality through service to mankind. Among the many individual attributes which Bahá'u'lláh mentions as characteristic of the spiritually minded individual are humility, obedience to the will of God, justice, love, abstention from backbiting and criticism of others, regarding others with a sin-covering eye, and preferring others to oneself in all things.

Bahá'u'lláh stresses that personal spiritual development, the experience of self-transcendence, and the mystic sense of union with God—all of which have been described and discussed in the world's mystic literature—are the fruits only of conscious and deliberate search and struggle. They are not haphazard experiences which we can casually cajole from the universe. They must be sought consciously and practiced as diligently as any scientific or academic discipline. Scientific method—the conscious, systematic, organized, and direct use of our mental faculties—must be employed if we are to be successful in developing spirituality.

Of course to say that spirituality must be sought consciously and systematically does not imply that it can be reduced to a formula any more than science itself can be so reduced. 'Abdu'l-Bahá has expressed it simply:

Everything of importance in this world demands the close attention of its seeker. The one in pursuit of anything must undergo difficulties and hardships until the object in view is attained and the great success is obtained. This is the case of things pertaining to the world. How much higher is that which concerns the Supreme Concourse!²⁷

In contemplating the application of scientific method to individual spiritual practice let us again recall that science never leads to total or absolute objectification of internal experience, for such a thing is simply unobtainable. Moreover, the quality of internal experience involved in the pursuit of spirituality clearly will be infinitely richer than that connected with most other types of activity. In this perspective, emphasis on the aesthetic and the mythic is legitimate, important, and useful, for the gap between any descriptive models of such experience and the experience itself will be correspondingly greater than in other areas, though the basic method remains unchanged.²⁸

Religion is primarily a form of knowing but the relativity and limitations of our knowledge will be felt even more keenly here than elsewhere. Indeed it is this self-knowledge, the acute consciousness of these very limitations, which constitutes an important part of our knowledge of God. One of the profoundest truths that the mystic discovers is that the ultimate goal is not to comprehend but to be comprehended. The deepest knowledge is attained by the profoundest awareness of our own relative ignorance. Bahá'u'lláh expresses this important truth in the following way:

Consider the rational faculty with which God hath endowed the essence of man. Examine thine own self, and behold how thy motion and stillness, thy sight and hearing, thy sense of smell and power of speech, and whatever else is related to, or transcendeth, thy physical senses or spiritual perceptions, all proceed from, and owe their existence to, this same faculty.... Wert thou to ponder in thine heart, from now until the end that hath no end, and with all the concentrated intelligence and understanding, which the greatest minds have attained in the past or will attain in the future, this divinely ordained and subtle Reality, this sign of the revelation of the All-Abiding, All-Glorious God, thou wilt fail to comprehend its mystery or to appraise its virtue. Having recognized thy powerlessness to attain to an adequate understanding of that Reality which abideth within thee, thou wilt readily admit the futility of such efforts as may be attempted by thee, or by any of the created things, to fathom the mystery of the Living God, the Day Star of unfading glory, the Ancient of everlasting days. This confession of helplessness which mature contemplation must eventually impel every mind to make is in itself the acme of human understanding, and marketh the culmination of man's development.²⁹

Since in the Bahá'í view internal religious experience is not simply the self's experience of itself but is a direct response to the datum of the Manifestation, there is consequently a need for a constantly accessible focal point toward which the individual can turn in his pursuit of these individual spiritual goals. This indeed is one of the reasons for the periodic nature of the phenomenon of revelation. Although something of God's nature can be said to be revealed in every aspect of creation, clearly the force and importance of such a revelation are conditioned by two things, namely, the inherent limitations of the instrument used as a vehicle of revelation and the accessibility, to us of the occurrence of revelation.

Man himself is the most highly ordered and subtle phenomenon in all the universe known to man. It thus seems logical that man would be the most nearly perfect (i.e., least limited) instrument available as a vehicle for God's Self-revelation, hence the person of the Manifestation.³⁰ The necessity for the repetition of revelation derives from the condition of accessibility. The length of the period between occurrences, on the other hand, derives from the social nature of religion as described in the foregoing. Simply, it takes a certain time for a Manifestation to become known, his system to become established, and for the specific purpose of his revelation to be accomplished.³¹

Conclusions

I feel that the Bahá'í view of religion is exciting in its fundamental assertion of the objectivity, universality, and accessibility of religion and religious experience to the inquiring mind. The existentialist view of religion, as well as other subjective views, sees religious experience rather as something which cannot (and perhaps should not) be

cultivated, practiced, and sought systematically. It must strike like lightning for reasons which are never wholly clear or else as the result of some magical or occult practice. Clearly no experience of such an erratic and unstable nature can ever serve as the basis for a progressive society.

