

Truth

A

Path

for the

Skeptic

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Truth: A Path for the Skeptic

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What is truth? Is there meaning in existence? What are life and death? These and similar questions are explored here. This work draws on techniques and examples from science and mathematics in a search for insights from ancient and modern sources. It is written especially for the skeptical scientist, the agnostic, and the atheist. It is informal but rigorous, and invites careful reflection.

Contents	Page
Questions	4
Answers	84
Actions	156
Notes and References	173

Questions

Overview

The search for truth is a lifelong endeavor. From the time we open our eyes at birth until we close them at the hour of death, we are sorting and sifting, trying to determine what is true and what is not, what is reality and what is illusion, what is predictable and what is random. Our understanding of truth underpins our priorities and all our activities. Every thought we have, every step we take, every choice we make is based on our assessment of what is true. Knowing the truth enriches our lives, while false beliefs impoverish and endanger us.

The importance of truth can be illustrated by countless examples. Contractual arrangements are accompanied by an assertion of truthfulness. Participants in a trial are required to tell the truth. Various implements have been used to try to ascertain truth, from the dunking and burning of accused witches to the use of lie detectors. Children are admonished to tell the truth, and they demand to know the truth. Calling someone a liar is a gross insult. Science and engineering rely on truth. There are laws regarding truth in lending. Failing to be truthful can result in both civil and criminal liability. In the wake of civil upheavals, a Truth Commission may be established. The United States was founded on the notion of self-evident truths. Indeed, every government and every system of jurisprudence, philosophy, science, medicine, and religion asserts that its central concerns are discovering truth and implementing the measures called for by that truth.

The role and value of truth vary greatly among individuals and groups. At one extreme are those who see truth as a commodity to be used for manipulation and self-interest. At the other extreme are those who are so impassioned by truth that they give their lives to

it and will even, if need be, sacrifice their lives for it. There are also those who see truth as a matter of indifference or convenience. This work is directed toward the members and admirers of the impassioned group, those who love and seek truth, and especially toward those whose training and background have accustomed them to formal, and sometimes highly constrained, concepts of truth and methods of proof, as found in science, mathematics, engineering, law, medicine, teaching, and other professions. Its aims are to provide approaches for deciding what is true; elucidate and reconcile what may be seen as contradictory viewpoints, intentions, and facts; and share some notions that the author believes are true, and hopes will be useful to individuals and society.

Important truths range from the trivial and mundane to the complex and sublime. At the lowest level, we need to know whether a fruit is poisonous or nutritious, whether we are in front of an open door or a clear window, whether we can safely cross the street. At the highest level, we consider the purpose and meaning of our lives, our place in creation, and the limits of our choices. And at intermediate levels, we need to know whether a given diet is good for us, what is a good occupation, who will be a good marriage partner, who will make a good governor. In all these instances and countless more, knowing the truth enables us to choose well, while believing a falsehood subjects us to unpleasant consequences.

The cynic or Machiavellian might say truth is not important: all we should care about is what allows us to live our lives as we please. Leaving aside the ethical aspects of such an assertion, it is obviously dangerous to ignore the truth. Thus, the successful person must care about truth. An unethical person may not care about anyone else's knowledge of the truth, and may in fact try to prevent others from knowing the truth; but ethical or not, we ignore the truth at our own peril.

As we look around us, we see a world in disorder. Terrorism, drugs, murders, poverty, extreme wealth, sexual assault, racism, wars, famines, epidemic diseases, environmental degradation,

school systems that fail to educate, and corrupt governments are just a few of the widespread problems afflicting the peoples of the world. Is this the normal and inevitable condition of the world, or does it reflect a world society that is somehow malfunctioning? If the former, how do we reconcile ourselves to it and minimize its impact? If the latter, how do we work towards a better system?

The object of this work is to examine existential truths—those concerning life, death, existence, creation, science, eternity, religion, and politics, to name a few—and to find proofs and actions relevant to those truths. However, a direct approach to existential truths is made difficult by the passions and preconceptions associated with them. Thus, we will first examine well-established practical truths—truths concerning mathematics, physics, and biology, for example—to elucidate the relative aspects of truth, the nature of proof, and the actions consequent on our understanding of truth. We will then use this groundwork to venture into the existential realm.

This work is intended to be rigorous but not formal, and thorough but not tedious. Definitions of terms are provided as need arises, and are repeated under “Definitions,” beginning on page 173.

Preliminaries

An immediate and obvious question is, “What is truth?” For our purposes, we will take it to mean “reliable notions.” That is, a given notion is true if we can rely upon it, and truth is the set of all true notions. This simple, practical definition of truth allows us to explore the relations among truth, proof, and action, and to consider fundamental questions about existence, without falling into pedantic or circular definitions. It also allows us to reasonably speak of notions such as “relative truth” and “absolute truth,” and to ask whether such notions are valid and useful. A statement is true if it expresses a reliable notion; we will not generally distinguish be-

tween a notion and a statement, except in cases of ambiguity. “Reality” will be taken to mean “that which is described by the set of true notions.”

A “proof” will be taken to mean a procedure that causes us to accept a notion as true.

“Action” refers to those actions that arise from having accepted a given truth or set of truths. Actions range from the immediate (not walking through the window) to the unending (seeking to improve our character).

Four terms closely related to truth are belief, prejudice, understanding, and hypothesis. A belief is a notion that may or may not have an associated proof. A prejudice is a belief that is maintained in the face of contrary evidence. An understanding is a belief based on proof. A hypothesis is a notion that one is in the process of proving or disproving.

Another term that will be used frequently is “science.” By this we mean a body of knowledge and system of reasoning having for its object the discovery of truth.

We will use the term “spiritual” to mean “concerning those aspects of life that are not specifically physical or scientific.”

Truth has both individual and collective aspects. Individual understandings about truth determine individual behavior, while collective understandings about truth determine social structures, mores, customs, and laws.

It is obvious that our actions depend on our understanding of truth. It is perhaps less obvious that our understanding of truth depends on our notions of proof. Most beliefs that we accept as truths are “self-evident”: we do not seek for explicit proof because we accept the appearance or experience as true. For example, we accept the existence of our limbs and senses, the solidity of the ground under our feet, and the alternation of night and day as true descriptions of existence. The question of proof of these implicit statements (for example, “The earth is a solid body”) never arises in normal circumstances. Discovering that these self-evident assumptions are not entirely true can be traumatic: consider, for ex-

ample, the fear and disorientation experienced in a major earthquake. Other violations of self-evident truth will be considered explicitly, under the heading of “relative truth,” and implicitly in various existential contexts.

Our vision of what is true evolves throughout our lives, as do our criteria for proof. Likewise, the actions evoked by the same perceived truth vary as we proceed from infancy, through childhood, adolescence, youth, maturity, and into old age. A fundamental assumed truth is the observation of cause and effect. We discover quite early that certain actions bring corresponding results. If we cry, we are fed. If we crawl off a stair, we get hurt. If we eat, we are relieved of hunger. Our interpretations of cause and effect are intimately connected with the phenomena of conditioning, prejudice, and superstition. The notion of causality (cause and effect) as a fundamental truth requires a careful examination, which will be carried out at a later point.

Language That Lies

In order to discuss truth, we use language. Unfortunately, language can be used to hide or distort truth as well as to expound it. This is particularly true when habitual usage is at variance with established meaning. George Orwell’s novel *1984* uses “Newspeak” as the epitome of a perversion of language. While his examples are extreme in degree, they are not different in kind from what we sometimes encounter in advertising, government communications, news media, and casual speech.

In the commercial realm, we are urged to “save” by spending money. While it is true that you spend less money on a given item by buying it at a lower cost, the money “saved” will probably be spent on something else. “Save,” then, effectively means “buy more.” Similarly, a customer may be referred to as a “guest.” A guest, however, is not expected to pay for services, while a customer is not only expected but required to pay.

In the sociopolitical realm, we read about the dangers of “fundamentalists” and “fundamentalism,” when the reference is really

to fanatics and fanaticism. Fanatical behavior, such as bigotry or terrorism, is not in line with the fundamental teachings of any religion. Allowing fanatics to paint themselves as fundamentalists distorts religion and creates suspicion and discord between members of different religions—precisely what the fanatics aim to achieve.

In our casual conversation, extremists are often labeled “radicals.” The term “radical” means “reaching to the roots” and should not be taken to imply extremism, which means tending toward the fringe, with an implication of intolerance for the middle. A radical approach could well be adopted by the broad middle of a group, and an extremist may often be seeking superficial, not radical, changes.

“Security” and “defense” have evolved a remarkable spectrum of meanings, including war, aggression, police brutality, terrorism, and spying. We all want our lives to be secure, and all people acknowledge the right of defense against aggression. This usurpation of meaning leads to acceptance and promotion of behavior and policies, on the part of both nations and non-nation groups, that, contrary to the meaning of the words, create insecurity and jeopardize our defense.

In the domain of product labeling, basic terms may be given meanings quite different from their obvious definitions. For example, in the United States, “natural flavoring” does not mean “extracted from the natural flavor of the listed item” but rather “produced from any food” (paraphrased from U.S. FDA¹ *). For example, “natural orange flavor” does not mean “flavor extracted from an orange” but “orange-like flavor produced from a food.” As another example, many products carry the indication, “100% recycled content,” and in smaller type, “Minimum 25% post-consumer recycled content.” This is because raw material that has passed through the production line without being used is considered “recycled,” and its re-use is called “recycling.”

* Numbered endnotes begin on page 182.

The reader can no doubt cite many more examples; indeed, to do so may be an interesting—if perhaps discomfiting—exercise. Clearly, we cannot individually change these broad usages; it would be difficult or impossible even for a nation to make such a change. Nevertheless, as we search for truth, we can become ever more aware of discrepancies between dictionary definitions and habitual use, and we can try to cast our own thoughts and speech in terms that truthfully express our intent.

Truth: Absolute and Relative; Literal and Figurative

We are inclined to think of truth in absolute terms: a statement or notion is either true or not. However, many statements or notions are relative: they can be reasonably taken as true or false, depending on the context. This ambiguity may result from various factors, including different points of view, historical development, things that are not as they seem, and differences in definition or terminology. When we think of scientific truth, we tend to think in literal terms; however, truth is often better expressed in figurative terms. The next few sections provide examples and discussions of truth in this framework.

Literal Truth

Literal truth means truth that is expressed in words and phrases that reflect as closely as possible the intended notion. For example, when we say that one plus one equals two, we are expressing a literal truth about the mathematical system. Likewise, when we provide a geometric description of the structure of a leaf, and list the plants that have leaves with this structure, we are expressing literal truths. A literal description of truth is foundational to mathematics, science, law, and the mechanical aspects of art, to name just a few domains. “A 6H pencil makes lighter lines than a 4B pencil” is a literal truth. Literal truth provides points of reference that all can agree on, and descriptions that can readily be translated from one language to another.

Literal truth has its limitations, however. Its very precision can make it difficult to understand. For example, consider two descriptions of a telescope mirror. In the first, we begin by stating that *a parabola is the locus of points equidistant from a point and a line*. We then describe a telescope mirror as *a parabola of rotation, the surface of which has a high reflectivity and a roughness that is small compared to the wavelength*. In the second, we state that a telescope mirror is a shiny silver bowl. While both descriptions are true, the second one is far more useful as a general introductory statement about telescopes. If we try to describe more complex and variable objects, such as plants and people, in literally truthful terms, we find ourselves tediously bogged down in detail. If we try to describe subjective reality—such as the attractiveness of a painting, or the discomfort of cold weather—in literal terms, we find the task impossible. While the physiological aspects of subjective reality may be described in literal terms, it is necessary to use figurative descriptions to effectively communicate the subjective experience itself.

Figurative Truth

Figurative truth means truth expressed in a form that is evocative but not literal. It picks up where literal truth leaves off. If you tell someone you exploded in anger or melted with pity, nobody asks how the doctors put you back together after your explosion or how much you had to be chilled to solidify after melting. If you fall in love, nobody throws you a rope or offers to help you get up. We understand that the literal meanings of the verbs are inappropriate to the situations they describe, but they are more evocative, and hence more truthful, than a literal description could be.

In the science of history, we see that a chronicle of dates, times, and locations provides the literal truths within which the events of history take place. However, the historian, to make history useful, goes beyond the literal truths and provides interpreta-

tions and connections. For example, the chronicler would say that an event *occurred*, while the historian might describe it as *unfolding*: not a literal truth, as the event was never folded up to begin with; but truthful nonetheless, in that it evokes a process that must surround the event. Likewise, we speak of historical movements when we want to describe complex, long-term sets of processes. We speak of a language as developing over time, when the literal truth is that individuals, over the course of generations, have adopted, adapted, and invented various words, phrases, and structures. Trying to describe all the details in literal terms, however, does not provide insight into the process as a whole.

Centrifugal force is an example of a figurative truth in physics. If you swing a ball on a string, you feel an outward pull, referred to as a centrifugal force. In literal terms used in physics, the force involved is a centripetal one, namely the pull of your muscles acting through the string. The centrifugal “force” is the acceleration resulting from the centripetal pull of the string on the ball, and is opposite and equal to force acting through the string, according to the formula *force equals mass times acceleration*. For many purposes, it is far more convenient (and intuitive) to use the figurative quantity *centrifugal force* than to describe it as an acceleration.

In astronomy, we say that one body orbits another. In fact, all bodies orbit jointly around their common center of mass. If the masses are very different, then the motion of the larger body is negligible, and the smaller body orbits approximately around the center of the larger one. However, for bodies with comparable mass, such as the earth and the moon, the common center is far from the center of the larger body, and may be between the two bodies. For convenience, though, we still say that the moon orbits the earth.

Relative Truth

Relative truth is a statement or notion that may be true or false depending on the context. Let us consider some examples of relative truth in the domains of mathematics, physics, astronomy, and biology.

Mathematical Oddities

Consider the domain of numbers. It is built entirely of simple operations on simple objects. Yet we shall see that even very simple statements in this simple domain may be either true or false, depending on what universe of numbers we use. We will consider this carefully and at length, as an example of how people can hold conflicting views and express disagreement, based on their underlying (but normally unspoken) assumptions.

As children, we learned first that the numbers (known as the positive integers) are 1, 2, 3, etc. The universe of mathematics, at that stage of our development, consisted in the ability to recite the numbers, and later, to count objects. The digit zero was a convenience, needed for writing the number 10 and its multiples. We could learn about addition and multiplication, but subtraction and division left us with some big questions, such as, “Why can’t you subtract 5 from 4?”, or “What’s the exact answer to dividing 7 by 3?” We could confidently assert that there are no numbers between 5 and 6. If our big sister had told us that 5 minus 8 is -3, or that 11 divided by 2 is 5.5 and is a number between 5 and 6, we would have said, “Those aren’t numbers!” And we would have been correct, considering the universe of numbers available to us. There are a number of things that are false for the positive integers, but true for a larger universe of numbers. Two of the true statements in the universe of positive integers are, “Any two numbers can be added to get another number” and “Any two numbers can be multiplied to get another number.” Three false statements are, “Any two numbers can be subtracted to get another number,” “Any two

numbers can be divided to get another number,” and “Between any two numbers there is another number.”

Later in our education, we learned about fractions (or ratios, formally known as “rational numbers”) and negative numbers. With these added to our universe, the three formerly false statements became true (excluding division by zero, which is undefined). The statements did not change, but their meaning changed, because of implicit reference to a different universe of available numbers. Thus 4 minus 5 is -1, 7 divided by 3 is $2\frac{1}{3}$, and some numbers between 5 and 6 are $5\frac{1}{2}$, $5\frac{3}{4}$, and $5\frac{11}{16}$. Note that there is some ambiguity about notation: without context, it is not possible to know whether $5\frac{1}{2}$ means “five-and-one-half” or “five minus one-half.” This ambiguity is not unusual: as a system becomes more complex and expressive, opportunities for ambiguity increase. In this case, we could avoid ambiguity by writing “ $5+1/2$ ” or “ $5\&1/2$ ”, but the typographic convention “ $5\frac{1}{2}$ ” already exists, and we cannot make it disappear just by our own choice of usage. Note also that to write “ $5\frac{1}{2}$ ” as a fraction (that is, to explicitly display it as a rational number) we need to combine the whole number with the fractional part and write “ $11/2$ ” (eleven over two).

Now suppose that we want to indicate the lengths of the sides of a triangle. Certainly, these should all be numbers. However, if we limit ourselves to just the rational numbers (those that can be expressed as fractions) we can express the sides of some triangles, but not of others. It can be shown by purely geometric proof that for a right triangle (one having one 90-degree angle), the square of the length of the hypotenuse (diagonal side) is equal to the total of the squares of the other two sides (legs). For example, if the legs have lengths 3 and 4, the square of the length of the hypotenuse is $9+16$, or 25. In this case, we can see that the length of the hypotenuse is another integer, 5. However, for the simple and obvious case of legs of length 1, the square of the hypotenuse is 2. This means that the length of the hypotenuse is $\sqrt{2}$ (the square root of

2). It is not difficult to prove that $\sqrt{2}$ is not a rational number—that is, it cannot be expressed as a fraction. It can be shown also that the circumference of a circle of radius 1 is not a rational number. In the universe of rational numbers, then, it is false to say “If the lengths of two sides of a triangle are numbers, so is the length of the third,” or, “If the radius of a circle is a number, so is its circumference.” This is obviously unsatisfactory, and so the universe of numbers is expanded to what is known as the “real” numbers. By this we mean all numbers that can be written in decimal notation as “a...bc.defg...”, where the letters indicate decimal digits, the three dots between **a** and **b** indicate any finite number of intervening digits, the dot between **c** and **d** is the decimal point, and the dots after **g** indicate any number, finite or infinite, of additional digits after the decimal point. We will see shortly that the term “real” reveals a certain prejudice.

Before discussing this prejudice, though, let us see what statements are true and false in the universe of real numbers. In this universe, we can say, “If the lengths of two sides of a triangle are numbers, so is the length of the third side”, and, “If the radius of a circle is a number, so is its circumference.” However, we cannot say, “Every number has a square root.” While it is true to say that every positive real number has a square root, negative real numbers do not have real square roots. Just as the universe of the positive integers does not allow subtraction of a larger number from a smaller one, likewise the universe of real numbers does not allow the square root of a negative number. Why not? Because the only way a product of two real numbers can be negative is for one to be positive and the other negative. Thus the square root of a negative number would have to be either zero (clearly wrong) or simultaneously positive and negative (not possible). So in the universe of real numbers, the statement, “Every number has a square root,” is false. Now, this does not pose a problem if all we want to do is measure the sizes of objects, and other similar computations. How-

ever, it turns out that there are reasons for wanting the square root of a negative number.

This brings us to the prejudice referred to earlier: the square root of a negative number is known as an “imaginary” number. This makes linguistic sense, in contradistinction to the “real” numbers; but the “imaginary” numbers are no more (or less) imaginary than, say, negative numbers or the square root of 2. Perhaps it would be better to call them “surreal” numbers; be that as it may, the name “imaginary” is conventional. The canonical imaginary number is the square root of minus one, denoted “ i ”. In the universe of “complex” numbers, consisting of the real numbers, the imaginary numbers, and the sums and products of real and imaginary numbers, the statement, “Every number has a square root,” is true.

There are further extensions of the number system used for various purposes, but the ones described thus far are sufficient to illustrate the problems of communication resulting from different assumptions about the set of numbers. We have described the positive integers, all integers, the rational numbers, the real numbers, and the complex numbers. We now recapitulate, in tabular form, the truth and falsity of some statements relative to each number set.

Positive Integers	All Inte- gers	Rational Numbers	Positive Real Num- bers	Real Num- bers	Complex Numbers
----------------------	-------------------	---------------------	----------------------------------	----------------------	--------------------

The sum of every two numbers is a number

True	True	True	True	True	True
------	------	------	------	------	------

The difference of every two numbers is a number

FALSE	True	True	FALSE	True	True
-------	------	------	-------	------	------

The product of every two numbers is a number

True	True	True	True	True	True
------	------	------	------	------	------

The quotient of every* two numbers is a number

FALSE	FALSE	True	True	True	True
-------	-------	------	------	------	------

The square root of every number is a number

FALSE	FALSE	FALSE	True	FALSE	True
-------	-------	-------	------	-------	------

*excluding division by zero

Let us rephrase this discussion in terms of individual development. When we were little children who had just learned to count, if we heard our older sister talking with our mother about negative numbers, we could not have made any sense of the discussion, because it is not possible to count objects by using negative numbers. Fractions, decimals, square roots—none of these is accessible. We had no use for a distinction between rational and irrational numbers, for the number zero, or for the existence of complex numbers. Later we learned about operations on numbers. Subtraction leads eventually to the need for zero and negative numbers, such as two minus three. Division leads to the need for fractions (ratios of integers, or rational numbers) such as the result of three divided by two. Later still, the notion of square roots leads to consideration of irrational numbers (for example, the side of a square with area equal to three) and eventually complex numbers (what is the square root of minus four?), while analysis of curves leads to the

need for transcendental numbers, such as π . At any given stage in our learning about numbers, the “truth” for us consists of things that make sense about numbers that we have learned about. When we have learned to count, we can discuss whether 100 is larger than 150, and make sense of 150 minus 100, but to pose the question, “What is 100 minus 150?” is meaningless. The statement, “Negative numbers don’t have square roots,” is true for the set of real numbers, but false for the set of complex numbers. Likewise, the statement, “All numbers have square roots,” is true for the positive real numbers and the complex numbers, but false for the integers and for the real numbers. At any given stage, we do not have the tools to formulate the limitations of what we “know to be true” because those limitations are beyond the knowledge that we have about the number system. A statement that is valid at one stage of learning may be false, incomplete, or meaningless at a different (earlier or later) stage.

It is important to notice that in the case of each true-and-false statement, there are not two different truths, but rather two different statements of truth. For the person at the earlier stage of development, the statement made by the more advanced student seems either meaningless or false, and there is no reasonable way to “make him see the truth”—he does not have the concepts necessary to understand the more advanced (or comprehensive) point of view. In this sense, the truth of these statements is relative.

Let us briefly examine the same developmental sequence from a historical point of view. The set of positive integers was adequate to the needs of mankind for many millennia. The Romans conducted all their business and science with Roman numerals, which denote only the positive integers; the notion of zero seemed highly suspicious and even blasphemous. The Greek geometers were able to measure and calculate straight and curved distances accurately with integers and ratios of integers. With the introduction of the “Arabic” system of decimal notation, it became possible to see a difference between rational numbers (which have repeating patterns after the decimal point) and those that did not seem to repeat.

With the introduction of limits and a notation for “infinity”, the values of such numbers as pi could be expressed in a concise way. The introduction of complex numbers allowed the solution of algebraic problems that had no “real” solutions. A discussion of the difference between 3, pi, and the square root of 2 would have been impossible for the Greek geometer, because neither the notions nor the notations existed to allow such a discussion. Likewise, the solution to a problem such as “ $n^2+4=0$ ” was not possible for the mathematicians of the 14th century, who used only the real numbers, while it is trivial for today’s advanced algebra student, using complex numbers. Thus the “truth” in the 14th century was “There is no solution to ‘ $n^2+4=0$ ’,” while the “truth” in the 21st century is, “there are two solutions to ‘ $n^2+4=0$ ’: $2i$ and $-2i$.”

We thus see that in terms of both individual and historical development, the truths of mathematics are not absolute, but relative, in the sense that statements are always made in an implicit context, which it is not possible to describe at an earlier stage, though the context can be made explicit at a later stage.

Another sense in which the same mathematical statement may be true or false is related to how we interpret strings of symbols—what we call “words” in natural language. We are accustomed to a system known as base-10 (decimal) notation, in which we have one digit each for the numbers 0 through 9, and then use placement of the digits to express 10s, 100s, 1000s, etc. We are so accustomed to this system that we implicitly identify the number with its representation. That is, we think of the symbol “3”, the word “three” and a group of three items (***) for example) as identical and interchangeable, and likewise the string “16” is thought of as identical with a group of this many items: **** ***** **** *****. This is very convenient and serves us well, except when we have occasion to use a different number base. For example, in certain computer applications, base-8 (octal) notation is convenient, because it readily translates to the base-2 operation of most digital computer circuitry. The first 8 digits (0-7) do not offer any difficulty. However, writing “10” in octal means this many objects: ****

****, whereas in decimal it means this many: ***** *****. To add to the confusion, in decimal, $5+5 = 10$, whereas in octal, $5+5 = 12$. Of course, this is simply because “12” in octal means this many objects: **** ***** **. Thus the same truth (***** + ***** = ***** *****) is expressed in an inherently different way. If we are using decimal notation, “ $5+5 = 10$ ” is true, and “ $5+5 = 12$ ” is false, whereas if we are working in octal notation, “ $5+5 = 12$ ” is true, and “ $5+5 = 10$ ” is false. This can be confusing enough in the very cut-and-dried world of mathematics; analogous differences in terminology can be far more difficult to resolve in the context of natural language and philosophical concepts, since the same words and phrases may mean very different things to different people.

Peculiarities from Physics

We will next consider some notions and statements from the domain of physics and examine some statements that are false at one level of development but true at another. We will divide physics into ancient (prior to Newton), Newtonian (Newton to Einstein), and modern phases. We will consider concepts related to motion and the nature of matter. Later, we will use these same concepts in examining methods of proof.

In ancient physics, the law of motion of objects was, “A moving object slows down and stops unless acted on by a force.” In Newtonian physics, the law of motion is, “An object in motion continues its motion with no change unless acted on by a force.” These two appear to be contradictory, but both worked well for the applicable circumstances. In ancient times, the effects of friction were not well understood, and were not regarded as a “force” in the context of the law of motion. Since objects on earth are always subject to friction, the ancient law was correct for all earth-bound observations: any object subject to friction slows down and stops unless a force is applied to keep it in motion. In Newtonian physics, the effect of friction is included among the “forces” acting on a body. For earthbound objects, the Newtonian law gives the same result as the ancient law, because friction is included among the

forces. For celestial objects (the moon and planets in particular) the Newtonian formulation allows the motions of the bodies to be described correctly without having to suppose, as in ancient times, either that the laws of physics in the heavens are different from those on earth, or that there is some sort of heavenly force that keeps celestial objects moving. For earth-bound events, then, both formulations are “correct”, although different; but for astronomy, the Newtonian law is a clear improvement over the ancient one.

In both Newtonian and ancient physics, time and space are regarded as a fixed framework, applicable in all places and under all conditions of motion, and mass as a fixed property of an object. Modern physics introduces the ratio of an object’s speed to the speed of light as a factor that changes the effective size and mass of a moving body. Because the speed of light is so great (about 0.2 million miles per second), these effects are negligible for everyday objects in everyday situations, such as balls, horses, cars, trains, and airplanes. However, for objects moving at high speeds, such as subatomic particles in particle accelerators, these effects are significant, and useful results cannot be obtained using Newtonian physics. Even for spacecraft moving at orbital velocities, the change in the flow of time at high speeds can be measured with high-accuracy clocks. One of the fundamental laws of Newtonian physics is that the speed of an object is proportional to the force applied during a given length of time. Thus if you apply twice the force, you get twice the speed. Newtonian physics thus predicts that if you apply a million times the force, you get a million times the speed, and that if you apply enough force, the object will travel as fast as you want, even faster than light. Modern physics has demonstrated that this is not the case. What happens instead is that some of the force is used in increasing the mass of the object, and no matter how much force you apply, you can never accelerate an object to the speed of light. What you will get is a much more massive object, moving at a speed slightly less than the speed of light. Curiously, that more massive object will appear, to the observer on the ground, to be shortened along the direction of motion. Even

more curious, perhaps, is that an observer riding on the speeding object will see no changes at all within the object, but will instead see the ground observer as shortened along the direction of the object's motion. Once the object is brought to rest, everything will return to its previous size and mass; these effects are purely results of relative motion. Modern physics thus shows that our common-sense notions of time, distance, and mass as fixed and independent attributes are viable only for events taking place under the sedate conditions of macroscopic earthly life.

Matter—the very substance of our physical existence—is seen, through the discoveries of modern physics, to be quite different from the solid and continuous structure that we perceive. The question of whether matter is continuous (and therefore divisible into arbitrarily small particles) or atomic (consisting of minute indivisible particles) has been of great interest for thousands of years. In the 1800s it was established that matter is atomic: there is indeed a minimum unit of any given elemental substance, known as the atom. In the 20th century it was found that atoms are made up of yet smaller particles (protons, electrons, and neutrons), and that even those smaller particles are composed of smaller units, whose nature and behavior are so different from our direct experience that they are difficult to describe or imagine. In the ancient view, atoms were thought to be like so many tiny marbles. Modern physics tells us that the atoms are more like tiny solar systems, with a heavy center (nucleus) containing protons and neutrons, and a cloud of very light electrons swirling around them in a random yet highly structured fashion. The rules that govern the behavior of these particles are not like anything we can see in our normal view of the world. The apparent solidity and opacity of objects are a result of electrical forces within and between the atoms, while the stability of the atomic nuclei is due to forces that are entirely imperceptible at our macroscopic scale. To see how illusory the solidity of matter is, imagine constructing a macroscopic scale model of matter. If we constructed a scale model of an iron crystal, for example, with the atomic centers spaced 10 feet apart, the dense nucleus would be

less than 0.001 inch in diameter (less than the diameter of a hair), and the space between the nuclei would contain 26 electrons, each with a diameter less than 0.001 inch, swirling around in a layered cloud. So a simple and obvious statement such as, “Iron, at room temperature, is solid,” can be either true or false depending on one’s point of view. From a macroscopic point of view iron is hard, impermeable, and static, whereas from a submicroscopic point of view it is a sparse lattice in constant motion.

Ambiguities of Astronomy

“The sun rises in the morning and sets in the evening.” What could be more obvious? However, it is not literally true. The sun stays fixed at the center of the solar system. In the morning, the eastern horizon falls, and the sun becomes visible. In the evening, the western horizon rises, and the earth hides the sun. Observationally, the sun does appear to rise and set, and it is a convenient figure of speech; but in ancient times, when it was believed that the sun really did rise and set, and that all the heavenly bodies circled around the earth, improbably complex motions were needed in order to explain the detailed astronomical observations of the sun, moon, planets, and stars. Using the heliocentric model of the solar system, the planetary motions are seen to be (to a good approximation) simple ellipses, with all other apparent motions arising from the motion of the earth. As to the daily rising and setting of the sun: from the point of view of an astronaut, the sun may rise and set several times a day or not at all, depending on the astronaut’s path. For a scientist stationed at the South Pole, the sun never rises or sets; it circles above the horizon, spiraling out of sight in April and spiraling back into sight six months later. For a lunar inhabitant, the sun rises and sets once per (earth) month.

The stars, too, offer examples of relative truth. They are said to be “out” or not, depending on the presence of clouds and the time of day, whereas in fact the stars are always “out,” but may be obscured by the opacity of the nighttime clouds or the brightness of the daytime sky. They are observationally tiny points of light,

whereas in fact they are comparable to the sun in size and brightness. We speak of astronomical events, such as novae and the behavior of galaxies, in the present tense, although in fact they occurred years, centuries, or millions of millennia ago.

Biological Ambivalence

We will consider just one notion from the realm of biology: the difference between men and women. At the biological level, the truth seems simple enough: men and women are different. Men fertilize women; women bear and nurture children. Even at this level, though, the truth is not historically static. Until the advent of the microscope, it was not clear what role the man played in the creation of children. There were two main beliefs. One was that the child was produced by the mother, and the man's role was to provide some sort of nourishment that allowed the child to grow in the womb; the other was that the child was produced by the man, who implanted it in the womb of the mother, where it then grew. Either of these views inculcates the notion that the child is primarily the product of one parent or the other. Such views have deep implications for family relationships. It is clearly established today that the sperm and egg play a joint role in the creation of the baby, which combines genetic characteristics of both parents. Thus, from a biological perspective, men and women have an equal partnership, at least in the continuance of the species. What once seemed to be an obvious truth (that the child was primarily the product of one parent or the other) is today seen as an obvious falsehood.

Absolute Truth

In the foregoing we have considered various examples of relative truth. Let us now take up the question of absolute truth. What exactly ought we to mean by this? We will take it to mean "truth on which everyone will agree." By "everyone" we mean people with whom we can communicate and exchange ideas; otherwise, we would have no way of knowing whether they agree.

There are two different questions to pose. The first is, “Is there such a thing as absolute truth?” The second, assuming a positive answer to the first, is, “Can we assert that a given truth is absolute?”

Consider mathematical truth. It can be absolute, within its system. For example, the rules of arithmetic, within a specified system, are absolutely true. While various systems can be defined, each with different arithmetical rules, the results within any given system are agreeable to all who have investigated the subject. We can thus state that there are some absolute mathematical truths, and we can give some examples of them, which will be discussed under *Mathematical Proofs*.

Scientific truth (other than mathematical truth) is not likely to be absolute. For example, Newtonian physics was thought at one time to be absolutely true, but has turned out to be an approximation.

Historical facts may be absolutely true, but only those that are of a trivial nature, such as dates of birth and death. The interesting and useful insights from history—that is, the chains of cause and effect from which we may learn—are subjective and not absolute.

One might propose that external physical reality is an absolute truth—the existence of the earth, sun, people, etc., as they appear to us. However, there are at least two reasons not to accept this. One is that certain cultures and philosophies hold these things to be mere illusion, and so not everyone agrees on physical reality as truth: thus it is not an absolute truth. The other is that even for those who believe in the external reality of the physical world, the findings of modern science show that our perceptions of reality are quite different from a detailed description of that reality, from the quantum scale to the interstellar scale. Thus again, what we see as external physical reality is not an absolute truth.

Others might propose that the existence of a creator is an absolute truth. However, there are many people who deny such a concept, which by our definition means it is not an absolute truth.

Are there any existential truths of which we can be absolutely certain? There is one: one's own existence. This does not mean, necessarily, physical existence; rather, it means consciousness. You who believe yourself to be reading these words can doubt the existence of me, their author; you can even doubt the separateness of the words (or the author) from yourself; but the "I" who is reading knows its own existence. Perhaps this is the reality of a dream, or perhaps it is a physical reality, or perhaps it is something else; in any case, the truth of the existence of "I" is more certain than the truth of its being a dream, a physical reality, or something else. If we consider this notion carefully, we will see that it has profound implications for our understanding of the nature of truth, as well as for our evaluation of proofs. We will take this up in more detail at a later point.

It is worth noting the immense difference between the existential truth, "I am," and the existential question, "Who am I?" While the first is the one absolute existential truth, the other is the deepest and most widely debated existential question. The answer we give to this question informs every aspect of our individual and collective life.

While external physical reality is not an absolute truth, the existence of a shared reality is the first derived truth. That is, no sane person believes himself or herself to be the only existing thing, or denies that all people share in a reality of some sort that is well described by certain laws. If we did not believe in the reality of it, we would not try to communicate with others or adapt ourselves to the circumstances we find. For our purposes, we will speak generally of this shared reality in conventional terms, but will keep in mind that it is a derived truth, not absolute truth. The importance of doing so will become clear when we come to the consideration of strongly contested beliefs.

For now, let us move on to the topic of proofs.

Proof

We have said that a proof is a procedure that causes us to accept a notion as true. We have deliberately not said that the proof must be acceptable to everyone (that is, it need not cause everyone to accept the notion as true); thus a proof, like a truth, may be absolute or relative. Under this broad definition, there are many kinds of proof. The simplest proof is to assert that a notion is self-evident. The most complex proofs may be some of the formal deductive proofs used by mathematicians. Scientists often use inductive and statistical proofs. There are also proofs based on tradition or authority: because I (or she or he or they or it) said so. We will use examples to show that all of these methods of proof have validity, and to suggest what domains are best suited to what kinds of proofs.

Definitions should be clearly understood and agreed upon before a proof is begun. Of course, a common set of definitions is needed for a common understanding of any statement; but in the case of a single statement, definitions can be an implicit part of discussing the statement; whereas in the case of proofs, if definitions are not agreed upon at the outset, and differences are discovered later on, the whole chain of reasoning has to be re-evaluated in light of newly agreed-upon definitions. Thus definitions will be presented at the outset of each proof, even though this is sometimes awkward.

We will revisit the examples of truth from the previous section, from the point of view of proof. First, though, we will briefly discuss four methods of proof.

Methods of Proof: Self-Evident, Deductive, Inductive, and Authoritative

Self-evidence is probably the most common proof that we use. Only the philosophically-minded question their own existence; only the social misfits doubt that their own culture is the best one; the carpenter never questions whether a saw is the best tool for cutting

wood. Asserting (or assuming) self-evident truth allows us to focus on what seems important and to ignore the trivial, irrelevant or dangerous. It is a very efficient proof; however, it provides no basis for asserting a degree of confidence in the correctness of the proof. It may be thought of as an informal type of inductive reasoning. Intuition and faith are variants of self-evidence.

Deductive proof is the method most often thought of in contemporary Western culture as “proof.” It is eminently suited to formal systems such as mathematical theories and the mathematical bases for various scientific disciplines. A deductive proof starts with a set of premises (hypotheses) and uses formal or informal rules of logic to arrive at conclusions. This was the first kind of reasoning to be automated. In the early 20th century it was hoped that automated deductive reasoning would allow a complete understanding of all of mathematics. It was later shown, however, by Kurt Gödel, in his renowned First Incompleteness Theorem, that this hope was probably a false one. Gödel’s theorem implies that under any set of rules so far envisaged, any formal and sufficiently powerful deductive system will have notions that are true but cannot be proven true within the formal system. However, even if automated reasoning is not complete, it is reliable: if a statement is proven to be true in a deductive proof, then anyone who accepts the hypotheses and the reasoning has complete certainty that the statement is correct. Note that hypotheses may be taken as self-evident, or may be arrived at in some other way; in the latter case, the degree of confidence in the statement is the same as the confidence in the hypotheses.

Inductive proof, which might also be called statistical proof, starts from observed conclusions and attempts to find a valid set of premises that explains the observations; it is, in a sense, the reverse of deductive proof. Normally it is a cyclical process, in which some observations are made, some premises posited, then further observations made, and the set of premises modified, until no new combinations of observations and premises are evident. Often, new observations are predicted based on the current set of premises,

and experiments are designed to try to produce the expected observations. Since all observations are finite, there is always some uncertainty about the validity of the induction. Subsequent deductive proofs based on the putative premises are therefore subject to that same uncertainty. As an aside, note that there is a similarly named, but unrelated, type of proof referred to as “mathematical induction,” which is a deductive method, not an inductive one.

Authoritative proof means asserting that certain notions are valid based on some authoritative source. For example, players in a game accept the correctness of the rules; they cannot be proven, and they must be obeyed. Young children believe their parents on the basis of authority. Members of religious groups may consider their religious literature to be authoritative proof. The elements of a constitution and the laws of a government are used by lawyers and by society in general as authoritative proofs. Deductive reasoning is often used to infer subsidiary conclusions or regulations based on an authoritative source.

Examples of each of these types of proof will be given later in this section.

Degree of Confidence

“How sure are you?” is perhaps an oxymoron. It is useful, though, to consider the degree of confidence in an assertion, or our level of “sureness.” This can also be looked at as an assessment of the correctness of a proof. The notion of confidence, with numerical values assigned, is used in many domains, such as safety analysis, forensics, genetics, and meteorology. Underlying the quantitative measurement of confidence is the mathematical discipline of statistics. In the present work our interests are qualitative rather than quantitative, and so we will forgo statistical rigor; but the principles of probabilistic analysis are relevant and applicable to confidence in proofs, particularly inductive proofs.

Formal logical proofs are associated with very high levels of confidence. If we agree with the premises and understand the proof, we feel certain of the assertion’s validity. If we take excep-

tion to any premise, or we fail to follow some part of the proof, the proof provides no confidence in the assertion. We may, however, still have confidence in the assertion, if we believe (through authoritative or inductive reasoning) in the competence of the person(s) who carried out the proof, and lack confidence in our own ability to understand the proof or evaluate the premises. Our degree of confidence in the proof is then no greater than our confidence in the person who carried out the proof: for us, the proof is authoritative or inductive, rather than deductive.