Positivism and its variants limit unduly the application of scientific method and fail to see that the essence of the method can be applied to all phenomena and to all aspects of life, including the spiritual.

The ultimate resolution of the religion-science opposition is thus based on a balance and complementarity between the two, involving a better understanding of the nature and universality of scientific method on the one hand and of the nature and content of that datum which is the phenomenon of revelation on the other. 'Abdu'l-Bahá has expressed admirably the nature of this balance:

Religion and science are the two wings upon which man's intelligence can soar into the heights, with which the human soul can progress. It is not possible to fly with one wing alone! Should a man try to fly with the wing of religion alone he would quickly fall into the quagmire of superstition, whilst on the other hand, with the wing of science alone he would also make no progress, but fall into the despairing slough of materialism.... When religion, shorn of its superstitions, traditions, and unintelligent dogmas, shows its conformity with science, then will there be a great unifying, cleansing force in the world which will sweep before it all wars, disagreements, discords and struggles—and then will mankind be united in the power of the Love of God.³²

-
1. This essay was reprinted in *Zygon, Journal of Religion and Science*, vol. 14, no. 3 (September, 1979).
 2. Shoghi Effendi, *World Order of Bahá'u'lláh* (Wilmette, Ill.: Bahá'í Publishing Trust, 1955). p. xi.
 3. Bahá'u'lláh, *Gleanings from the Writings of Bahá'u'lláh* (Wilmette, Ill.: Bahá'í Publishing Trust, 1971), pp. 194-195.
 4. Bahá'u'lláh and 'Abdu'l-Bahá, *Bahá'í World Faith* (Wilmette, Ill.: Bahá'í Publishing Trust, Second Edition, 1956), pp. 382-83.
 5. 'Abdu'l-Bahá, *Some Answered Questions* (Wilmette, Ill.: Bahá'í Publishing Trust, 1930), pp. 181-82.
 6. This is a conscious paraphrase of a description due to W.V. Quine, *Word and Object* (Cambridge, Mass.: M.I.T. Press, 1960). p. 3.
 7. For a much more detailed and exhaustive analysis of this conception of scientific method see essay 1 of the present volume.
 8. Some might feel that deductive logical proofs are absolute, but such proofs proceed from premises which are based ultimately on empirical and thus inductive or probable inference. See *ibid.* for a more detailed analysis and discussion of these points.
 9. The appeal to probable inference here is in the sense of "approximate" and not in the technical sense of the strict construction of a probabilistic model for the phenomenon being investigated. Probability in our sense is thus a measure of the relative ignorance of the knowing subject rather than the hypothesis that the phenomenon under investigation is indeterminate in some way. This leaves unanswered the question of whether every use of probability can be so regarded. However, if one espouses an essentially pragmatic epistemology, as I do, it may not even be necessary to determine, in any given instance, which part of our world view comes from the viewer and which part derives from the thing viewed. We have only to evaluate the explanatory and predictive value of our model according to pragmatic criteria. (See my "Foundations as a Branch of Mathematics," *Journal of Philosophical Logic* 1 [1972]: 349-58 for a further discussion of these points. Cf. also the discussion in my "Platonism and Pragmatism" presented to the seventh annual meeting of the Society for Exact Philosophy, held at McGill University, June, 1979.)
 10. This and the following passage are quoted in H. Balyuzi, *'Abdu'l-Bahá* (London: George Ronald, 1971). p. 242.
 11. It is interesting to note the discussion given of the use of scriptural authority. In *Some Answered Questions* (n. 4 above), pp. 342-43 'Abdu'l-Bahá points out that man's understanding of scripture is limited to his powers of reasoning and interpretation. Since these powers are relative, so is his understanding of scripture. Thus, regardless of the authority one attributes to the text itself, arguments based on such authority are in reality based on man's understanding of the text and hence are not absolute.
 12. See n. 9. above.
 13. 'Abdu'l-Bahá, *Some Answered Questions*, pp. 180-81.
 14. *Ibid.*, p. 181.
 15. *Ibid.*, pp. 255.56.

16. We have in effect a Platonic metaphysics combined with a pragmatic epistemology, the essential connection between the two being the Manifestation. See also n. 30 below.
17. Of course it is clear that such things as remote stars and subatomic particles are not immediately accessible, but the refined techniques used to study them are often appealed to as concrete extensions of the immediately accessible, even to the extent of identifying the object of study as being the techniques themselves (operationalism). On the other hand such examples (and especially the subatomic case) can be seen already as a partial refutation of the narrow view of scientific method. Witness the difficulty encountered by positivistic philosophers of science in assimilating the study of these phenomena to the narrow view.
18. The most well-known attempts are those of the Vienna-Oxford school typified in Alfred J. Ayers *Language, Truth, and Logic* (New York: Dover Publications. 1952).
19. Comparison may well be made here between such an experience and that of mystics. Perhaps the mystic is initially overwhelmed by the newness and intensity of his first experience and is thus led to feel that it is essentially and irredeemably chaotic and unsystematic. This would naturally lead to the glorification of the subjective which is characteristic of the existentialist view as well as to the conviction that mystic experience is essentially nonobjectifiable. But it is precisely my suggestion that the building of a religious community of understanding in a scientific way can lead to a relative objectification of mystic experience similar to that effected by the application of scientific method to other levels of experience. The resulting framework of interpretation would allow the individual to proceed from the initial mystic experience to a new stage of spiritual perception or knowledge, again bringing order out of chaos. This model also serves to illumine the relationship between the individual practicante and the community. The individual's mystic experience is his own and no one else's, but he has to relate properly to the community if his internal experience is to be of genuine profit to him. At the same time there is the further benefit to the community itself, which profits from harnessing the individual's spirituality in the form of service.
20. One thousand years is mentioned in the Bahá'í writings as representing an approximate length of time between two successive occurrences of revelation within a given collective or social gestalt. However, it is stated clearly that this is an approximate or average time span which can vary and which has in fact varied in history. Also, as the collective awareness of human society has increased through progressively more sophisticated means of transportation and communication, traditional gestalts widen, overlap, and fuse, lessening thereby the necessity for parallel or complementary occurrences of revelation.
21. In this regard Bahá'u'lláh has given the following clear statement: "Beware, O believers in the Unity of God, lest ye be tempted to make any distinction between any of the Manifestations of His Cause, or so discriminate against the signs that have accompanied and proclaimed their Revelation. This indeed is the true meaning of Divine Unity, if ye be of them that apprehend and believe this truth. Be ye assured, moreover, that the works and acts of each and every one of these Manifestations of God, nay whatever pertaineth unto them, and whatsoever they may manifest in the future, are all ordained by God, and are a reflection of His Will and Purpose. Whoso maketh the slightest possible difference between their persons, their words, their messages, their acts and manners, hath indeed disbelieved in God, hath repudiated His signs, and betrayed the Cause of His Messengers." (*Bahá'í World Faith* [n. 3 above], pp. 27-28).
22. My brief discussion of the Bahá'í concept of progressive revelation does not address itself directly to a number of questions which a thoughtful reader may be naturally led to pose. To treat these questions within the confines of a short paper like this would be impossible, and such excursions would also blur the sharp focus that is the proper goal of any essay. One important question, which is only partially treated in the foregoing, is that of establishing criteria for recognizing valid occurrences of the phenomenon of revelation. It is interesting to note that this and other related questions are treated in considerable detail in the writings of the Bab, Bahá'u'lláh, and 'Abdu'l-Bahá to which the reader is referred. Although these writers make some references to the internal states of the Manifestations, the criteria they give for assessing any claim to revelation mostly involve observable events. Besides the person of the Manifestation, his life, his teachings, his influence, and the social organization and civilization based upon them, one of the most important characteristics which these writers associate with authentic revelation, is the Manifestation's capacity for "revealed writing." This latter refers to the manner of writing (spontaneous and uninterrupted), the quantity and volume of writing, the capacity to reveal writing under all conditions of human life and without the benefit of formal schooling, and, most important, the spiritual and literary quality, the depth, the cogency, and the rationality of the content of the writing. Thus, e.g., Bahá'u'lláh left well over one hundred major works of writings, some of them written while in prison, in chains, or under other extreme conditions. Moreover, He had no formal schooling whatever beyond learning to read and write His native language of Persian. One of His major works, the Book of Certitude, whose English translation runs to over two hundred pages, was written in the space of two days and