Authoritative proofs, too, are associated with very high levels of confidence. A high level of confidence in an authoritative assertion is based on a high level of confidence in the authority and on the belief that the assertion comes from that authority. For example, rule books provide high levels of confidence in the fairness of games; codified sets of laws provide high levels of confidence in the legality or illegality of various acts; standardized sets of scripture provide high levels of confidence in the tenets of a religion. Clearly, an authoritative proof provides confidence only to the degree that we have confidence in the relevant authority.

Inductive proofs are highly variable in levels of confidence. As noted earlier, the set of available observations is always finite, and so there is always the possibility that some further observations will be made that invalidate the derived premises. Sometimes numerical confidence values are attached to an inductively proven set of premises. While there is justification for this in the case of tightly constrained problems, it is a dubious effort for broad and far-reaching theories, because there is always an infinite set of potential counter-observations. For example, if we consider a coin-flipping experiment, with the environment restricted to still air and a hard flat surface, and what we wish to prove is that a coin is evenly weighted, then we can flip it a few thousand times and make reliable numerical estimates of the limits to its unevenness. However, if what we want to show is that the same coin is always going to average equal numbers of heads and tails, under all circumstances, then we need to consider the individual who flips the

coin, the kind of surface it falls on (soft clay, for example, where it might land and remain on edge), the effect of air currents, and even the possibility that the experiment will be carried out in a liquid, in zero gravity, or in a rotating environment. Even if we carry out an extensive set of experiments that account for all the above, the coin could have magnetic properties, and behave entirely differently in a strong electromagnetic field. If we consider far-reaching theories, such as Newton's theories of motion, we see that the inherent limitations on experiments can produce a false high level of confidence.

One of the weakest forms of inductive proof is the statistical analysis of existing data: even if a high degree of correlation is established, correlation by itself does not establish causal relationships. This is a variation of the logical fallacy, "post hoc ergo propter hoc" (after this, therefore because of this). Such analysis is used as a way to create support for theories that do not have sound theoretical and experimental support. The degree of confidence in the correlation is often misrepresented as the degree of confidence in the causative effect. One common source of non-causal correlation is that the putative cause and effect are actually joint effects of some other cause.

To recapitulate, the level of confidence assigned to an inductive proof, and the scope of its applicability, should always take into account the restrictions on the set of data used for the induction.

It is worth drawing a distinction between subjective and objective confidence. Subjective confidence means a degree of confidence based on untested or unconscious assumptions. Objective confidence means a degree of confidence based on a proof. Assertions based on untested or unconscious assumptions may be held with complete confidence, but it is a subjective confidence: we have never tried to go through the process of evaluating the truth of the assertion. A prejudice is an example of a belief held with high subjective confidence. Another example is the retort, "Well, of course I locked the door." Subjective confidence plays a major role

in individual and group behavior. Replacing subjective with objective confidence is a sign of individual and societal maturity. Objective confidence levels tend to be lower than subjective confidence levels, because reflection causes us to be aware of our fallibility and our lack of precise and complete knowledge. The adage, “Believe half of what you see and none of what you hear,” dramatizes the relationship between subjective and objective confidence: what you have seen and heard is the basis for subjective confidence, but is largely inadequate for objective confidence. Where not otherwise qualified, we will take “confidence” to mean “objective confidence.”

We will now consider examples of various kinds of proof.

Mathematical Proofs

We will again start with mathematical examples, because they are simple and not controversial. Consider, for example, the statement, “Between any two unequal numbers there is another number.” We asserted earlier that this is false for the integers but true for the rationals and reals.

To show that the statement is false for the integers, we must first state explicitly what we mean by an integer. We will define it as the set of numbers consisting of zero and of any number that can be gotten by repeatedly adding or subtracting the number “one” from an (already defined) integer. This gives us the set $\{0, 1, -1, 2, -2, \dots\}$. A trivial proof that the statement is false is to notice that there is no number between 0 and 1. While this is a proof, it is not entirely satisfying, since it merely provides a single exception; perhaps we were just careless in making up our statement, and a slight rewording would make it true. A more satisfying proof is to note that for any two integers n and $n+1$, there is no integer between them; and moreover that for any other two unequal numbers m and n , either $m+1$ or $n+1$ is between them; furthermore, there are $((n-m)-1)$ numbers between m and n (for m less than n). Thus the proof becomes not just an argument, but an exploration, showing more about what “between” means for the integers.

To show that the statement is true for the real numbers, take any two unequal real numbers a and b , with b greater than a . Since b is greater than a , $b-a$ is greater than zero. The number $a + ((b-a)/2)$ is a real number, and it is greater than a and less than b . This proves the statement and gives an example for each pair of numbers. It also provides an infinite set of numbers between the original two, since the process of subtracting and dividing can be repeated indefinitely, indicating that “between” for real numbers is very different from “between” for integers.

It is worth noting that we need to be very clear about what makes two real numbers unequal. In most cases, two real numbers are unequal if they differ at some point in their decimal expression: thus 1.1 is unequal to 1.2, and 1.111111111... is unequal to 1.112111111... (where ... means to go on repeating the last digit “forever”). However, there is a special case that makes two different-looking numbers equal. For example, 0.9999... is equal to 1.0. In general, any number ending with $x9999999...$ (with x not equal to 9) can be re-written as a similar number ending with $x+1$. For example, if we tried to find a number between 356.9323999999... and 356.9324, we would find that there is none, because they are not, in fact, unequal numbers to begin with; they are merely different representations of the same number, much as 0 and $1-1$ are two representations of the same number. This is by no means a contrived and isolated example; rather, it is illustrative of a large class of statements that seem obviously true and are in fact false; or seem obviously false, and are in fact true. It also suggests the potential hazards of using self-evidence as a proof.

The two above proofs illustrate both the simplicity and the subtlety of proofs, and underscore the importance of accurate definitions, as well as the consideration needed for special cases. It is to be remembered that these are deliberately chosen from a simple and uncontroversial domain. Examples and counterexamples are thus clear and simple. Such is not the case in the existential domains of greater interest, such as ethical, political, moral, and religious concerns.

Proofs in Physics

Proofs in physics are fundamentally different from proofs in mathematics. In mathematics, the objects of interest are specified, along with certain fundamental postulates. Proofs use deductive reasoning. The mathematician is not constrained by physical reality. Physics, on the other hand, purports to tell us about the physical world. Thus the physicist must relate proofs to experience in the physical realm. Proofs in physics are therefore based primarily on inductive reasoning. We will use the same examples presented earlier, in the discussion of relative truth.

The laws of ancient physics were based more on philosophical considerations than on observations. Thus, for example, the difference between the behavior of terrestrial objects (the object stops unless acted on by an external force) and celestial objects (they seem to move forever) was seen as a difference between the imperfection of terrestrial objects and the perfection of celestial objects, rather than as the consequence of a set of laws that could be derived from experiment. Physics proofs were largely authoritative rather than inductive. If observation disagreed with theory, the observation was generally taken to be flawed.

Modern physics tends more toward the empirical inductive approach: if observation disagrees with theory, the theory is revised. Note, however, that authoritative reasoning is also used: once a theory is widely regarded as proven, scientists or inventors who claim observations contrary to theory are regarded with great suspicion. This has the benefit of reducing time spent on resolving the results of poorly designed experiments, but it has the drawback of slowing down the development and adoption of new and more complete theories.

The theory that an object in motion continues its motion unless acted on by an external force could not have been proven directly, as there is no way to remove all the external forces from an object. Until the development of calculus, in the 1600s, there was no way to predict the details of motion. Once these predictions could be

made, the agreement between Newtonian theory and experiments was excellent, and for two centuries, no exceptions were found. The accumulation of evidence in favor of Newton's laws was enormous. In the late 1800s, various experiments with the propagation of light showed that there was something missing or wrong. It was thought that light must be either particles or waves. If the former, light should travel analogously to bullets; if the latter, light should travel analogously to sound. In fact, it did neither. When a German patent clerk proposed a novel resolution to the problem, involving a deviation from Newton's laws, he was met with as much scorn as interest. His ideas were based on philosophical considerations rather than on experimental data, which was contrary to modern custom, and conflicted with the authoritative nature that long usage had given to Newton's laws. Eventually, the new theories of Einstein (by then no longer working as a patent clerk) were shown to agree with all applicable experimental data, and are now accepted as a refinement to Newton's laws. To recapitulate, the ancient laws were accepted primarily on authoritative proof; Newton's laws were based on inductive reasoning; consequences of Einstein's relativity were generated by deduction; and relativity was accepted based on inductive reasoning.

It is interesting to note that the laws of motion are significantly modified at the subatomic scale, in ways that have been well described mathematically but remain intuitively baffling to any but well-trained physicists. There is no single theory that explains the behavior of matter from the smallest to the largest scales. This is not altogether unlike the situation in the social sciences, in which theories of individual and collective behavior have been separately developed and do not readily translate between the individual and collective domains.

Proofs in Astronomy

The development of astronomy reveals an interesting interplay of proofs. Ancient beliefs were based on the acceptance of authority. The Greeks used measurements (inductive reasoning) to deter-

mine that the earth was curved. The medieval Christian Church used authoritative reasoning to prove that the sun went around the earth, while Copernicus used the same style of reasoning, from the same authoritative sources, but augmented by inductive reasoning, to show the opposite. In the course of the 20th century, various proposals were advanced as to the nature, origin, and future behavior of the physical universe. Repeatedly, heterodox theories (contrary to what had come to be regarded as authoritative sources) were initially rejected and later accepted. In astronomy, since few experiments are possible, the role of experimentation is generally taken by deducing new expected observations from a theory, and then seeing whether those observations, once made, correspond to the predictions. There is currently no comprehensive and widely accepted theory that both explains the origin and predicts the destiny of the observable universe.

As a simple example of an inductive astronomical proof, let us consider the moon and its apparent shape. Suppose that we have a general understanding (based on authority) that the earth orbits around the sun and the moon orbits around the earth, but we wish to know why the moon changes shape. We can see that the change in shape is caused by a shadow, but where does the shadow come from? The first thought might be that it is the earth's shadow. However, if we notice that the non-circular moon and the sun can both be in the sky at the same time, we realize that the earth cannot be between the sun and the moon at that time, so the earth cannot be casting a shadow on the moon. If we keep careful track of our observations, we see that when the moon is full, it is crossing the sky 12 hours after the sun; when it is a half-circle, it is 6 hours before or after the sun. If we hold up a ball on a sunny day, when the moon is also visible, we can see that the shadow on the ball is similar to the shadow on the moon. We can thus decide that it must be the moon's own shadow on itself that we are seeing—that is, that the moon is always half-lit, just like the ball, and that it is our point of view that is changing and causing us to see different portions of the dark and bright halves.

It is important in this context to remember that until the middle of the 20th century, observations of this kind (though more sophisticated) comprised all the data that were available to understand the structure of the solar system. With the advent of extra-planetary rocketry, this understanding has been confirmed experimentally as well as observationally. The structure of the rest of the universe, however, is still based purely on observations and on theories derived from those observations. As the decades go by, many aspects of our understanding are confirmed, while others change. The organization of the universe into galaxies, the existence of black holes, and the ubiquity of extrasolar planets are all notions that have been proposed and doubted within the last hundred years, and currently enjoy widespread acceptance.

Proofs in Biology

The relationships between men and women, and their roles in producing children, were taken by deduction from authority until very recent times. The obvious difference in physical strength between men and women was seen to be a proof that man was superior to woman. Today, direct observation and inductive reasoning have shown how similar men and women are. Such reasoning has proven the methods by which offspring are created and inherit parental characteristics, though details of the process continue to be discovered.

It was once believed in many cultures that humans were a creation entirely apart from the animal kingdom. Examination of fossil records and genetic material, however, suggests that humans are closely related to animals, and that the human form was not always what it is today. Whether humans are “merely” animals will be addressed later; for now let us simply acknowledge that the preponderance of scientific evidence points to evolutionary connections among virtually all the macroscopic living creatures on the surface of the earth, humans included.

Proofs of Absolute Truths

The one absolute, self-evident truth is one's own consciousness. Establishing the nature of this consciousness is another matter altogether, which we will treat later. Suffice it to say that if you do not believe in your own consciousness, you should not—indeed could not—be reading this. Descartes said, “I think, therefore I am,” but one could equally well say, “I read, therefore I am,” or “I eat, therefore I am.” It is not clear whether one needs to be thinking in order to be conscious; but it is clear that when one is conscious, one exists. This suggests, of course, that one cannot be sure of one's existence when one is not conscious—that is, it is logical to question whether one's existence is continuous, or is interrupted during periods of unconsciousness. This, too, we will take up later.

Absolute truths in mathematics can be proven through logical means, as discussed earlier under the heading of “Mathematical Proofs.”

Dubious Methods of Proof

There are some approaches to proof that are more likely to obscure the truth than to uncover it.

One is the thought process called rationalization. This consists typically of an ex-post-facto chain of reasoning that seeks to justify one's actions or beliefs. It incorporates a blend of inductive and deductive reasoning: the conclusion is assumed, and a dubious set of hypotheses and weak chain of reasoning is created to support the conclusion. Insofar as it is used to assuage one's doubt about past actions, it is perhaps harmless; the danger is that the hypotheses and reasoning may be used for future decisions, or to preserve existing beliefs against contrary evidence.

False dichotomies provide a way to hide the truth by positing unreal distinctions and choices. For example, “Should men or women be in charge?” implies that one sex or the other must dominate, and that equality and cooperation are impossible. The absurdity of false dichotomy is captured in the classic rhetorical question, “Do you walk to school or carry your lunch?” Unfortu-

nately, most false dichotomies are subtler and not humorous. We often accept them unwittingly, and proceed to make further decisions on their basis. Some examples are “faith or reason,” “science or religion,” “democracy or socialism,” and “for us or against us.” When we are presented with a dichotomy, we should consider carefully whether the “or” is truly exclusive or whether, as is often the case, it is actually an inclusive “or.”

Oratory, argumentation, and debate all have negative aspects in the search for truth. Oratory is concerned with eloquence and expounding a point of view in a favorable (or unfavorable) way. While oratorical presentation can be valuable in motivational terms, it is suspect as a means of finding truth. Argumentation is an insistence on an initial point of view, with no possibility of its changing. Debate is often touted as a method of arriving at the truth, but it is, in essence, formalized two-sided argumentation. It is akin to a “trial by fire,” in which the truthful party is determined by survival in the fire, except that the physical fire is replaced by a fire of words.

Reductio ad absurdum is a convenient method of proof, but can be misused. It may be used either directly, to show the falsity of a statement, or indirectly, to prove a statement by demonstrating the falsity of the statement’s negation. When we are dealing with well-defined, highly constrained systems, reductio ad absurdum is simple and straightforward. For example, to prove that the integers are not finite, we merely note that if they are finite, they must have a biggest member, M . Since $M+1$ is also an integer, and is greater than M , then the integers are not finite. On the other hand, consider the claim that purple people are taller than green people. If we find a green person who is taller than all purple people, have we proven the claim false or not? This depends on what was meant by the statement in the first place. A normal reading of the claim would be that the average height of purple people is greater than that of green people. In this reading, the existence of a single exception does not disprove the rule. On the other hand, we have proven the falsity of the claim, “All purple people are taller than any green

person.” In general, *reductio ad absurdum* is a doubtful method to apply to existential questions. Most often, the constraints imposed in order to apply *reductio ad absurdum* to existential questions are such that they implicitly assume an answer to the question, resulting in a circular argument. The circularity of the argument may not be evident, especially to the person presenting the proof.

Action

The fruit of proof is truth; the fruit of truth is action. Once we have established truth, we use it to direct our actions. Without action, truth is an abstraction, a personal vision. Truth without action is like an architectural drawing without a building, or a symphony score without an orchestra. Action may also result in a more complete understanding of truth: implementing plans based on our understanding of truth will either confirm what we expected, or highlight some discrepancy or incompleteness. In the former case, our confidence in our knowledge of the truth is enhanced; in the latter, we search for the source of the discrepancy, whether it is in our proof, our understanding, or our implementation. Thus action can lead to a refined proof, which leads in turn to a refined understanding of truth, and to more appropriate actions.

In a societal context, the passage from truth to action may be quite formal. Engineering and manufacturing incorporate the actions of the truths found through science: for example, science proves certain principles about fluid flow, engineers design an airplane according to those principles, and manufacturers produce an airplane according to the design. Practitioners of the healing arts act on the results of medical research to improve health. Courts direct actions based on the truth uncovered through investigations and through civil and criminal trial procedures.

In our personal use of proof, truth, and action, we are not usually involved in a formal process. We try a recipe, make changes in it, and settle on our personal version of the recipe. We shop at dif-

ferent stores, evaluate the price and quality of the goods, and pick certain stores as our preferred ones for certain items. In childhood, we accept what our parents tell us as the truth (authoritative proof), and then at some age begin to question their infallibility. If we were told tales such as Santa Claus, the Easter Bunny, or the bogeyman, we discover a certain element of duplicity. We discover that if we run into the street, we do not necessarily get hit by a car. We may gradually develop an acceptance of some degree of untruth as necessary to the functioning of society; or we may become disillusioned and reject all that we were told. In either case (or many other variations of these cases), we eventually begin our own search for truth. We may decide to accept some truths as given, or we may proceed on the basis that nothing can be accepted without explicit proof and some degree of experimentation.

Whatever path we choose, our actions are an outcome of what we perceive as truths, and of the proofs we have used to find them. For some, this means a life that harmonizes with our parents' or society's expectations; for others, it includes some element of conflict and change. It may mean adopting political views or affiliations very different from our family's, marrying someone of a different race or culture, or taking on a new religion.

Some individuals have an understanding of truth that is so at variance with current views (whether of the family, of society, of science, of religion, or of art, to name a few) that their life revolves around this unusual view of truth, and they become famous or infamous; heroes or martyrs or villains; founders of new movements, religious systems, or nations; developers of new tools of science; or inmates of insane asylums. In the light of history, these individuals are characterized as "great" if they have been successful, or they are entirely forgotten if unsuccessful. To seekers of truth, these individuals are highly interesting. It is especially worthwhile to examine the claims of recent or contemporary individuals with a variant view of truth, whose claims have not had time to be vindicated or obliterated by history, to see whether we too may find and

use this new view of truth. Later in this work we will examine the views and teachings of two such individuals.

Prejudice and Knowledge

We are prejudiced if we have formed a belief or opinion about a matter, a place, a category of people, etc., and we act on that belief even in the face of contrary evidence.

Typically, we think of prejudice in terms of the harm it causes to others, but in the case of the 19th-century European Christian missionaries to tropical Africa, their prejudices caused harm to themselves. They believed that the people there were entirely ignorant, and so when the missionaries became afflicted with local diseases, they refused the local remedies, and many died as a result. Those who listened and learned from the local people were able to survive and carry on their missions.

Racial or national prejudice results in harm to others as well as to oneself. The result of such prejudice is generally that a powerful group denies material and social benefits to a weaker group. The weaker group suffers in obvious ways. The powerful group suffers as well, but in less obvious ways. One of these is fear that the less powerful will attack the more powerful. Another is the moral dilemma of considering oneself superior and therefore worthier. Even materially, the powerful suffer from loss of the contributions that could be made by the weaker group if they were not suppressed.

It is clear that prejudice interferes with the search for truth: if I am already informed of the truth, I need not search for it. The difficulty with refusing to search is that since truth is infinite, no one can ever be entirely informed of it. Thus my prejudice stunts my growth and stifles my opportunities.

Prejudice is different from a working hypothesis. The latter is a framework adopted in order to permit decision-making in the absence of knowledge. We carry working hypotheses into every new

situation; otherwise we would be paralyzed. As long as we remain open to revising our hypotheses, we have not succumbed to prejudice. The difficulty is in deciding when revisions are needed. We must be continually alert to the limits of our knowledge, to our blind spots, and to our prejudices. Some examples will elucidate the point.

The Natural Numbers

Suppose I am versed in the natural numbers (1, 2, 3, ...). I have learned counting, addition, subtraction, and multiplication. I feel a complete familiarity and ease with these numbers, and my knowledge of them is such that I can work out any sort of problem that I have encountered. Now suppose someone proposes to me that there are other numbers, suggesting the example of two minus four. What shall I do with this proposition? My working hypothesis is that numbers are associated with the counting of objects. Addition means adding them to a collection; subtraction means removing them. It is clear that I cannot remove four objects from a group of two.