two nights. Since these writings are published in many languages and widely disseminated, there is a maximum opportunity for objective verification of their quality and depth. The original manuscripts are all preserved, and there is consequently no question of interpolation or of other modifications done before publication. For an excellent discussion of these and other related points, together with eyewitness accounts and photocopies of many archival materials, see A. Taherzadeh, *The Revelation of Bahá'u'lláh*, 2 vols. (Oxford: George Ronald. 1974-77). Another important point stressed by Bahá'u'lláh and 'Abdu'l-Bahá is that a Manifestation is the first to practice his own teachings. He is the first example who lives his teachings into reality, whereas many philosophers, scientists, thinkers, and creative artists produce their works while living lives widely at variance with the precepts or ideals these works seek to express. In particular the Bahá'í concept of revelation must not be confused with a host of other phenomena which are sometimes popularly called "revelation." I am thinking of such things as trances, occultism, hypnotism, various psychopathological states, etc. As I have tried to make clear in my discussion, "revelation" in the Bahá'í concept refers to a naturally occurring periodic phenomenon (of rather long period) and not to abnormal or occult events. Of course the laws governing occurrences of revelation are viewed by Bahá'ís as depending on the will of God, but this is no less the case for all natural laws, and so revelation would have no special status in this regard. I feel that these supplementary comments are made necessary primarily because of the current resurgence of occultism, witchcraft, satanism, and other such activities which are specifically condemned by Bahá'u'lláh and 'Abdu'l-Bahá as superstitious and based on false imagination. Such popular fascination with the "supernormal" tends to create an ethos in which objective discussion of questions relating to religious experience becomes difficult and the otherwise clear lines between authentic spirituality and superstitious exoticism obscured.

23. The revelation of Jesus was focused primarily on the individual and can be viewed at least in part as counterbalance to the overemphasis on the totalitarian state and to the miserable social conditions and status to which the majority of the recipients of his message were subject.
24. Bahá'u'lláh does not claim to be the last of these messengers, for according to His teachings the succession will never stop: nor will human and social evolution ever come to a dead end (though the ultimate physical death of the solar system itself seems inevitable according to the best current scientific knowledge). However, He does state clearly that the next Manifestation will not come before the lapse of a thousand years' time.
25. This reflects a fundamental principle of evolutionary phenomena: That which is functional and productive at one stage of the process can become dysfunctional and unproductive at another stage. The same principle can be applied in attempting to understand the various changes in religious practice wrought by each successive revelation.
26. With regard to the individual purpose of religion Bahá'u'lláh has said: "Through the Teachings of this Day Star of Truth [the Manifestation] every man will advance and develop until he attaineth the station at which he can manifest all the potential forces with which his inmost true self hath been endowed. It is for this very purpose that in every age and dispensation the Prophets of God and His chosen Ones have appeared amongst men,... (Bahá'u'lláh, *Gleanings* [n. 2 above], p. 68).
27. Bahá'u'lláh and 'Abdu'l-Bahá. *Divine Art of Living*, rev. ed. (Wilmette, Ill.: Bahá'í Publishing Trust, 1970). p. 92.
28. Nothing that I have said in the foregoing should be taken as implying that the aesthetic and emotional aspects of religion should be in any way deemphasized, neglected, or excised from religion. My contention rather has been that when religion is excluded from the application of scientific method the aesthetic and emotional tend to become drastically overemphasized as they are then seen as constituting the only datum of religion. But it is my feeling that when a more balanced picture of religion is attained and its basically cognitive nature is recognized then these other aspects naturally fall into place in a healthy way, neither being indulged or sought for their own sake on the one hand nor rejected on the other. I think it is fair to say that many of the excesses witnessed throughout religious history, such as fanaticism, asceticism, mystic thrill seeking, and withdrawal from society, can be attributed largely to the lack of the sort of balanced viewpoint I am seeking to describe. It is interesting to note that Bahá'u'lláh pointedly condemns these specific excesses as well as others.
29. Bahá'u'lláh *Gleanings* (n. 2 above), pp. 164-66.
30. In this connection Bahá'u'lláh has said: "... all things, in their inmost reality, testify to the revelation of the names and attributes of God within them... Man, the noblest and most perfect of all created things, excelleth them all in the intensity of this revelation, and is a fuller expression of its glory. And of all men, the most accomplished, the most distinguished, and the most excellent are the Manifestations of the Sun of Truth. Nay, all else besides these Manifestations, live by the operation of their Will, and move and have their being through the outpourings of their grace." (ibid., pp. 178-79).