If I am prejudiced, I inform my interlocutor that the proposition is meaningless, and that there is no point in discussing it further. If I am polite as well as prejudiced, I may even thank them for their suggestion, but I will not be open to any further meaningful discussion on the topic.

If I recognize that my understanding of numbers is useful, but possibly incomplete, I will ask my interlocutor to explain what they mean, and what could be the value in such an operation. I have then opened myself to the possibility of learning about all the integers, and further, I have reinforced the future possibility of my learning about the rationals, the reals, and other mathematical concepts.

Racial Prejudice

The notion of “races” of humans, based on facial features and color, has been a problem throughout the history of the human

race, and has served as an excuse for exploitative personal, social, and governmental behavior. In ancient times it was taken for granted, and in recent centuries, it was imagined to be “proven” by deduction from authoritative sources and by induction from various observations. It was firmly believed, taught, and enacted into law, that some people were not real people, did not have the same rights as real people, had no significant reasoning ability, and should be treated as property, like goods and animals.

The notion of racial superiority and inferiority has been shown through objective observation and inductive reasoning to be wrong. The notion of “race” has been discarded as a concept in human biology, although it persists in social and political contexts. The only genetic differences between different “races”, however they are defined, turn out to be those used for creating the “racial” distinction in the first place. The differences in behavior and intelligence claimed to exist among different “races” are not observed when members of different “races” grow up under similar circumstances, and are certainly not genetically determined. Of the authoritative sources from which notions of “race” were derived, some are no longer considered authoritative and others are no longer interpreted in the same way.

Racial prejudice denies everyone the opportunity of normal interaction with the majority of the world’s population, because no matter what “race” we belong to, most people are of another “race.” Racism denies opportunity and perpetuates poverty in some segments of society, and fosters pride and arrogance in others. Overcoming racial prejudice is one of the major challenges of our time, both for individuals and for societies.

Religious Prejudice

Religious prejudice takes many forms. Religion is often taken to be a matter of faith alone, with reason being thought of as antithetical to faith. Faith is often taken in an exclusive sense, meaning that any beliefs different from one’s own are not merely different, but wrong. If these attitudes are firmly held, it is all but impossible

to be unprejudiced about religion. An atheist with this attitude will insist that any premise based on religion is wrong; a member of any religious denomination with this attitude will insist that members of all other denominations, as well as atheists and agnostics, are wrong.

An unbiased look at religion will show that none of us has sufficient knowledge or understanding to be sure of the correctness of our own views, much less the falsity of others'. While we should surely continue to act in accordance with our beliefs, we must, if we wish not to be subject to prejudice, admit the right—indeed the responsibility—of others to act in accordance with their beliefs (provided their actions do not harm others or impede anyone's human and legal rights). If we are seekers of truth, we should not allow prejudice to prevent us from investigating the facts and the reasoning behind beliefs that differ from our own.

Reality

What is real? Is physical reality any more or less real than ideas? Are there different realities, such as physical reality, spiritual reality, political reality, social reality, and academic reality? Is it possible to agree on reality? Since truth purports to describe reality, a discussion of truth inevitably engenders a discussion of reality.

We asserted earlier that there is at least one absolute existential truth: one's own existence. We said further that the proof of this is one's consciousness. But what is the nature of that existence? Most of us believe that existence extends beyond our own consciousness. Indeed, the modern western reader may object, "We all know that physical existence is the true reality, and consciousness a product of it." Let us consider that notion, starting from the only truth of which we can be absolutely certain: our own existence. Why do we accept that physical existence is a reality at all, let alone the true or primary reality? The answer is not difficult: if I

try to act as though my consciousness is the only reality, I get bad results. Contrast, for example, the dream (or daydream), in which I am able to fly, against the waking result of flapping my arms and jumping. Even if nobody else is present to give me feedback, I perceive that there is some external reality that is different in the waking state than in the dream state. From infancy on, we progressively learn the nature and boundaries of a personal realm and a shared realm. Through direct experience, observation, discussion, and reading, we find that this view is shared by others, and we come to accept the existence of a physical realm as a truth about reality.

The existence of a physical realm does not by any means prove, however, that consciousness is a product of physical existence. All it proves is that reality is larger than our own personal existence (consciousness). It does not provide any clue as to the true nature of our personal existence or of physical existence, or to whether physical existence is a cause of consciousness, a result of consciousness, or neither. The nature of reality and its relationship to consciousness are among the existential questions that will be addressed later. For the moment, we wish simply to emphasize that materialism—that is, the currently dominant conception of reality as primarily physical, with all other aspects of reality being by-products of physical existence—is simply a conception, a set of beliefs, which, like all beliefs, should be examined carefully in our search for truth. Materialism, like Newtonian physics, may turn out to be a very useful approximation to reality when applied to the proper domain, but inappropriate and inaccurate in other domains.

It is clear that different aspects of reality are best dealt with in different ways. For example, the equations of mechanics are not useful for the science of chemistry, and the methods of economics are not appropriate to the writing of poetry. We have also noted the ways in which different domains of physics are described by different sets of equations. Thus, whether or not there is more than one reality, there is certainly more than one way of describing and dealing with reality. This corresponds to the differences in descriptions of a single truth, as was pointed out for mathematics. This

multiplicity of descriptions may lead to compartmentalization of one's life, and to behaving as though the different descriptions of reality can be used independently, as though applying to different realities. We will return to this theme at a later point.

The reality of social existence is complex. Familial and societal relationships are highly variable throughout history and across the contemporary world. Anyone who has moved from country to country, or from city to city, or even from one neighborhood to another, will have experienced a change in the unwritten assumptions of daily life. Differences range from details of dress to the languages used for communication. Behavior that is considered normal or mandatory in one time or place may be abnormal or illegal in another. Descriptions that are commonplace in one culture may be incomprehensible in another. For some, the continuance of culture is the supreme good; for others, the happiness of the individual; for yet others, the perfection of the government. In our search for truth we will need to account for these differences and find the commonalities.

Hierarchy of Reality

Value and hierarchy are two interconnected notions about reality. There are various hierarchies in reality. For example, the various food chains constitute a hierarchy. Likewise, mineral, vegetable, and animal constitute a hierarchy. In the intellectual domain, the integers, rational numbers, real numbers, and complex numbers constitute yet another hierarchy. There are also hierarchies of value, such as hair, fingernails, ears, eyes, and brain. Human societies also have hierarchies, which differ from time to time and place to place. Some societies have placed a ruler at the top, with various functionaries and occupations ranked successively below the ruler. Other societies have placed the worker at the top, with managers and intellectuals ranked below them. Contemporary western society generally minimizes the importance of social hierarchies.

It is clear that our view of reality, and hence our understanding of truth and appropriate action, are strongly colored by our as-

signment of hierarchical value; conversely, we can assign hierarchical values based on our understanding of truth. By “hierarchy” we shall understand any systematic ranking. By “value” we shall understand attributes that allow us to decide whether one item is an equal, better, or poorer alternative to another: for example, a hair has lower value than a finger, because, given a choice, anyone would rather lose a hair than a finger.

A particular value is level of consciousness, or level of the appearance of consciousness. Minerals have a low level of consciousness. Plants have a higher level: they grow and move in response to light and moisture. Animals have a higher level than plants: they are able to learn. Humans have a higher level than animals: they can reason and express complex ideas.

From a naive individual point of view, the highest value must be the self, for without the self, nothing else would seem to exist. Clearly, this value hierarchy is not socially viable, since each person’s hierarchy puts that individual at the top. We thus have two sets of hierarchies, allowing for both personal and social values. The personal values involve rights of the individual, such as self-expression, the pursuit of happiness, and access to education. The societal values involve obligations, such as paying taxes, obeying traffic signals, and earning a living. We are free to assign our own values in our personal hierarchy, within the restraints imposed by the societal hierarchy, while society dictates the values of the societal hierarchy. Our personal value hierarchy determines how we lead our lives, while society’s hierarchy determines the social structure we live in.

Our individual and our collective understandings of truth inform the values of our hierarchies. To the degree that our understanding of truth is correct, we will lead satisfying lives in harmonious societies. If our understanding of truth is faulty, our lives will be in disarray and our societies will be dysfunctional. If we look at the world today, we must surely conclude that there are serious defects in both personal and societal value hierarchies. One of the objectives of the present work is to propose ways of improv-

ing the value assignments in both the personal and the collective spheres.

Materialism

We live in a world society dominated by materialism. The materialistic world view makes the assumption that the physical universe is real, and posits that all other existence and experience is a result of physical interactions. Many of us are so thoroughly imbued with this world view that we find it hard to conceive of any other point of view. Without (for the moment) taking any position as to the validity of materialism, let us examine more closely some of its attributes and implications.

Modern society is a product of physical science and engineering. Over the past two centuries, physics and chemistry have been enormously successful in creating products and opportunities beyond the wildest dreams of earlier times. We can see billions of years into the past; we can send rockets to the moon, the planets, and beyond; we can see and talk to one another across thousands of miles; we can perform electronic calculations in instants that a thousand people could not perform in a lifetime.

On the other hand, the gains in material possibilities have been offset by increases in material inequity and social disharmony. The promise that machinery would lift the burden of physical labor and provide a better life for the generality of mankind has not been fulfilled. The poor still lack the means to assure their children's advancement and their own comfort in old age. The rich are prey to psychological disorders and degenerative diseases. Conflicts between the rich and poor have become more acute, and rich and poor alike are threatened by degradation of the environment, increase in pollution, and social instability.

In short, materialism provides limited material benefits to a limited population, but does not provide a better and happier world. We must conclude, then, that materialism does not contain all the truths about reality that are needed to conduct our personal and social lives. Without rejecting the elements of truth that it con-

tains, with respect to manipulation of the physical aspects of existence, we should look for the falsehoods it contains, and search for truths to replace those falsehoods.

The Reality of Abstractions

We discussed earlier some truths about numbers. Let us reconsider these, along with geometry, in the context of reality. The question we will consider is, “What is the reality of numbers, points, lines, and cubes?” As we meet them in our childhood, they are physical. They are symbols, words, drawings, shapes, and objects. Three is three little pigs, ten is our fingers, a point is a dot on the page, a cube is a wooden block. But as we get older, we realize that these things are not themselves the mathematical objects, but examples (or instances) of them. Three is what three pigs, three books, and three thousand miles have in common; a cube is what all blocks of a certain shape have in common. Thus the reality of these terms is not physical, at least not in any conventional sense of the word. For example, a point has a location, but no length, width, or height; and a number has no physical significance at all, unless it is applied to some physical object or quantity. There are a number of approaches to answering the question. The materialistic approach defines them, in effect, as the set of all appropriate uses of the terms. The Platonic approach gives them the standing of reality in an ideal domain. Formal mathematics describes the concepts axiomatically but does not take any position on their reality.

Let us consider, as an example, the natural numbers (1, 2, 3,...). Does it make sense to assign them reality? For example, can they exist without any physical entities for them to refer to? It seems that they can. If we close our eyes we can have one thought, which means the number 1 has some kind of reality for us independent of external reality. If we think about that thought, we are having a second thought, which gives us a personal instance of the number 2. Similarly we can think about those two thoughts, giving us 3, and we can continue this process ad infinitum, giving us all the natural numbers without reference to anything but our own

thoughts. Mathematicians use sets instead of thoughts to arrive at the same notion: the set of natural numbers, independent of any physical realization of them. Thus, if thoughts and concepts can be said to exist independently of the physical world, then so can the natural numbers. Such an independent existence of thoughts and concepts is one of the existential questions that we will be addressing later. We will also consider later how this ties in with the reality of other abstractions such as justice, love, music, art, and life.

Causality

Causality is the notion that things happen for a reason. More explicitly, it posits that one event (the effect) may be the result of another event (the cause) according to certain rules (laws). For example, if a billiard ball rolls across a table and hits another ball, the second ball moves. This motion is said to be caused by the impact of the first ball on the second ball. It is generally, though not universally, accepted that every event is due to a cause (or causes). Let us, for the moment, accept this view; we will return later to exceptions or objections.

We will make a careful distinction between observed causality and posited causality. By observed causality we mean causes and effects that can be directly and immediately observed, either by introspection, or through the senses, or by well-documented historical records, or by means of well-understood and reliable data-collection devices such as microscopes, radiographs, ultrasonic imagers, telescopes, and nuclear magnetic resonance imagers. We distinguish observed causes and effects from those that are inferred through indirect and theoretical considerations; these latter we call posited causality. The reason for making this distinction is that including posited cause-and-effect relationships in a discussion of the nature of causality can result in a circular argument. For example, asserting that the posited causal theory of “survival of the fittest” proves something about the causes of evolution, and hence

the nature of reality or causality, is circular, since it was the observed facts (results) of evolution that gave rise to the theory of “survival of the fittest” in the first place. Unless otherwise qualified, “causality” will mean “observed causality.”

We believe in causality for the same reasons that we believe in physical reality: we see evidence of it, and trying to ignore it brings bad results. Causality, like reality, has multiple aspects. Our most immediate experiences of causality are internal: we think to move an arm, and that thought causes it to move; someone touches our arm, and the touch causes us to feel pressure. As we move outward from ourself, we continue to see causes and effects: we grasp a tennis racquet, swing it, and cause a ball to move. We see gravity’s pulling the ball down, and the effects of the ball’s elasticity as it bounces. We see that the ball eventually stops, and seek for the cause of its stopping, as discussed earlier under the truths and proofs of physics.

We experience immediate effects with obscure causes, such as stray thoughts, inspired paintings, twitches, cramps, our heartbeat, and our very existence. We also observe external and remote effects whose causes are obscure, such as wind, rain, the apparent motions of the celestial objects, and the variations in the earth’s landforms. Much of the intellectual effort of the ages has been devoted to associating causes with effects.

Hierarchy of Causality

Causality, like reality, has a hierarchical aspect. Let us explore, through examples, what this hierarchy might look like.

Consider the impact of a moving ball and a stationary ball. The moving ball causes the stationary ball to move, while the stationary ball causes the moving ball to slow down and possibly change direction. The moving ball has lost some of its kinetic energy, the stationary ball has gained some kinetic energy, and both have gained a small amount of thermal energy. We would probably consider the moving ball to be above the stationary one in a causal hierarchy. If both balls were moving, we would probably assign the

higher rank to the ball that initially had greater kinetic energy or greater momentum.

Now let us move one step back and consider what caused the balls to be in those positions and states of motion. Let us suppose that they are billiard balls, and a player used a cue stick to strike one ball, causing it to hit the other ball. In this view we rank the player higher than the cue stick and billiard balls, and we say that the player caused all of the events. It would not matter if the balls were bowling balls, table-tennis balls, or enormous boulders: in all cases, the person who placed the balls and started one of them moving is ranked higher than the balls.

Let us now move one more step back and consider what caused the person to set up the balls and strike one with the cue stick. One can imagine many scenarios: a game of billiards, a practice session, a trial of a new set, a physics assignment, to name a few. But what they all have in common is that the person decided to do it, or willed to do it. If no other causes are apparent, we call the cause “free will.” There is, of course, wide-ranging debate over the term, “free will,” but from one’s personal observation, without reference to systems of philosophy or theology, the existence of free will seems as obvious as the existence of our own consciousness. Clearly the freedom involved in exercise of “free will”—that is, the ability to choose the results proceeding from a given decision—is not absolute, as none of us is omnipotent. Nevertheless, there does seem to be a meaningful degree of freedom in the decision process, however constrained the results may be. Thus, a person can decide to push a brick wall down; the inability to do so is separate from the ability to make the decision.

The reality of free will is not merely an abstract question, but has practical ramifications. The assertion that free will is illusory generally leads to highly authoritarian social structures, none of which has demonstrated long-term viability. In the 20th century, communism, fascism, and radical behaviorism, all of which deny either the reality or the valid exercise of free will, gave rise to significant movements, and all failed to produce satisfactory long-

term results. This leads one to suspect that free will has a social and objective reality, as well as its obvious personal and subjective reality.

Let us continue stepping back in the chain of causality on our billiard table. To enable the successful implementation of the player's decision to strike the ball with the cue stick, something must have caused the player, table, cue stick, and balls to exist and be gathered together. That is, the free will of the player can be asserted as the cause of the player's decision to strike the ball, but unlike events in a dream or daydream, events in physical reality are contingent on other events outside of that will. Thus we are led to consider the parents of the player, the manufacturer of the pool table, etc. There is no obvious stopping point in this causal search, and it is not one-to-one. That is, we find some causes that required multiple preceding causes, and other sets of causes that all resulted from a single preceding cause. For example, the presence of one player required two parents, while the two balls required only one manufacturer, though the manufacturing process required the coordinated efforts of many people. The cause of the motions of the ball after their collision can all be attributed to one or two laws of physics, and even if multiple balls were involved, no additional laws would be needed.

One point to notice is that some cause-effect pairs are reversible: for example, apart from effects of friction, the interaction of two billiard balls can run backward in time. Other pairs do not appear to be reversible: running the motion of the first ball backward will not cause the player to pull back the cue stick, nor will it return thermal energy to the balls' kinetic energy. This difference can be seen as defining the direction in which time flows, and likewise, the direction in which causality operates.

Since we cannot examine all the causal chains in this simple example, let us pick one: the player's presence in the room. Among a multitude of causes, a necessary cause was the birth of the player. This in turn was caused by the union of a woman and a man, each of whom was brought into existence through the same

means. In brief, people are caused by other people. This is as far as we can go in observed causality; the question of the cause of the first person or people must be a matter of posited causality. We will defer consideration of this, and continue exploring the hierarchy of causality.

Now consider the presence of the balls (and by extension, the table and cue stick as well). This too was caused by people. People designed the balls, people built the machinery to manufacture the balls, and people placed the balls in the room. Here we see that people cause balls, but balls do not cause people; indeed, balls do not even cause other balls. This reinforces the hierarchical notion that people are higher than balls.

If we broaden the set of causes and effects, we see that living things cause other living things, and they also cause inanimate things: Bees make bees and beehives; beavers make beavers and dams; grass makes grass and soil. This suggests a more general aspect of a hierarchy: living things are higher than non-living things, at least within the limits of observed causality.

If we examine the world more broadly and deeply, we see that different kinds of living things are also hierarchically related. For example, people plant orchards and breed new varieties of fruit; fruit does not breed new varieties of people. People also breed animals and regulate their lives; animals do not regulate the lives of people. Animals carry seeds and drop them, causing the spread of plants; plants do not cause the spread of animals. We see, then, a causal hierarchy, in increasing height, of non-living things, plants, animals, and people. This is not to say that a lower form cannot have causal effects on a higher form. Plants are required by animals for food, and in this sense the plant might be said to cause the growth of the animal; however, it is the animal that chooses to eat the plant, not the plant that chooses to be eaten by the animal. Likewise, a tree, blown by the wind, can fall on a person and end the person's life; but a tree cannot grow in a womb and cause a person's life. A person, on the other hand, can choose to cut down

a tree, and can also choose to plant a seed from that tree, causing a new tree to grow.

We have spoken chiefly about agents of causation. However, causation is meaningless without the laws that govern it. When ball B is hit by ball A, B moves in the direction imparted by A; it does not rise up in the air or roll in circles. All progress that has been made in science has resulted from discovering and applying the laws of physical existence, among which are various laws of causality. Generally observed laws of heredity were derived from observation of breeding. These laws have been refined, through advances in chemistry and physics, to laws of molecular interaction of specialized organic acids. While the details of the molecules themselves, and the exact application of the laws, remain unclear, the existence of the molecules, their general form, and the general nature of the laws they follow are reasonably well understood. Enumeration of the laws of physics extends from the scale of star systems down below the scale of atomic components, although some aspects of these laws remain debatable. Thus, for example, we possess observed evidence of the quantum-statistical nature of the subatomic world, but only posited causal descriptions of these events: are the events themselves random, or is it only our knowledge of them that has a random aspect? It is not clear that this question admits of an either-or answer. It is clear, however, that there are laws that describe the relations of cause and effect, and that scientists are in good agreement about these laws.