31. The crucial role of the Manifestation as the link between the transcendent absolute reality and the world of man is expressed by 'Abdu'l-Bahá: "The knowledge of the Reality of the Divinity is impossible and unattainable, but the knowledge of the Manifestations of God is the knowledge of God, for the bounties, splendours, and divine attributes are apparent in them. Therefore, if man attains to the knowledge of the Manifestations of God, he will attain to the knowledge of God: and if he be neglectful of the knowledge of the Holy Manifestation, he will be bereft of the knowledge of God." ('Abdu'l-Bahá, *Some Answered Questions* [n. 4 above], pp. 257-58).
32. 'Abdu'l-Bahá, *Paris Talks: Addresses Given by 'Abdu'l-Bahá in Paris in 1911-1912*, 11th ed. (London: Bahá'í Publishing Trust, 1969), pp. 143-46.

William S. Hatcher, *Docteur èn Sciences*, is Professeur Titulaire of mathematics in the Faculty of Science and Engineering at *Université Laval* in Quebec City. Born in Charlotte, North Carolina in 1935, he received his B.A. *cum laude* at Vanderbilt University, Nashville, Tennessee in 1957, majoring in mathematics. A year later, he received an M.A.T. degree in mathematics from the same institution. Beginning in 1960, he took up resident study in mathematics at the *Université de Neuchâtel*, Switzerland where he received his doctorate in 1963. His doctoral thesis was in the area of mathematical logic. He has since published over twenty-five professional papers in the fields of mathematical logic, algebra (category theory and universal algebra), computer science, and philosophy. He has also published *Foundations of Mathematics* (W.B. Saunders, London and Philadelphia, 1968), a comparative study of various axiomatic foundational systems of mathematics, and *Absolute Algebra* (Teubner, Leipzig, 1978, co-authored with Stephen Whitney). He continues to be active in research.

Professor Hatcher has held academic positions at the *Université de Neuchâtel* and the University of Toledo, Ohio, coming to *Université Laval* in 1968. He has been an invited lecturer at major universities in Canada, the United States, and Europe, and was invited Professor of Theoretical Computer Science at the Swiss Federal Institute of Technology at Lausanne during the academic year 1972-1973.

A member of the Bahá'í Faith since 1957, Dr. Hatcher had previously contemplated a career in the Christian ministry. He has subsequently served the Faith in various administrative capacities, in particular as a member of the National Spiritual Assembly of the Bahá'ís of Switzerland from 1962-1965. He has been constantly active in his efforts to deepen his understanding of the vast range of the Bahá'í Teachings and to combine their insights with his professional knowledge.

The Bahá'í Faith

A Summary

The Revelation proclaimed by Bahá'u'lláh, His followers believe, is divine in origin, all-embracing in scope, broad in its outlook, scientific in its method, humanitarian in its principles and dynamic in the influence it exerts on the hearts and minds of men. The mission of the Founder of their Faith, they conceive it to be to proclaim that religious truth is not absolute but relative, that Divine Revelation is continuous and progressive, that the Founders of all past religions, though different in the non-essential aspects of their teachings, “abide in the same Tabernacle, soar in the same heaven, are seated upon the same throne, utter the same speech and proclaim the same Faith.” His Cause, they have already demonstrated, stands identified with, and revolves around, the principle of the organic unity of mankind as representing the consummation of the whole process of human evolution. This final stage in this stupendous evolution, they assert, is not only necessary but inevitable, that it is gradually approaching, and that nothing short of the celestial potency with which a divinely ordained Message can claim to be endowed can succeed in establishing it.

The Bahá'í Faith recognizes the unity of God and of His Prophets, upholds the principle of an unfettered search after truth, condemns all forms of superstition and prejudice, teaches that the fundamental purpose of religion is to promote concord and harmony, that it must go hand-in-hand with science, and that it constitutes the sole and ultimate basis of a peaceful, an ordered and progressive society. It inculcates the principle of equal opportunity, rights and privileges for both sexes, advocates compulsory education, abolishes extremes of poverty and wealth, exalts work performed in the spirit of service to the rank of worship, recommends the adoption of an auxiliary international language, and provides the necessary agencies for the establishment and safeguarding of a permanent and universal peace.

—Shoghi Effendi