If we consider the domain of thought and planning, we see that it is higher than the domain of action. Let us consider some examples to clarify this assertion. A boat, for example, is able to float and to carry people from one shore to another. Boats do not exist in the natural world. Floating objects exist, and serve as transport for animals and plants, but a boat, capable of allowing people to journey across the water to a specified destination, is the creation of the human mind. Similarly, airplanes allow people to do what birds and dandelion seeds can do: travel through the air; and again, it was through human planning and experimentation that airplanes

were developed. Nuclear bombs are another creation of the human mind, and these do not appear to have any natural counterpart, except possibly at the level of stellar explosions. Nuclear radiation, of course, is observed in the natural world; but a device that crowds fissionable nuclei rapidly into a small volume, initiating an explosive chain reaction, is entirely a product of human thought, planning, and execution. These examples, and many others, indicate that thought belongs higher in the causal hierarchy than natural phenomena.

Exceptions and Objections

While cause and effect is a general rule, it is possible to conceive of accidental events and spontaneous events, either of which could be exceptions to cause and effect.

Some events seem not to have a specifiable cause. These are termed “accidental” or “acts of God”, which has either of two meanings: that the causes are too diffuse to be ascertained; or that no human intention was directly involved. In either case, the event is not considered to be without cause; rather, it is considered impractical to specify the exact causes and effects involved.

An event with no cause would be termed “spontaneous”. At the macroscopic level, spontaneous events have never been observed. Some physicists theorize that the universe originated in a spontaneous event; but this event (spontaneous or not) was not observed. At one time, it was believed that microbial populations arose through “spontaneous generation,” which would have been (in a sense) an effect without a cause; today it is accepted that microbes grow from very small and durable spores, eggs, seeds, or other quiescent forms that have been created by earlier generations of the same microbe, and which, in the long run, have arisen through evolution.

At extremely small scales (the “quantum” scale, at which quantum physics is used to describe phenomena), there is a significant degree of uncertainty, or indeterminism, in observed events. One interpretation of this observation is that spontaneous events do oc-

cur in the quantum-scale world. However, these observations can also be interpreted as arising from observational uncertainty rather than from spontaneity. We can thus say without qualification that spontaneous events have never been observed, and that there is no observed contradiction to the notion that every event has a cause.

Consequences of Causality

From a naive personal viewpoint, placing thought above action seems perfectly normal. We decide to do something, and then do it, not the other way around. However, this poses a dilemma, if thought is believed to be the product of the brain's action. Since the brain is a physical object, how can it be the cause of thought, which is higher than physical objects? One response is to appeal to the notion of gestalt: that the whole is not just the sum of its parts. For example, a boat is not just the sum of the boards or steel that make it up; an airplane is not just the sum of its aluminum, copper, and fuel; a nuclear bomb is not just the sum of a conventional explosive and a few pounds of fissionable material; and similarly, the brain is not just the sum of its neurons. Another response is to suggest that thought is not caused entirely by the brain, but originates in some higher domain that includes both physical and mental reality, the brain serving to connect the thoughts with their physical expressions. Reasons to prefer one of these alternatives, or some other explanation, will be discussed later.

Let us resume, at a grander scale, our backward search from the billiard table. For the personal element, we can trace thoughts backward to one's birth, and we can trace ancestry backward until it is lost in the mists of time; the physical components can be traced backward to the mines and wells from which they were made; but however far we trace, we find another effect whose cause needs to be determined. It is clear that a chain of observable cause and effect can go only so far, and that we must, at some stage, choose to posit one or another unobservable earlier cause. If we continue the search, we find three possibilities for a chain of

earlier posited causes: they go on forever; they begin with no cause; or they are preceded by a first cause.

The first notion, that of an endless chain of prior causes, is unsatisfactory, because it does not provide a basis for the laws of causality. That is, even supposing that existence has existed forever, why does it behave the way it does? What is the cause of the laws of causality?

The second notion, that existence began with no cause, would seem to imply that laws and causes came into existence simultaneously. There are some problems with this view. One problem is that it suggests that cause and effect are an illusion. If this is the case, then there does not seem to be much point in following a chain of (illusory) causality. Another problem is that it does not correspond to anything observable: all observed effects are preceded by causes, and are governed by previously existing laws. A third problem is that an existence that comes into being in an arbitrary way should be an arbitrary existence. For example, suppose that the Big Bang theory for the origin of the physical universe is correct. Suppose further that the origin of the Big Bang was, as has been posited, a quantum fluctuation in an endless vacuum. If this occurrence was the cause of both the physical universe and the laws that govern it, why should this particular fluctuation continue for billions of years, with well-defined cause and effect? Why would it not fluctuate back into nonexistence? We are intimately familiar with randomness; it pervades physical existence, and it never generates order. For example, we can see small domains of order come and go, as evidenced by Brownian motion; but we never see a boiling teakettle suddenly fly across the room, all its water molecules having simultaneously gone in the same direction. Thus we are led to believe that the Big Bang itself must have been governed by laws, and could not be the cause of those laws. We also are loath to suppose that cause and effect are an illusion, except to the extent that all of physical existence might be an illusion. Thus the second notion does not seem plausible either.

We are left with the third notion, that of a first cause. What could that cause be like? Given that effects require causes of a higher order, this first cause would need to be higher than both physical reality and thought. In order to be the cause of physical existence, it would need to have physical existence or be more than physical. In order to give rise to thought, it would need to be conscious or more than conscious. Trying to posit such a first cause leaves us bewildered. How can we imagine or picture such a first cause? Or perhaps the question is, "Can we imagine, picture, or understand such a first cause?" And if we cannot, is it still reasonable to posit it?

Let us consider what the limits might be to imagination, visualization, and understanding. Consider, for example, what a first-grade student could understand or imagine about calculus. The student can throw a ball, and could perhaps imagine that numbers can be used in some way to explain the motion of the ball. But to understand the mathematical theory, or to extend throwing a ball to launching a rocket to Mars, is clearly beyond the child's capacity.

Consider, next, the limitations on what a domestic dog might imagine (supposing that it could, in some sense, imagine things). Clearly, a dog can learn how to behave acceptably in the framework of human society. It can learn who belongs in the household, when the family members come and go, when to sleep, and how to ask for food. But what could it know about how the household comes into being, about marriage, property rights, mortgages, and occupations? Even if it were taken to see all the scenes of these concepts, were present at the wedding, came to the signing of the mortgage, went to work with its owner every day, could it in any way imagine how human society is constructed and regulated, where its food comes from, and what happens when a person reads a newspaper? Even though it is part of all these activities, it is not able to comprehend them, nor can it contribute to most of them.

As a final example, more extreme but also more specific to the question at hand, consider whether a character in a painting could understand the world of the painter. The painting has only two spa-

tial dimensions and is frozen at a moment in time, while the artist moves about in three spatial dimensions and is carried along on the current of time. Even if we animate the painting, the inhabitants will not be able to conceive of a third spatial dimension. If the painter adds a new scene to the painting, the paint will seem to have come miraculously from nowhere. If the painting is on a flat canvas, the world will be bounded; if the painting is on the surface of a sphere, the world will be finite yet have no boundaries. The source of these phenomena would be utterly incomprehensible to the creatures in the painting.

Now, if a child cannot understand calculus, and a dog cannot imagine the source of the framework in which it lives or the workings of the society that sustains it, and a flat creature in a painting cannot understand its three-dimensional painter, is it unreasonable to suppose that we might be unable to imagine the source or workings of the cause of our existence? Not at all. It seems quite unreasonable, in fact, to think otherwise: that we could imagine the nature and workings of the cause and source of our existence. We are led to posit that there is such a cause and source, but we seem to be prevented from imagining anything more about it. We have thus come to a pause in our examination of causality. We will resume this thread after some consideration of personal reality and social truths.

Personal Reality and World View

We have briefly considered our personal reality (that is, our personal experience of reality) as the necessary basis for seeking truth; let us now carry out a fuller examination of that reality. We will consider what we know directly, what we believe to be true on the basis of reliable proof, and what we believe without proof.

In the strictest sense, the only direct knowledge we have is what presents itself to our immediate consciousness; and even that knowledge relates only to our personal consciousness, not to the

world as a whole. For example, when we are dreaming, our physical surroundings may be entirely irrelevant to our experience; when we awaken, we can find no source to confirm or deny what we experienced in our dream. Even when we are awake, our senses are limited in what they can convey, and our memory is imperfect. Since we believe that we live in a shared existence, we interpret our immediate consciousness in terms of a world view that includes our memories and the existence of other people and places. It is of great interest to examine that world view, which for each of us is the basis for interpreting our experiences, and hence is an inextricable part of evaluating truth and distinguishing it from error.

Studies of human development indicate that our world view begins to develop in the womb, changes rapidly throughout infancy and childhood, and in most respects is firmly ingrained by the end of adolescence. Changes in our world view later in life are associated with extreme experiences of some sort, such as personal trauma, societal upheaval, or other situations that produce an intolerable discrepancy between the predictions of our world view and the experiences we undergo. Since each of us is finite and imperfect, our world view is likewise limited and, to some extent, erroneous. As we seek for truth, we continually try to fill in the gaps in our world view and correct erroneous aspects of it. However, because our world view shapes our perceptions, we are also continually trying to deny or disprove notions that conflict with our world view. Anytime we encounter a notion that conflicts with our world view, we are faced with a choice: change our world view, reject the notion, or suspend our judgment. Often, our immediate response is to reject the notion, while on later reflection, we may re-examine our world view.

Effects of Our World View

Categorizing people is one of the salient aspects of one's world view. Some common categories are sex, skin color, ethnicity, religion, and wealth. We will discuss two hypothetical categories: "cube" and "sphere." Let us say that we are Cubes. To us, what

other Cubes do is normal and predictable. When another Cube says something, we can relate to it, and agree or disagree, because we speak in the same terms. What the Spheres do, though, is strange and unpredictable. They say one thing and do another. We speak to them in our accustomed way and they respond as though we had insulted them. Anything they tell us has to be carefully analyzed, because they don't understand the truth. Obviously, we can interchange Cube and Sphere; the distortions of the world-view lenses work in both directions.

These effects are not the product of ill will; they are simply side effects of assuming that our world view is complete and correct. Most of us accept the problem as part of "human nature" and go about our business as best we can, dealing with the difficulties as they arise. Some of us try to avoid the problem by associating only with other Cubes. A few try to "solve" the problem by eliminating the Spheres. Another approach is multi-categorism: acknowledge that there are vast differences between Cubes and Spheres, highlight the differences, and celebrate them. Yet another approach is to acknowledge that these effects arise from differences in world view, and then try to find the common truths, the missing parts, and the conflicting errors. This might lead to finding and adopting the best in each, or to creating a new view that takes in both of the old ones. The approaches we take to resolving the categorization issue have dramatic effects on our lives and our societies.

Changes in Our World View

Learning to read entails a change in world view. What once appeared to be endlessly complicated designs of ink suddenly appear as words and thoughts. What appeared to be the province of grownups or older siblings now becomes part of our own repertoire. We formerly thought of books as mysterious, having meaning only to the initiate; once we can read them, we see them as part of the same phenomenon as oral speech. The same applies to learning a new written language or a new mathematical or scientific

formalism. The same visual objects that once seemed obscure and complex become clear and cogent.

Overcoming a prejudice, such as one of race, sex, class, religion, or nationality, is associated with a change in world view.

Personal trauma can change our world view. When we are subject to severe injury or stress from such causes as an accident, a crime, war, or death of a loved one, a world that may have seemed predictable and benign becomes unpredictable and threatening. Situations that once seemed normal become difficult or intolerable. The world—truth—has not changed, but our view of it has been profoundly altered. We may require the services of trained professionals to help regain a world view that enables us to resume normal functioning.

Religious conversion often entails a change in world view. Some aspects of life that formerly seemed important become less so, while other aspects, perhaps unnoticed before, become central. Old friends may say, “What happened to you?” New friends may hear of your earlier life and ask, “Was that really you?” Every aspect of life, whether work or play, financial or intellectual, birth or death, is interpreted in new ways.

Truth and Our World View

Given that everyone filters truth through their world view, two issues arise. One is how to “turn off” the filter from time to time, so that our world view does not obscure the truth. The other is how to interact with people whose world views seem incompatible with ours.

One response to both issues is humility. If we remember at all times that we are finite creatures of limited experience and capacity, then it is possible to recognize that our world view is incomplete and perhaps wrong. This in turn allows us to modify our world view. It also helps us appreciate that others’ world views—and consequently their understanding of truth—will differ from ours. These limits on completeness and correctness are, if nothing else, inevitable consequences of the nature of inductive reasoning.

Clearly, we cannot live as though our world view is wrong. We assume its correctness because otherwise we have no way to make decisions. Most of the time, we do this with no particular attention. However, when we meet a discrepancy; when our world view clashes with our experience; when we find disagreement over something that seems obvious to us: these are the occasions to pause and ask whether perhaps the problem, as Shakespeare put it, “lies not in our stars, but in ourselves...”² Rather than unquestioningly maintaining that our current world view is correct, we can use these occasions to re-evaluate the view itself, and consider whether we need to expand it or correct it.

When we meet disagreement, we can first try to determine whether we are agreed on the basic facts at issue. Sometimes disagreement is not a clash of world views, but a difference in knowledge, or perceived knowledge. In this case, if all parties to the discussion become equally acquainted with the facts, there should be no further cause for disagreement. If we agree on the facts, but the interpretations are different, then it may be possible to discuss our world views. If we find resolvable discrepancies in our world views, then we should, in this case too, be able to come to agreement. If we cannot resolve differences in our world views, then we are not likely to come to agreement; the best we can do is “agree to disagree” and be respectful and accommodating of each other. Of course, some disagreements are based on preference, not on truth; in this case too, the best resolution is respect and mutual accommodation.

Social Reality

Our social reality (the social context in which we live) shapes our experiences, preferences, thoughts, habits, language, and understanding. We do not, however, live in a single social context, but in a multitude of them. Some social contexts include family, work, school, belief group, club, electronic network, town, tribe,

profession, state or province, language group, nation, and continent. Some of these contexts are subsets of others; some contexts cut across other contexts; and some contexts are mutually exclusive of other contexts. Some contexts have a spatial or geographic definition, while others have a more abstract character. What is common to all of them is the notion of membership.

Membership in a social context has many implications, such as duties, privileges, restrictions, and assumptions. In particular, our membership in a social context affects our search for truth, our perception of truth, and our actions in response to truth. We cede some of our judgment to the group, accepting, in general, the group's beliefs as our own. We are likely to defer to the leaders or authority figures in the group, and assume that if they hold something as true, it is by virtue of proofs that we would accept if we examined them. This is natural to us, as herding is to deer or flocking is to birds. There is nothing inherently bad about it, and it allows us to function efficiently within the group. However, we need to be aware of this effect, and if we detect some discrepancy between the group's beliefs and our inner feelings, we should make the effort to look for the source of the discrepancy, and subject the relevant beliefs to the same rigorous examination that we would carry out for an idea presented to us by an untrusted stranger. We should beware of adopting the position of "my group, right or wrong." If we find something wrong in our group, we should work to make it right, rather than working to propagate and perpetuate the wrong.

Let us consider group influence on search for truth, perception of truth, and actions in response to truth, in various social contexts. We will begin with small or more immediate contexts, and work outward toward large or more general contexts.

Family

By "family" we mean the immediate circle of acquaintances with whom we grew up. This may be our biological parents and siblings, an adoptive family, an ad hoc group, or an institution.

Whatever its form, our family serves as our model for normal human relations. We learn what to expect from the world around us, and we learn how to behave in order to optimize our experiences. We also infer a picture of the greater world, based on our family experience.

Early in life, we learn two contrasting lessons about truth in the family. The first lesson concerns the importance of truth. We discover this when we lie and get punished, or tell the truth about a mistake and, by doing so, avoid punishment. If we are punished after telling the truth, we may decide that a lie is preferable to a difficult truth. The second lesson concerns social limitations on truth. We learn not to verbalize assessments of people's clothing or appearance.

The manner in which our questions and behavior are treated in the family has a lasting effect on our understanding of truth and our assessment of its importance. One message may be that truth doesn't matter, and only tradition is important; another may be that nothing matters except truth; another may be that truth is important, but sometimes elusive. Consider what responses adults may have made to our questions about "adult" matters, such as "Where do babies come from?" and "Where do we go when we die?" If the questions are treated as important questions, but ones that don't have an easy answer suited to our child-level understanding, then we are likely to continue our inquiries as we mature. If we are punished for our insolence in posing the questions, then we may withdraw from seeking truth, and decide that the best course is to copy whatever we see around us, and not try to make sense of it. We may revise this attitude in later years, and resume the active search for truth that young children innately display, or we may simply perpetuate the notion that truth is whatever our authority figures tell us it is. This is, in the end, a matter of our free choice; but the choice is strongly influenced by our childhood family experience.

School

The purpose of school is to educate its students. There are two aspects to education: one is to focus the mind on what the educators believe is important; the other is to expand the mind beyond the student's current understanding. In principle, education favors the search for truth. Certainly we will be taught the valid fundamental notions of mathematics and language. However, education inevitably contains elements of bias. As in the family context, the relative importance assigned by the school to truth and bias will have a significant impact on the outcome of the education. If we are allowed to search freely for ideas, and are given no guidance in evaluating what we find, we may conclude that life is about doing whatever we fancy, and grow into irresponsible adults. If we are held rigidly to a closed curriculum, we may conclude that life is a scripted performance, and become no more than efficient cogs in the machinery of society. The educational experience for most of us lies somewhere between these extremes, and as adults, we choose some aspects of truth to examine more fully, while abiding by our educational training in other respects.

Work

The context of our occupation determines a large fraction of our relationship to society, and may have a great influence on our lives outside the workplace. In general, we will be truthful in delivering what we are employed for, but may not always consider whether the requested goods or services have optimal value for the customer. Thus we may be, in a sense, in a constant state of tension about truth and truthfulness. In terms of our performance as employees, we are bound morally and legally to truthfulness; but in terms of our customers' requirements, we generally defer to our employer's expectations, and do not venture to provide our own assessment of how well our employer's expectations correspond to our customers' needs. Our employer generally expects us to provide the customer with our company's goods or services, and not to encourage the customer to look elsewhere.

If our work is homemaking, then we are answerable primarily to ourselves and family members. In rearing children, we are imparting to them our ideas about truth; as caretakers of our parents, we are continuing in some sense on the path of our childhood family, but with the possibility of changing that path in ways that are important to us. In all situations of working at home, we interact with society at large, and our work values and societal values must be compatible.

If we are self-employed, whether in farming, service, consultation, the arts, or any other field, our customer relationships are the primary external influence on our behavior. When our customers value truthfulness, it is easy to make that value a keystone of our business, as it is in our private life. If our customers ask us for illicit behavior, such as under-the-table dealings, tax avoidance exchanges, or bribes, then it may be challenging to maintain both our principles and our business.

In summary, whatever our work situation is, it frames much of our approach and response to truth.

Belief Group

Most of us belong to a belief group, either formally or informally. We are members of churches, mosques, synagogues, or temples. We have friends with whom we meet to discuss our thoughts. We belong to Freemasonry, Rastafari, Scientology, Unitarianism, or Wicca. We are believers, agnostics, or atheists. We are Christians, Muslims, Freethinkers, Buddhists, Bahá'ís, Sikhs, Jews, Zoroastrians, Hindus, or Jains. To some extent, we join belief groups because of our beliefs, and to some extent, we hold beliefs because of the belief groups we belong to. Belief groups differ widely in their tolerance for differences of belief. Some hold that their beliefs are true, and that all other beliefs are false. Others deny the finality of any truth. Most steer a path between these two extremes, having an explicit or implicit creed and certain expectations of their members. Some allow wide latitude of belief, but re-

strict the actions of their members, while others prescribe a set of beliefs but allow more latitude of action.

Membership in a belief group inherently affects our search for truth. If we question some of the beliefs in our group, we may not be free to express those questions. If our search leads us not merely to question, but to reject, some of the beliefs of our group, then we may face the choice of hiding our discoveries or leaving the group. This can have sweeping consequences for us, our families and friends, our occupations, our schooling, and our citizenship. During the Cold War, for example, people who rejected the dominant ideology of their country were faced with difficult possibilities, including emigration, dissimulation, flight, and prison. As of the early 21st century, there are many countries in which membership in certain belief groups is considered unpatriotic, heretical, or criminal.

For most of us, most of the time, the tenets of our belief groups are taken for granted as an integral part of our lives. Occasionally, though, we are faced with situations that cause us to question whether some of those beliefs are true, and our response to those situations can have an important effect on the course of our lives.

Club

A club is an organization, such as Rotary, Hospice, or Amnesty International, consisting of people working together in a set of common interests. It is focused more on action and activity than on belief. Membership in a club may provide opportunities for new views of truth that would not be possible otherwise, or it may provide pressure to conform to the prevalent views of the club. Because of the action-oriented nature of a club, there is opportunity to see the consequences of what we believe to be true about human nature, society, and the environment.

Electronic Network

Online social networking groups are related to belief groups and clubs, but do not depend on physical presence or even geo-

graphical proximity. It is easy to adopt an online posture that is quite different from our posture in physically present social groups. On the one hand, this provides us with the freedom to explore truth in a way that we cannot do otherwise; on the other hand, it can lead to our embracing and acting on contradictory beliefs. One example of this is the phenomenon of “flaming,” that is, expressing our thoughts online in antisocial ways that we would not do in person. The implicit contradiction in flaming is that we behave online as though others’ feelings are secondary to our privilege of self-expression, while in our face-to-face interactions, we behave as though others’ feelings are the more important determinant. Similarly, we may be free online to seek truth in novel ways, but we may be less committed to our online discoveries than to those that are part of our physically present life.

Town or City

Our city, town, village, or neighborhood influences our options for finding, expressing, and acting on truth. Our town, like our family, serves as a model for what the world is like. It continually provides feedback about our words and deeds. In the anonymity of a large city, the feedback may be, “It doesn’t matter what I do.” In the closer-knit structure of a small town, we may feel pressure to conform to local norms. In a city, our work and home lives may be entirely independent; in a small town, they may be closely intertwined. In a city, our participation in belief groups is generally a personal choice, while in a small town, there may be strong expectations and social pressure to be a member of one or another belief group.

Tribe

Our tribe, ethnic identity, or cultural background affects our perception of truth and our inclination to explore new avenues, and may place restrictions on acceptable actions. As a member of a dominant majority group, we may be arrogant about our (supposed) knowledge and disdainful of others’, and be reluctant to

consider new ideas. As a member of a highly cohesive minority group, we may be unwilling to embrace anything new, for fear of weakening the group's cohesion. If we are a member of a disadvantaged group, we may be open to new concepts, especially those that offer to improve our situation; by the same token, we may be more interested in the purported advantages of a new idea than in its truth. If our culture embraces exploration, then we may seek out new ideas, even if the results of our search do not reinforce our cultural traditions.

Profession

Apart from our immediate work environment, we may belong to a profession, such as education, bricklaying, medicine, law, science, firefighting, engineering, military, or clergy. Membership in a profession entails various expectations, presumptions, oaths, behaviors, and habits of mind. We may be required to accept certain tenets of our profession in our practice, even if we are not convinced of their truth. Often there is a board regulating the profession within a given jurisdiction, and their decisions may carry considerable weight and possibly the force of law. Even in matters that are not regulated, we are likely to give strong credence, or at least lip service, to the majority opinions of our fellow professionals.

In some professions, truth is both a basis for the profession and an object of the profession. However, truth as an object may be replaced by distortion or evasion of truth. As an example, arbitrarily chosen, let us consider this in the context of the legal profession. Consider criminal law, and the situation of a lawyer for the accused. From the point of view of society, the objective of a trial is to establish the truth. However, from the point of view of the defendant's lawyer, the objective is usually to establish the client's innocence. Thus, rather than seeking to present the truth, the defense lawyer seeks to present a one-sided view and to discredit the evidence of the prosecution. In an adversarial system, as in the United States, the prosecutor is trying to establish the defendant's guilt, not to uncover the truth, and will present evidence in a lop-

sided way. In a civil suit, there are generally two parties, each trying to portray only one side of the situation, and to convince a judge or jury that this one-sided view represents the truth. While this may seem normal and natural to those who have been raised and educated within an adversarial legal system, it seems perverse and unnatural as a method for finding truth. In the sciences and mathematics, there may be competing theories of truth, but all participants in an inquiry are expected to work together. If complementary experiments give different results, the various researchers try to harmonize their findings and perhaps suggest a new theory that encompasses their competing theories, rather than denying any of the results. Of course, science is also sometimes carried out in an adversarial fashion; but this is generally regarded as an aberration, not the norm.

If we examined other professions, we would likewise find peculiarities in the methods of seeking or establishing truth, different from those of the legal profession, but equally perplexing. As a member of a profession, we may find it difficult to avoid the influence of those peculiarities on our search for truth, even when we are considering matters that are outside the bounds of our profession.

State or Province

Our state, province, or region has an effect on our perceptions of reality and our responses to those perceptions. These effects are generally mediated by the region's history and predominance of various belief systems in the region. Within the United States, for example, there are states and regions that have a history of religious persecution, political revolution or rebellion, wars with native populations, and slavery. Each of these has a lasting effect on the way of thinking of both the majority and the minority populations. For some, the effect may be to avoid a repetition of history, or to undo its effects; for others, it may be to try to relive that history. Either way, it skews our inquiries and our perceptions, and affects our ability to differentiate truth from tradition.

Language Group

Our command of a language or languages has a profound influence on our ways of thinking and on our access to ideas. To the extent that our communication is through language, our communications are facilitated by the strengths of our language and limited by its weaknesses. Furthermore, we have access to the ideas of other language groups only through translation, which means that the ideas are filtered through the translator as well as limited by the available correspondences between the original language and our own. In the immediate sense, if we meet a speaker of a different language, we cannot communicate through language at all, unless a third person is present to translate.

Languages differ widely in their gender distinctions, verbal constructs, and detail of vocabulary. These limitations channel our thoughts along certain paths, and make it difficult to express certain ideas. For example, English forces a choice of gender in the third person. This in turn leads to a choice among awkwardness (He or she should bring his or her behavior into conformity with the expectations of his or her parents), inappropriate specificity (He should show his report card to his parents), and inconsistency (He should clean his room daily and eat what her parents give her). One does have the choice of the impersonal construction, but one finds it fatiguing and overly formal. Some other languages provide gender-neutral options in the third person, while others force a gender choice in all persons.

Working around the limitations of a language is difficult even when we are writing our own thoughts; working around them in translation is far more difficult. Each word has a range of meanings in one language, but the corresponding word in another language typically has a different range. Several difficulties arise from this circumstance. One is that the translator is forced to choose—perhaps arbitrarily—among the renditions for a word. Another is that where one word may have been suitable in several places in the original, different words must be used in the translation, ob-

scuring the original connection between the instances of the word in the original. Another is that a word used in the original may have multiple meanings in the translation, so that passages that were precise in the original become ambiguous in the translation. These difficulties of translation are awkward in fiction or poetry, and can have far-reaching implications in the translation of philosophy, science, mathematics, medicine, religion, government, and other foundational works for the conduct of human affairs.

Nation

Our nationality has implications for our membership in previously discussed groups, such as town, state, and language group, and thus creates all the effects discussed under those headings. In addition, it has effects on our attitudes, expectations, rights, and privileges. If we belong to an economically strong and technologically advanced nation, we are inclined to see truth as related primarily to money and machines; if we are in a less technologically advanced or poorer nation, we will be more inclined to see truth as a function of human relations and harmony with natural processes. The national system of government influences our ideas about decision-making. A citizen of a single-party state will tend to approach problem-solving differently from someone in a two-party, multi-party, or non-party state. The national conventions in law and jurisprudence also affect our approach to finding truth. Those who are accustomed to an adversarial system will be inclined to see truth as emerging from pairs of one-sided presentations and arguments between opposing views; those accustomed to an inquisitorial system will be more likely to look for truth through either a cooperative or a one-sided analysis.

Continent

Our continent or continental region has an effect on our assumptions and our approach to truth. Island, landlocked, and coastal areas have some distinctive psychological and cultural features, as do areas defined by climate, religion, language group, and

ethnicity. Those who live in a tropical climate may see humans and nature in a harmonious, mutually supportive relationship, while those from colder climates may perceive a need for humanity to conquer nature. People from religiously homogeneous regions may make different assumptions about what constitutes a normal approach to life from those made by people from heterogeneous regions. Those who have grown up with earthquakes, volcanoes, tornadoes, or hurricanes may see nature as less benevolent than those whose regions are stable and mild, and they may see catastrophe as a normal aspect of life, rather than as a preventable exception to the norm.

Earth

We are all humans, and we all live on Earth. When we try to imagine intelligent beings from other planets, we necessarily anthropomorphize them. We believe the time scales and temperature ranges of Earth to be necessary to life. We also assume that any intelligent life must be similar to us, and therefore in need of a similar environment. However, considering that there are life forms on the Earth that inhabit hydrothermal vents in the depths of the oceans, far from the sun and at high temperatures and pressures, it seems quite possible that intelligent creatures from other star systems might be so different from us as to be unrecognizable as life, let alone as intelligent. The day of encountering any such beings may be far in the future, if ever; but we should still keep in mind that our ideas of truth are bounded by our experiences, and that in the vastness of space and time, there may well be experiences and truths that we cannot currently conceptualize.

Promoters of Truth

Let us consider some of the social agents that promote truth. Some of these same social agents may also serve as barriers to truth; this will be considered in the following section.

Educators provide us with the basic tools we need in order to widen our search for truth beyond our immediate experience and

family histories. From our early childhood to the end of our formal schooling, educators help us to acquire the skills of reading, mathematics, and research, as well as knowledge of specific fields. They encourage both our curiosity and our diligence, and by their own education, they give us examples of inquiry. They implement the social ideal of a continuous and progressive expansion of knowledge and skills, by which each generation is able to build on the accomplishments of earlier generations.

Scholars and researchers dedicate their lives to the discovery of truth, often in a narrow field, but sometimes in multiple or broad areas of research. Their efforts are concerned both with uncovering truth and with improving the methods used to uncover truth and formulate proofs.

Authors present truth in a variety of ways, ranging from the strictly literal to the highly metaphorical, and from formal prose to poetry. Some present personal views, while others communicate consensus views of scientific or other scholarly communities. Some writing is intended only for entertainment, but most writing, even if its avowed aim is entertainment, discloses truths about human nature and other aspects of existence.

Performers, like authors, present truth in many ways, such as speeches, songs, plays, and monologues. Some performers, such as magicians, deliberately falsify what they display, but even sleight of hand awakens a desire in the audience to know “how it is really done.”

The communications media, including television, radio, internet, newspapers, and magazines, publicize both typical and atypical happenings, and place them in a social and historical framework. They provide us with both a broader and a more intimate view of society than we could achieve individually. They provide a forum for the exchange of viewpoints among individuals and the broadcasting of individual discoveries and opinions. Media in the 21st century include an unprecedented spectrum of presentation modes, from formal news reports to individual opinions, using the printed word, still photographs, artwork, and both audio and video

live streams, recordings, and compositions. It is not always clear which presentations are truthful and which are fictitious or deceitful.

Courts of law are the forum for determining the truth about legal matters. They have extensive rules, which vary among nations and regions, intended to assure that the criteria for proof are consistent and predictable.

Investigative agencies use every available means to uncover truth. Unlike the courts, they try to use unpredictable means of proof, in order to circumvent attempts to hide activities. Both private and governmental agencies may resort to means of dubious legality and validity in order to acquire information.

Consultation, meaning a mutually respectful group search for truth, without prejudice and without attachment to one's initial opinions, is a powerful means of arriving at the truth. It allows the minds and thoughts of all the participants to work together, rather than wasting time and energy on defensive maneuvers. It allows all parties to succeed, rather than forcing some to concede defeat.

Barriers to Truth

Let us consider some of the social agents that interfere with our search for truth.

Special interests try to highlight favorable truths and hide unfavorable ones. Mining and petroleum extraction companies emphasize the usefulness of their products and obfuscate the damage done in both their production and their end use. Drug manufacturers may sponsor multiple tests, publicizing the results of only the favorable studies. Investment companies try to present their funds in the most favorable light, and promoters of health products will publicize their successes and hide their failures. Much research is carried out under funding from special interests; and even independent research suffers from the self-interest of the researchers to emblazon their names and attract future funding.

Partisan politics sets up a systematic prejudice against truth: truth is subservient to the platform and perceived advantage of the

party. When a partisan of Party A hears an exposition from Party B, the hearer will automatically discount anything that counters or contradicts Party A's set of assumptions or goals. Even if Party B has a candidate who seems superior to Party A's candidate, the partisan of A will still vote for Party A's candidate, because of party loyalty and the belief that the long-term advantage is always gained by promoting Party A.

Advertising and public relations are aimed at promoting a particular brand or product. Though much advertising is aimed simply at making a potential customer aware of the existence of a suitable product, and much public relations effort is merely to promote the image of a company, yet a significant part of it is carried out with no regard for truth beyond that which is needed to avoid libel suits, legal prosecution, and universal derision. Even partial derision is acceptable, provided that a large enough target audience will discount the derision. This industry supports the self-interest of every other industry. It uses the best findings of psychology and the most advanced methods of communication to promote various notions, true and false, compatible and conflicting. It makes its appeals through every conceivable means, with scant regard for reason and logic. It co-opts the sex instinct to promote entertainment, and co-opts hunger to promote destructive eating habits. If the communications media are supported principally through advertisements, then advertising or advertisers may subvert and pervert the primary communications function of the media. The use of idealized and unrealistic images of human life in advertisements contributes to confusion and dissatisfaction in our personal experience. The emphasis that advertising places on material possessions denigrates the importance of moral and spiritual values. While advertising per se, in the root sense of making a potential customer aware of the existence of a suitable product, is blameless and even praiseworthy, yet the implementation of it in modern society makes it all too often a barrier to truth and reason.

Shills—that is, people who are paid to use a certain product and then publicize the product's benefits—undermine the evalua-

tion of one product's superiority or inferiority to another. While the original skill, buying from a street vendor with the vendor's own shilling, is mostly a relic of the past, the modern skill, using product endorsement, is visible in every sporting event and every advertisement for sporting goods. From signature baseballs to wearing a sponsor's shoes in the Olympics, the skill is a major component of marketing in sports and other mass markets.

The communications media may be an impediment to truth as well as a source of truth. Communication per se is truth-neutral. In the service of seekers and promoters of truth, it is likely (though not inevitable) that it will serve the interests of truth; in the service of falsehood, it is likely to be a barrier to truth. Communications are likely to be biased in favor of those who provide or pay for the communications, whether they are advertisers, media conglomerates, governments, or special-interest groups (to name a few). Subscription media are likely to be biased to suit the preferences of their subscribers, and censors may assure that media conform to governmental bias.

Educators can be a potent force against truth as well as in its favor. In some cases they may be hired more as indoctrinators than as educators, to suit the purposes of a government or other powerful body. But even with the best will and no intentional bias, educators can provide only the truth that they are aware of; in a rapidly changing society, what they learned as students may have been obsolescent when they learned it, and may actually be false by the time they teach it.

Pedants, as distinct from scholars, have a greater interest in tradition and consistency than in truth. Change is suspicious, and new ideas are heresy. Pedantic influence in educational and scholarly pursuits tends to suppress the discovery of truth. Pedantry is instrumental in perpetuating recognized truths and established falsehoods alike.

Secrecy is not only a barrier to truth but antithetical to truth. Whether the context is a personal secret, a secret society, or governmental secrecy, the object is the same: to hide the truth. In some

cases the secret is the hidden truth, such as the name of a spy, the method to construct a weapon, or the identity of an adoptee's biological parent. In other cases the secret is that the holder of the secret has no truth to hide, but wishes to entice others to pay or join in order to be privy to the supposed secret. Secrecy is surely necessary in some cases, such as protection of passwords; but this does not alter its nature, which is opposition to the disclosure of truth.

Law-breaking is clearly a violation of trust, and it is also a barrier to truth. Lying about the illegal act leads to a series of other related lies, and may lead to a false accusation against another person. The precedent of lying about the illegal act also leads to a breakdown in the offender's regard for truth in general. If the law-breaking results in some sort of financial gain, then it encourages others in the same pursuit, multiplying the resulting barriers to truth.

Addiction causes us to assert the desirability, and deny the harmfulness, of the addictive substance or behavior. It has a secondary effect of causing us to lie about our behavior. It may cause us to break laws, with all the concomitant opposition to truth.

"Isms" are significant barriers to the recognition of any truth that does not conform to their respective points of view. Some examples are nationalism, racism, sexism, ageism, communism, capitalism, socialism, materialism, and rationalism. In many of these examples, the barrier to truth is not in the underlying ideas, but in a one-sided view resulting from their elevation to the status of unassailable principles. Loyalty to my country, for example, and support of its well-being, are laudable and necessary; but to deem my country superior to all others, and to promote its interests to the extent of damaging other countries, leads to conflict and war, and in the end, is detrimental to the welfare of my own country as well as that of others. Likewise, private ownership of the means of production, and a compassionate regard for social welfare, are both effective principles, but if either is exalted to the exclusion of the other, the result is destructive of both private and public interests. Finally, rationality is an integral component of private and social

discourse, but rationalism, i.e. exalting rational thought to the exclusion of emotional, intuitive, and artistic urges, is destructive. Whatever its use, we should regard the “ism” suffix as a warning flag in our search for truth.

Progress and Modernism

A common assumption in modern thought, whether implicit or explicit, is that modern society is a linear sum of all preceding societies, and is therefore better than anything that came before. It follows from this assumption that whatever is modern is good, and if an older concept conflicts with a modern concept, the older one is wrong. From a historical perspective, however, progress is not linear, but consists of some steps forward and some steps backward. It is not clear at any given moment whether we are traveling forward or backward. As an example, modern western societies provide unprecedented freedom to the individual; and yet, this has not resulted in unprecedented happiness for the individual. We must question, then, whether more individual freedom is an unmitigated good. Generally, in our search for truth, we should be alert to the fact that not all of what is newer is better. We should be willing to consider that some old-fashioned concepts, discarded by modern society, are in fact preferable to what has replaced them, and will, in future, be taken as progressive and normal, while some currently popular concepts may be seen as unworkable and undesirable.

Summary

Our social reality produces multiple and often conflicting suppositions and pressures in seeking, expressing, espousing, and acting on truths. Our membership in a social context tends to passively channel our thoughts in certain directions. Further, the beliefs and customs of our groups may actively restrict both our search for truth and our actions in response to newly discovered truth. We may face difficult choices such as ignoring truth, working to change our social context, accepting persecution, or leaving our

social context. Whatever our situation, it behooves us to be continually alert to the limitations it imposes, and ready to surmount those limitations in our quest for truth.

Answers

Looking for Answers

We have left in abeyance a number of questions and issues, concerning topics such as the first cause, reality, consciousness, thoughts, and free will. These questions are in abeyance because logic, science, and mathematics do not provide satisfactory answers to them. Where can we seek such answers?

What about philosophy? Perhaps the wise and learned, the “lovers of knowledge,” have found answers to these questions. Indeed they have; however, their answers are as disparate as any that we have considered so far. Their claims are contradictory and widely divergent, and therefore cannot all be true. In ancient times, the philosophers assumed the existence of gods or a god, who controlled nature and humankind, and of a realm beyond the earth, populated by heavenly beings and the souls of the dead. Some taught that the senses show us the true reality, from which we then form ideas to describe it, while others taught that ideas form the true reality, and become manifest in the forms perceived by our senses and the actions we carry out in response. In modern times, the existence of anything other than the physical world has been doubted or denied, leaving us with more questions and fewer answers than the ancients had. Attempts to put into practice the conclusions of modern materialistic philosophers have, as noted earlier, resulted in dismal social failures. Thus, philosophy does not promise fruitful responses to these questions and issues.

It would be very helpful to get some reliable information about the first cause. If we had that baseline information, we could perhaps puzzle out subsidiary matters as well. But we have already determined that the first cause is of necessity beyond our comprehension, so how can we get information about it? Is it possible that

there is such information, but we have been overlooking it? What if the first cause is actually providing answers to us, but we are not paying attention?

Suppose that we have managed to create a race of intelligent ants, and we see that they need guidance to carry out whatever mission we had in mind for them to accomplish. How might we go about communicating with them? If we approached them, they would flee from our huge feet, and their hearing would not make sense out of anything we tried to say. But if we created a special-purpose ant, equipping it with some sort of communications device, then it could talk with the other ants and we could relay communications through it, and receive answers back in the same way. Is it possible that our creator provides us with something akin to that? Could it provide some special-purpose human that is able to serve as a communications channel between us and it? If so, where might we find such a human?

There is a domain of human endeavor that asserts the historical existence of special-purpose humans. This endeavor claims to provide information from the first cause, to hold answers to a number of existential questions, to provide viable social norms, and to give appropriate guidance for individual behavior. This endeavor has been ongoing since the dawn of history, and provides the primary structure in the lives of billions of people. It is called religion. Let us then consider religion, and see if it can contribute something to our search for a better understanding of the first cause and of the many other issues we have raised.

Religion

By “religion” we understand a system of beliefs and practices, based on a belief in a universal force, essence, or being, and having two main purposes: the well-being of the individual and the harmonious regulation of society. Note that by religion we do not mean “going to church” (or mosque or synagogue or temple), alt-

though that may be a component of religious practice. We do, however, understand something systematic and collective, not simply an individual sense of spirituality.

Objections and Explanations

Let us acknowledge at the outset that religion has a bad reputation in many modern intellectual and scientific circles. It has been stigmatized as the opiate of the masses. It has been regarded as a crutch for those of weak will or poor social judgment. It has been thought of as a remnant of bygone superstitions, a product of man's fear, ignorance, and lack of understanding. It is seen as inculcating and perpetuating certain customs and superstitions, such as caste, inequitable gender roles, and sorcery, that hold back the progress of society. It has been seen as a major cause of war and conflict. In modern western society it often functions as a social club. We will briefly consider the reasons for this reputation, then review the history and function of religion, and then examine whether religion does in fact have something to offer in support of our investigation of truth, the first cause, and other existential issues.

Karl Marx regarded religion as a tool for the rich to control the poor. This view refers more to the corruption of religion than to religion itself. There are indeed many examples of churches or comparable religious structures that provide a luxurious living for their leaders while exploiting their members, or promote policies on behalf of the wealthy and elite of the society. However, these functions are not inherent to religion, but are a result of the size and power of the religious organization, and the lack of scruples of the leaders of the organization. The same situation can be seen in large companies and in governments. The problem in this regard is not with religion or companies or government per se, but with corruption of their functions.

The notion of religion as a crutch for personal will and social judgment, as taught in some schools of psychology, has roots in 18th-century philosophy. It arises from a humanistic sociological

viewpoint. Society needs individuals who behave according to social norms; deviation from the norms causes disruption and disintegration. Individuals who lack judgment may violate these norms. Religion is seen as a psychologically coercive measure that substitutes for innate judgment. There is an implicit suggestion that individuals who are brought up in some sociologically correct manner will not need any such “crutch,” but will behave properly of their own accord. This hypothesis has been, and continues to be, put to extensive practical testing. The results indicate that in fact either religion, or something similar to it, is needed for an orderly society and a satisfactory personal life. People seem to require both goals and guidelines; deprived of either, they turn to drugs, violence, and other unsatisfactory forms of behavior. Religion has filled this role in society since the dawn of history; if some other social structure can fill that role, such a structure has not yet been created.

Religion as palliative is epitomized in the claim, “There are no atheists in a foxhole.” That is, the fear of death is the cause of religious belief. The objection raised in this respect is that our assessment of truth should not be influenced by fear—of death or of anything else. This is a valid objection: to the extent that religious belief is based on fear, acceptance of it is an unworthy exercise of our free will.

Equating religion with superstition and ignorance has three bases: historical forms, literalism, and faulty logic. First, historically, as more of physical reality has been explained by science, less of it has been explained by religion. Where once the wind was seen as a god, science has shown it to be generated by differential solar heating; where volcanoes were once seen as supernatural, they are now seen to well up naturally from the hot subterranean regions of the earth. While this may be a valid objection to ancient forms of religion, it has no bearing on the major religious systems founded during the past three thousand years, which are all monotheistic. Second, it is commonplace for religious adherents to deny clear scientific truth because it conflicts with their literal interpretation of certain religious texts, such as creation narratives. This stems from the

adherent's failure to appreciate the figurative nature of language in general and of religious texts in particular. Third, a scientist may object that religion makes certain claims that are not supported by science; therefore religion is superstition. For example, science sees human life as ending at physical death; religion, by and large, claims a continuation of life after the death of the body. However, science has no way of knowing whether the life of the consciousness is the same as the life of the body. Most interpretations of religious teachings understand the "eternal life" to be something different from the life of the body. The problem with the logic of such a scientist is that it equates correctness with completeness. As we have noted earlier, scientific knowledge is generated inductively, making it only provisionally correct, and always incomplete. We should not accept arguments that assume the completeness of science.

It is true that certain customs and superstitions, such as caste, inequitable gender roles, and sorcery, are associated with religious beliefs and practices. In some cases, these are simply outworn aspects of religion, which once served a positive purpose; in other cases, they are accretions, not originally part of the religious system, that actually run counter to the core of the religious system itself, but are useful to a powerful group within society. This is a valid criticism of religious practice, and many progressive religionists work to eliminate these dysfunctional elements.

Religious fanaticism has undeniably been a major cause of war and conflict, and continues to be so. The question, then, is whether religious fanaticism is separable from religion. One difficulty in contemporary discussion of this question is the use of the word "fundamentalist" to mean "fanatic." Both within and without fanatical circles, the claim is made that these fanatics are adhering to the fundamentals of their faith. Since one can find a great many people, both today and throughout history, who are deeply religious, and believe in the fundamentals of their faith, but are not fanatical, it should be clear that fundamentalism and fanaticism are different things. We will look further into this question in our historical in-

vestigation, but briefly, it would seem that not religion but fanaticism is the cause of religious warfare. Indeed fanaticism of any sort—religious, patriotic, or racial, for example—leads readily to warfare.

The role of religious organizations—especially the Protestant churches—in modern western society can be described as more social than religious. People often choose their church by its pastor and its congregation as much as by its creed. The church provides weekly talks, children’s activities, and programs to help the poor. While these activities all fall within the purview of religion, they do not provide answers to the existential questions we are addressing.

The role of inspiration in religion is suspect in the eyes of some in the scientific community. They say that science is based on research, while religion is based on inspiration, and that research is what makes us confident in the accuracy of scientific notions. While there is some truth to this assertion, setting inspiration in opposition to research is a false dichotomy. Science cannot progress without inspiration, and religion cannot ignore the results of experience. Likewise, one can make a false dichotomy between faith and reason. However, science is based on the faith that what was proven yesterday remains true today, and the exercise of religion requires reason to connect the tenets of the faith to their application in daily life. It appears, then, that the difference between the inspiration- and faith-based approach of religion, compared to the research- and reason-based approach of science, is one of degree and emphasis, not of kind.

One of the objections to religion is that some protagonists of religion use a circular argument about “miracles” to “prove” the validity of their faith. The argument goes as follows: In my religious system, such-and-such a miracle has occurred. I know that it occurred because it is in the writings of my religious system. And that miracle proves that my religious system is valid. The obvious circularity of this argument is that the validity of the religious system is conditioned on the validity of a miracle, but the validity of

the miracle is conditioned on the validity of the religious system. We are thus led to conclude that recorded religious miracles, whether they occurred or not, are not a firm basis for accepting the validity of a given religious system. This does not imply that religious miracles are unreal; but it does suggest that discussions of the validity of a religious system should not revolve around miracles. It is also possible that the descriptions of certain miracles in religious texts are examples of figurative statements of truth. For example, the episode of the flood and Noah's Ark in the Torah or Old Testament may or may not refer to a physical flood of water, but it has rich metaphorical significance when seen as a description of a society corrupted by unsustainable practices, purged by a flood of disasters, and redeemed by embarking on an improved religious and social system.

Validity of Religion

Religion is often thought of as a matter of faith, and therefore entirely subjective and not susceptible to objective proof. That is, people generally accept or reject religion, either specifically or categorically, on the basis of faith, self-evidence, or intuition, and neither expect nor desire objective proof. Let us explore whether there is objective evidence for the validity of religion.

The modern materialistic narrative concerning religion holds that it is an accretion to society, something that originates within society and grows stronger as society develops. This view may be accurate as a depiction of religious organizations in contemporary society, but it conflates religion with religious organizations. Below, we consider a different narrative, which addresses the fundamentals of religion as well as its social organizations, shows that religion creates society rather than the other way around, and uncovers reasons to believe that religion does indeed offer answers to life's difficult questions.

If we are to use religion to answer questions, we need to establish its validity. Some would claim that this is impossible, since religion is not an objective discipline with directly observable re-

sults. However, the same objection could be made to many scientific disciplines. For example, nuclear physics and astrophysics contain many unobservable assertions; their validity is established by indirect means and the lack of alternative explanations.

We will approach the validation of religion along two paths: historical evidence for the validity of religion in the creation and regulation of society; and contemporary evidence for its benefits to the individual. Having validated the observable results of religion, we will examine its unobservable claims, under the same supposition that we use for science: we find a body of theoretical explanations providing observable results; we have no alternative explanation; therefore the explanations and unobservable assertions given by the theory may be taken as valid.

Historical Examination

We have seen that the objections to religion turn upon such extrinsic factors as corruption of its functions, lack of appreciation for its benefits, literalistic interpretations, and fanaticism, and not upon its intrinsic characteristics. Let us now consider historical evidence for the validity and importance of religion.

We looked earlier at science from a historical perspective, and saw how the expression of scientific truth has changed over the ages. We have seen that obvious scientific truths of one age are obvious scientific fallacies of a later age. Let us now take a brief historical look at religion, consider how it has changed, and see what effects it has had on the life of humankind. We will consider whether it deserves a place alongside science, providing a different perspective on truth, and serving as a guide to moral and spiritual upliftment, just as science serves as a guide for intellectual and material improvement. We will be interested to see whether it sheds further light on an interpretation of the idea of a first cause and other pending issues.

The earliest records of religion date from pre-historical times; we cannot say what the origin and course of these early forms of religion may have been. We do know, however, from historical

evidence, that religion provided the earliest bodies of organized knowledge, the earliest written records, and the earliest forms of government. Records of the great civilizations in the Near East show that religion was central to the functioning of society, and that kings and warriors developed from the priestly class. The earliest records of science are the astronomical data, and associated mathematical methods, used in keeping track of religious rites and festivals. Early governments all owed their validity to support from religious bodies. Thus we see that from a broad historical perspective, religion is not a result of social organization, but a cause of it.

We will now look in more specificity at historical and contemporary religion in terms of major existing religious systems. In keeping with a preference for observed causes over posited causes, we will limit our detailed consideration to religious systems with clearly known and widely acknowledged founders, history, beliefs, and practices. We will consider Judaism, Zoroastrianism, Buddhism, Christianity, Islam, and Bahá'í.

Judaism traces its history through a series of prophets, beginning with Adam and Abraham. The core set of laws is attributed to the Prophet Moses, who presented them as being revealed to him by the Creator, an invisible but all-powerful Force, identified only by a phrase usually translated as "I am." Moses gave laws of personal and interpersonal conduct, specifically enjoining love for the Creator. He prohibited worship of material things. The Jewish laws and teachings created a culture that has endured several thousand years, including periods of many hundreds of years during which the Jewish people were the stable and dominant civilization in their land, and other periods in which the Jewish people maintained their teachings and culture despite being scattered and persecuted. The modern State of Israel is based on the Judaic teachings, and millions continue to follow Jewish teachings.

The Zoroastrian faith was founded several thousand years ago in Persia. Zoroaster emphasized purity, and used fire as a symbol of life. He taught the existence of a unique and all-powerful Creator. The Zoroastrian teachings guided the life of the Persians until

their conversion to Islam some one thousand years ago. The Zoroastrian New Year is still one of the principal national celebrations of Iran (modern Persia). Iran still has a significant Zoroastrian minority.

Buddhism arose from the teachings of Gautama Buddha, who was born into Hindu culture in India about 2500 years ago. He claimed inspiration from an invisible and supernatural force. He taught that people should love one another, and that they should be detached from materiality, but avoid extreme asceticism. Buddhist culture engendered long-lived kingdoms throughout southeastern Asia, still guides a number of governments, and inspires many people to lives of peace and service.

Christianity comes from the teachings of Jesus of Nazareth, known as the Christ, or Anointed One, who lived about 2000 years ago in western Asia. He was born into Jewish society under Roman rule. He announced that he was inspired by an all-loving Creator, and that his life fulfilled certain Jewish prophecies of a Messiah. He enhanced some Jewish teachings: for example, he commanded his followers to love not only their friends, but their enemies as well. He abrogated certain practices, such as stoning of adulterers, strict observance of the Sabbath, revenge, and use of the Temple for banking. He explicitly taught that humans have a spirit that survives the death of the body. Christianity gave rise to great kingdoms in Europe that flourished for centuries. Its teachings and practice have spread to every part of the world. Today, Christianity, like Buddhism, continues to serve as individual and governmental inspiration.

Islam is based on the teachings propounded by the Arabian Prophet Muhammad, collected in the Qur'án (or Koran). Whereas Moses saw the Creator in a vision of a burning bush, Muhammad heard the Creator as the voice of the Angel Gabriel. He reiterated certain of the Jewish and Christian teachings, and emphasized submission (islám) to the will of the Creator, while requiring respect for the Jews and Christians, and stating that there is to be no compulsion in religion. He gave new instructions able to foster

larger-scale social structures. Over the course of several centuries, the Muslim (Islamic) civilization spread across thousands of miles, unifying people from disparate religious and ethnic backgrounds. The spread of Islamic teachings into Europe brought about the Renaissance, and Islamic mathematical structures enabled the development of modern science. Many governments are Islamic, and many of the world's inhabitants follow the teachings of Islam.

The Bahá'í Faith, and its immediate predecessor, the Bábí Faith, arose in the 1800s amid the welter of a decaying Persian empire. The founders of these two faiths, Bahá'u'lláh and the Báb respectively, were Muslim by heritage and birth, and proclaimed that they fulfilled prophecies of Islam, Christianity, Judaism, and other of the past religious systems. They taught a view of history known as "progressive revelation," by which they meant that the founders of each religious system, whom they called Manifestations of God, have built on the preceding systems, created a new system, and laid groundwork for a future Manifestation and a new system. They are the historically recent figures mentioned earlier in this work, whose new ideas history has yet to vindicate.

As discussed earlier, when we look over the history of humankind, we see that religion is a cause of advancement in human civilization. That is, each time a new religious system has appeared, a new social system, indeed a new civilization, has grown up based on that religious system.

We see further that each religious system seems to have been founded by an individual. These individuals are unique in their age. They are followed by disciples, converts, and adepts, many of whom are wise and renowned. None of the followers, though, inherits the power, the originality, and the degree of assurance and self-sacrifice that the founder exhibited. These founders of religious systems, then, seem to have had something special about them, similar to the genius of those who have founded scientific and philosophical movements, but greater in degree and different in kind. They have laid claim to knowledge received from the First Cause, either directly or through an unseen intermediary, and they

have asserted that their teachings should be studied and followed by all who may learn of them. These claims are so emphatic and novel that many of the founders were put to death by the people of their time, as were many of the early followers of each religious system. The survival of these religious systems despite severe persecution, and their value in generating social progress, are strong evidence that the claims of their founders are valid. Thus, we should consider their statements carefully.

The modern view of religion is biased toward what is often called “priestly religion,” as distinct from “prophetic religion.” That is, the operation of religion in the modern world seems to revolve around laws and rituals managed by a priesthood, and obedience to that structure, rather than around love for a prophetic founder, and behavior that flows from that love. In the historical view set forth above, priestly religion is simply the evolution or degeneration of the early religious teachings into a set of societal norms and structures, sometimes including extreme and violent elements. This is not something inherent or unique to religion, but a consequence of the intrinsic power of religion coupled with the impermanence of societal institutions.

Experiential Overview

We have examined religion from a historical and societal perspective, and seen that it provides the impetus and framework for many aspects of society. Let us now consider religion from the perspective of the individual. It is obvious that if religion is the cause of societal structure, then it is also the cause of the behavior of the individuals who make up the society. Thus, from the collective point of view, religion, in creating a successful society, must create socially useful individuals. However, how does this look from the individual’s perspective? After all, it is our individual conscious experience that matters to each of us, and not just our usefulness to society.

A fundamental human need is to have meaning and purpose in our lives. Religion addresses this need in both an individual and a

social context. In the individual context, it asserts that our creation and our behavior are meaningful, in and of themselves. In the social context, it provides a framework in which the individual can contribute to society; it gives guidelines for interpersonal relations; and it supplies an assurance that working within the framework and guidelines will contribute to a purposeful, productive life and a well-functioning society. Each religion provides various behavioral goals, placing a premium on striving to reach these goals.

Religion has been the motivating force for myriad endeavors in the creative arts. Temples, frescoes, paintings, statues, songs, books, plays, movies, and poems all reflect their creators' religious inspirations. All over the world, people join together in religious songs and dances. People sing in congregations and choirs, in buildings and forest clearings, on beaches and mountains, with clapping or drums or organs or pianos or flutes. People dance on stages and in village squares, in groups and alone, giving expression to a joy they find in religion.

Religion helps each person to chart a harmonious life, avoiding both self-destructive and antisocial behavior. It encourages productive and generous behavior, and discourages unkind and self-destructive acts. It thus guides us to live with a maximum chance of personal success and a minimum chance of failure.

None of this is to deny that religion can also be an excuse for individual mischief and misery. Any powerful tool can be used for good or for bad. It is not the fault of the axe if it is used for bloodshed instead of for chopping wood, and the automobile industry cannot be blamed for reckless drivers. Certainly there are people who construe religion as a reason to be violent or abusive towards themselves or others. We will see, though, in looking at the teachings of the major religious systems, that, in the individual case as in the collective case, such behavior either is directly contrary to the fundamental teachings of religion, or is a misguided attempt to bring ancient remedies to bear on modern problems. The very fact that the power of religion can be misused is evidence of the power of religion.

We have seen, then, that religion is not only a valid instrument of the collective good, but also a potent means for individual joy and productivity.

The Only True Religion?

The founder of each religious system has not merely invited people to follow his teachings, but has indicated that those teachings are the only path to individual perfection and social progress. This leaves us two options (under the supposition that religion has validity): the founder of one religious system was truthful, and all the rest were false; or each founder was speaking to the people of his day, with the expectation that the people of a later day would understand that the claim to uniqueness was made provisionally, not absolutely. If we compare religion to science, the latter option makes more sense. The underlying laws of physics, mathematics, chemistry, and other sciences have not changed during the course of human development, but the expression of them, our understanding of them, and our ability to use them have grown over the centuries and millennia. Likewise it seems reasonable that the expression of religious concepts, our understanding of them, and the use we can make of them have also grown. Thus it would seem that the only true religion is to be faithful to the teachings (if any) that we believe to be valid, to remain alert to the possibility that the teachings have been updated, and to conscientiously investigate the merits of any teachings that claim to update the ones we have already accepted. If such an approach were universally adopted, all would gradually converge on the most recent valid religious system, and arguments and fighting over religious truth would fade away.

Implicit in this viewpoint is the necessity for mutual respect among the followers of all the religious systems. If I am an algebra student, I probably understand arithmetic, perhaps geometry, and probably not calculus. But I should neither be dismissive of the lesser knowledge of an arithmetic student, nor suspicious of the greater knowledge of a calculus student. My knowledge of algebra

does not make me a better cashier, and my ignorance of calculus does not invalidate the calculations of a rocket scientist. Likewise, then, I should be neither dismissive of the followers of earlier religious systems than my own, nor suspicious of the followers of later systems.

Truth According to the Founders of Religious Systems

We have established that religion has provided a unique and distinctive impetus to the development of civilization, as well as valuable guidance for individual lives. Consequently, the founders of religious systems have unique insight into individual behavior and the workings of society. We will assume in what follows that their pronouncements have the same validity for human life and society that the laws discovered by scientists have in the natural world. It must be recognized that since most of the founders left no written records, we cannot be sure exactly what they said; but the records preserved by the religious systems they founded are accurate enough to have ensured the viability and longevity of those systems, and so we will use those records as our best available guide to their founders' actual utterances. Let us examine some of what the founders have said on various topics related to the questions and issues that have been left in abeyance. Some propositions are universal to all these religious systems. Other propositions differ among them, and we must eventually consider how to reconcile these differences with the claim that the founder of each system makes to universality.

Questions in Abeyance

These are the questions and issues that have been left in abeyance. After listing them, we will consider each one in turn.

- What is the nature of the first cause, the cause of our consciousness and of physical existence?
- Are humans “merely” animals, and if not, what is our place in creation and what is the purpose of our lives?
- What is the nature of our individual consciousness?
- Is one’s existence continuous, or is it interrupted during periods of unconsciousness?
- What is the nature of reality and its relationship to consciousness?
- Is it reasonable, given that the brain is physical, to place thought above action? If so, what is the most tenable explanation, such as gestalt (the whole is not just the sum of its parts), origin of thought in some higher domain, or some other explanation?
- Is it appropriate to compartmentalize one’s life, and to behave as though the different descriptions of reality can be used independently, as if applying to different realities?
- Is there free will? If so, what are the limits to the choices we can make in its exercise?
- Can thoughts and concepts, including numbers, justice, love, music, art, and life, be said to exist independently of the physical world?
- Is the present disordered state of human society the normal and inevitable condition of the world, or does it reflect a world society that is somehow malfunctioning? If the latter, how do we correct the malfunctions?

The First Cause

The First Cause, or Creator, is, of necessity, outside the realm of space-time. Therefore, Its attributes are beyond our comprehension—that is, we cannot hope to surround them, or inclusively understand them. However, the founders of religion have provided descriptions of Its attributes that we might think of, mathematically speaking, as projections into our space. Based on our trust in the

reliability of the founders of religious systems, we can suppose that these descriptions are as accurate as possible, given the limitations of language and of our finiteness. This section will cite some of those descriptions.

Moses reported the voice of the Creator as saying,

I am the God of thy father, the God of Abraham, the God of Isaac, and the God of Jacob.... I have... seen the affliction of my people..., and have heard their cry...; for I know their sorrows....”³

When Moses asked the Creator’s name, the reply was,

*I Am That I Am....*⁴

Zoroaster spoke of

*... the creator..., the radiant, glorious, omniscient, maker, lord of lords, king over all kings, watchful, creator of the universe, giver of daily bread, powerful, strong, eternal, forgiver, merciful, loving, mighty, wise, holy, and nourisher.*⁵

Buddha spoke of

*... acquiescence in the eternal law....*⁶

Buddha did not expound on the nature of the First Cause, but focused on behavior.

Christ said,

*God is a Spirit: and they that worship him must worship him in spirit and in truth.*⁷

*My Father ... is greater than all...*⁸

*...there is none good but one, God....*⁹

He also alluded to attributes of the Creator in a well-known prayer,
*Our Father which art in heaven, ... Thy will be done....
 Give us ... bread. And forgive us our debts.... thine is the
 kingdom, and the power, and the glory, for ever.*¹⁰

Muhammad said,

*There is no God but God.*¹¹

*...God, the Compassionate, the Merciful. ... Lord of the
 worlds!*¹²

*Your Lord is God ... and he created the sun and the moon
 and the stars, subjected to laws by His behest....*¹³

*God would have you beware of Himself.... He knoweth
 what is in the heavens and what is in the earth; and over all
 things is God potent.*¹⁴

The Báb said,

*...O Lord, my God! ... Verily Thou art the Source of all
 knowledge, the Omniscient. ... There is no God but Thee,
 the All-Glorious, the Almighty.*¹⁵

*He is exalted above every name, and is sanctified from eve-
 ry comparison.*¹⁶

Bahá'u'lláh said,

*God was, and His creation had ever existed beneath His
 shelter from the beginning that hath no beginning, apart
 from its being preceded by a Firstness which cannot be re-
 garded as firstness and originated by a Cause inscrutable
 even unto all men of learning.*¹⁷

*God, the unknowable Essence, the divine Being, is im-
 mensely exalted beyond every human attribute.... All the
 Prophets of God ... and the wise of every generation, unan-
 imously recognize their inability to attain unto the compre-*

*hension of that Quintessence of all truth, and confess their incapacity to grasp Him, Who is the inmost Reality of all things.*¹⁸

All of these statements confirm, first of all, what logic and reason demand: that the First Cause is unique, that It created both the universe and the laws that govern it, and that It possesses, in some sense, attributes and properties (or their progenitors) that we observe in the world of existence, such as consciousness and knowledge. However, they suggest further attributes that are not apparent from a pure cause-and-effect approach: that the Creator is all-powerful; that It not only possesses consciousness, but specifically possesses consciousness of each element of Its creation, and knowledge of the condition of each element; that It is glorious; that It is eternal; that It is loving; and that It provides for Its creatures. A perusal of religious literature will reveal many other qualities attributed to the Creator.

The Nature of Human Existence

One of the questions held in abeyance is whether we humans are “merely” animals, and if not, what is our place in creation, and what is the purpose of our lives. Let us consider what the founders of various religious systems say about this.

Jewish tradition states, in the first book of Moses,

*And God said, Let us make man in our image, after our likeness: and let them have dominion over ... all the earth, and over every creeping thing....*¹⁹

Moses said that the Creator spoke as follows:

*Thou shalt therefore keep the commandments.... Wherefore ... if ye hearken to these judgments... the LORD thy God ... will love thee, and bless thee, and multiply thee.... And... if thou ... forget the LORD thy God, and walk after other gods... ye shall surely perish.*²⁰

Zoroaster relates that the Creator said,

*I created... the stars, the moon, the sun, and the red burning fire, the dogs, the birds, and the five kinds of animals; but, better and greater than all, I created the righteous man.... But without any reason men adhere to that evil guide, Passion...; so that they do not think of Fate, And by the bent of their nature they forget death.*²¹

Buddha said,

To give oneself up to indulgence in sensual pleasure...; and also to give oneself up to self-mortification...: both these two extremes the Perfect One has avoided, and found out the Middle Path, which makes one both to see and to know.....

*Hence, the purpose of the Holy Life does not consist in acquiring alms, honor, or fame, nor in gaining morality, concentration, or the eye of knowledge. That unshakable deliverance of the heart: that, verily, is the object of the Holy Life, that is its essence, that is its goal.*²²

Christ taught,

*Thou shalt love the Lord thy God.... And... Thou shalt love thy neighbour as thyself. On these two commandments hang all the law....*²³

*But love ye your enemies, and do good, and lend, hoping for nothing again; and your reward shall be great.... Judge not, and ye shall not be judged: condemn not, and ye shall not be condemned: forgive, and ye shall be forgiven....*²⁴

Muhammad cited the Creator as follows:

*I have not created spirits and men, but that they should worship me....*²⁵

He said further,

*There is no piety in turning your faces toward the east or the west, but he is pious who believeth in God...; who for the love of God disburseth his wealth...; who observeth prayer... and who is of those who are faithful to their engagements....*²⁶

The Báb said,

*God loveth those who are pure.*²⁷

*...purge all thine acts and thy pursuits that thou mayest be nurtured in the paradise of pure love....*²⁸

*It is better to guide one soul than to possess all that is on earth....*²⁹

Bahá'u'lláh said,

*All men have been created to carry forward an ever-advancing civilization.... Those virtues that befit his dignity are forbearance, mercy, compassion and loving-kindness towards all the peoples and kindreds of the earth.*³⁰

He also said that the Creator

*chose to confer upon man the unique distinction and capacity to know Him and to love Him....*³¹

The foregoing citations demonstrate that the founders of religious systems consider humans to be greater than animals and qualitatively different from them, and that they consider the goals of human life to be entirely different from the goals of animal life. Life goals mentioned above include acting wisely, seeking moderation, loving our fellow humans, promoting the progress of humankind, being kind, and being generous.

One of the repeated themes we see in these quotations is that of our relationship to the Creator: one of love, worship, obedience and, as far as we are able, understanding. Since the aspects of love,

worship, and obedience may seem foreign to the rational scientific thinker, let us consider rational bases for them. As to love and worship, if we think of the beauty of a sunset, the glory of stars and galaxies stretching unfathomably distant, the wonder of rain and thunder and a newborn child, and the feelings they evoke, we can perhaps see how those feelings can all join together and result in love and worship of the Creator of them all. As to obedience and understanding, these are logical extensions of our relationship to the physical world, where we perforce obey the laws of gravity and chemistry, and seek to understand their operation. Just as jumping off a cliff or drinking poison has predictable deleterious physical effects, so disregarding the laws of personal and social behavior causes predictably problematic results in our lives and our societies. We will consider later what it means to obey the laws of religious systems, given that they do not all have the same laws.

Critics of religion have long scoffed at the claim that “God said, Let us make man in our image, after our likeness....” They rightly point out that the Creator cannot possibly be a big man with a beard (or a big woman either), and so in that sense humans cannot be in the image of their Creator. However, if we read the notion of “image and likeness” in a non-physical sense, and consider that in our experience on earth, of all the living creatures, only humans have created civilizations, recorded their history, pondered their own nature, and created technological wonders, then this “image and likeness of the creator” makes good sense. The notion that we have “dominion... over every creeping thing” becomes all too clear, as we find ourselves today in the position of careless stewards of the earth, wondering how to preserve the priceless diversity of nature against our ability to turn forests into deserts and our inclination to hunt bountiful species to extinction.

Individual Consciousness

We will consider here what the founders of religion have said about the nature of our individual consciousness and the continuity of our existence.

Jewish tradition states,

*And the LORD God formed man of the dust of the ground, and breathed into his nostrils the breath of life; and man became a living soul.*³²

Moses said,

*Only take heed to thyself, and keep thy soul diligently....*³³

*... love the LORD thy God with all thine heart, and with all thy soul, that thou mayest live.*³⁴

Zoroastrian records state,

Zarathustra asked Ahura-Mazda: ‘... when a pure man dies, where does his soul dwell...?’ ‘The soul of the pure man ... arrives at the Eternal Lights.’; Zarathustra asked Ahura-Mazda: ‘...when a wicked one dies, where does the soul dwell...? The ... soul of the wicked man ... arrives at the darkneses without beginning.’³⁵

Buddha taught,

*... that there is mind. He who understands by soul mind, and says that mind exists, teaches the truth....*³⁶

Buddha answered a question about eternal consciousness:

*Question: The Buddha teaches that all conformations are transient.... How then can there be Nirvana, a state of eternal bliss? Answer: ... to him who sees aright all things are naught.... Since... there is an unborn, unoriginated, uncreated and unformed, therefore is there an escape from the born, originated, created, formed.*³⁷

Buddha said,

He who seeking his own happiness punishes or kills beings who also long for happiness, will not find happiness after death. He who seeking his own happiness does not punish

*or kill beings who also long for happiness, will find happiness after death.*³⁸

Christ said,

*And fear not them which kill the body, but are not able to kill the soul: but rather fear him which is able to destroy both soul and body....*³⁹

*For whosoever will save his life shall lose it; but whosoever shall lose his life for my sake and the gospel's, the same shall save it.*⁴⁰

*And these [who have done evil] shall go away into everlasting punishment: but the righteous into life eternal.*⁴¹

Muhammad stated,

*Every soul shall taste of death.... And whoso shall scape the fire, and be brought into Paradise, shall be happy.*⁴²

*But they whose only gains are evil works, and who are environed by their sins,—they shall be inmates of the fire....*⁴³

The Báb wrote,

*There is no paradise... more exalted than to obey God's commandments, and there is no fire... fiercer than to transgress His laws and to oppress another soul....*⁴⁴

Bahá'u'lláh wrote as follows:

Thou hast asked Me whether man... will retain, after his physical death, the self-same individuality, personality, consciousness, and understanding that characterize his life in this world. If this should be the case, how is it, thou hast observed, that whereas such slight injuries to his mental faculties as fainting and severe illness deprive him of his understanding and consciousness, his death, which must involve the decomposition of his body and the dissolution of

its elements, is powerless to destroy that understanding and extinguish that consciousness?

He answered:

*Know thou that the soul of man is exalted above, and is independent of all infirmities of body or mind. ... Consider the light of the lamp. Though an external object may interfere with its radiance, the light itself continueth to shine with undiminished power. ... When [the soul] leaveth the body, it will evince such ascendancy, and reveal such influence as no force on earth can equal.*⁴⁵

In these extracts, the founders of religion all speak of something that we may call consciousness, mind, self, or soul, and all indicate that it is independent of our physical body. Most of them speak explicitly of the condition of our soul after the death of our body, and indicate that such a condition is dependent on the way we behaved during our physical lifetime. All of them indicate that the well-being of our soul is dependent on our choices, and not on the chance conditions of life, such as poverty or wealth, sickness or health. We see further that our choices should be made in accordance with the teachings of religion, and not on the pure basis of personal preference or convenience.

It is clear that the founders of religion do not teach that the soul is a product of the brain. It appears, further, that consciousness—that is, in the sense that we can be conscious or unconscious—is a state or product of the soul. This answers the question about continuity of our existence: even when we are unconscious, both the external world and the soul continue their existence.

We can see once again the similarity between scientific inquiries and existential inquiries. In physical science, we find that the reality of the things we see about us is derived from sub-microscopic entities so removed from our everyday experience that we can describe them mathematically but still cannot understand them at an intuitive level. Similarly, when we reflect on the reality

of our conscious experience, as described by the founders of religion, it is derived from an entity that cannot be described in words. We can accept the sub-material reality of protons and quarks because they are an integral part of established and effective science; we can accept the supra-material reality of the soul because it is an integral part of established and effective religion.

The Nature of Reality

We consider here what the founders of religion say about the nature of reality and its relationship to consciousness.

Jewish tradition in the books of Moses states,

*In the beginning God created the heaven and the earth...
And God created ... every living creature.... ...God created
man in his own image, ... male and female....*⁴⁶

Zoroaster cited

*Sixteen perfect lands created by Ahura Mazda, and as
many plagues created by Angra Mainyu.*⁴⁷ He spoke of the
*endless and sovereign Light*⁴⁸ and the depths of the dark,
*raging world of hell.*⁴⁹ He spoke of the good creature .. that
*... kills thousands of the creatures of the Evil Spirit.*⁵⁰

Buddha said,

*[it] remains a firm condition, an immutable fact and fixed
law: that all formations are impermanent, that all for-
mations are subject to suffering....*⁵¹;

*There is a realm, where there is neither the solid, nor the
fluid, neither heat, nor motion, neither this world, nor any
other world, neither sun, nor moon. ... This is the end of
suffering.*⁵²

The Bible records,

*Then spake Jesus again unto them, saying, I am the light of the world: he that followeth me shall not walk in darkness, but shall have the light of life.*⁵³

Christ said to his disciples,

*If ye were of the world, the world would love his own: but because ye are not of the world, but I have chosen you out of the world, therefore the world hateth you.*⁵⁴

*The life is more than meat, and the body is more than raiment.*⁵⁵

Muhammad said,

*Fair-seeming to men is the love of pleasures from women and children, and the treasured treasures.... Say: Shall I tell you of better things than these, prepared for those who fear God...? Theirs shall be gardens, beneath whose pavilions the rivers flow, and in which shall they abide for aye....*⁵⁶

*Ye desire the passing fruitions of this world, but God desireth the next life for you.*⁵⁷

The Báb wrote,

*In the estimation of them that have fixed their eyes upon the merciful Lord, the riches of the world and its trappings are worth as much as the eye of a dead body, nay even less.*⁵⁸

He wrote, with respect to physical reality and the reality of the Creator,

For instance, were ye to place unnumbered mirrors before the sun, they would all reflect the sun and produce impressions thereof, whereas the sun is in itself wholly independent of the existence of the mirrors and of the suns which they reproduce. Such are the bounds of the contingent be-

*ings in their relation to the manifestation of the Eternal Being...*⁵⁹

Bahá'u'lláh wrote,

*Upon the reality of man... He hath focused the radiance of all of His names and attributes, and made it a mirror of His own Self.*⁶⁰

*Fleeting are the riches of the world; all that perisheth and changeth is not, and hath never been, worthy of attention, except to a recognized measure.*⁶¹

*Know then that 'life' hath a twofold meaning. The first pertaineth to the appearance of man in an elemental body.... This life cometh to an end with physical death.... That life, however, which is mentioned in the Books of the Prophets and the Chosen Ones of God is the life of knowledge.... This is that blessed and everlasting life that perisheth not: whosoever is quickened thereby shall never die, but will endure as long as His Lord and Creator will endure.*⁶²

Considering the statements of the various founders, we see that all have tacitly concurred that the physical world is real. Most of them have indicated that physical reality is transient and in some sense secondary, and that physical pleasures are secondary to spiritual virtue. Most of the founders have described a permanent existence of our soul (and hence our consciousness), variously described as heaven, paradise, or freedom from suffering; or hell, fire, or continual suffering.

Thought, Free Will, and Action

Here we will see what the founders of religious systems tell us about thought, free will, and action. We will then consider the question, "Is it reasonable, given that the brain is physical, to place thought above action, and if so, what is the most tenable explana-

tion, such as gestalt, origin of thought in some higher domain, or some other explanation?"

Judaic tradition says,

*... whatsoever Adam called every living creature, that was the name thereof.*⁶³

*And the LORD God said, Behold, the man is become as one of us, to know good and evil....*⁶⁴

Moses said,

*Behold, I set before you this day a blessing and a curse; A blessing, if ye obey the commandments of the LORD your God, which I command you this day: And a curse, if ye will not obey....*⁶⁵

*Speak unto the children of Israel, that they bring me an offering: of every man that giveth it willingly with his heart ye shall take my offering.*⁶⁶

*And thou shalt speak unto all that are wise hearted, whom I have filled with the spirit of wisdom....*⁶⁷

Zoroaster said,

*When Thou, O Mazda, in the beginning didst create the Individual and the Individuality, through Thy Spirit, and powers of understanding—when Thou didst make life clothed with the body, when Thou madest actions and teachings, whereby one may exercise one's convictions at one's free-will; Then lifts up his voice the false speaker or the true speaker, he that knows or he that knows not, each according to his own heart and mind.*⁶⁸

*What is the thought well thought? It is that which the holy man thinks.... What is the word well spoken? It is ... the bounteous word of reason. What is the deed well done? It is that done with ... Righteousness....*⁶⁹

Buddha said,

*...the arising of consciousness is dependent upon conditions; and without these conditions, no consciousness arises. And upon whatsoever conditions the arising of consciousness is dependent, after these it is called. [Examples include:] eye-consciousness; ear-consciousness; mind-consciousness; corporeality; feeling (bodily ease, pain, joy, sadness, or indifferent feeling); perception (visual objects, sounds, odors, tastes, bodily impressions, or mind objects); and mental formations (impression, volition, etc.).*⁷⁰

Christ said,

*...those things which proceed out of the mouth come forth from the heart; and they defile the man. For out of the heart proceed evil thoughts, murders, adulteries, fornications, thefts, false witness, blasphemies: These are the things which defile a man....*⁷¹

*...take no thought beforehand what ye shall speak, neither do ye premeditate: but whatsoever shall be given you in that hour, that speak ye: for it is not ye that speak, but the Holy Ghost.*⁷²

*...the spirit indeed is willing, but the flesh is weak.*⁷³

*And there was in their synagogue a man with an unclean spirit; and he cried out.... And Jesus rebuked him, saying, Hold thy peace, and come out of him. And when the unclean spirit had torn him, and cried with a loud voice, he came out of him.*⁷⁴

Muhammad, relating events of Old Testament times, states that the Creator spoke as follows:

O David! verily we have made thee our vicegerent upon earth. Judge therefore between men with truth, and follow not thy passions.... For they who err from the way of God

*shall meet with a grievous chastisement... We have not created the heaven and the earth and what is between them for nought. That is the thought of infidels; but woe to the infidels because of the fire! Shall we treat those who believe and do the things that are right like those who propagate evil on earth?*⁷⁵

He spoke of those

*Who... though longing for it themselves, bestowed their food on the poor and the orphan and the captive....*⁷⁶

*Who is guilty of a greater injustice than he who inventeth a lie concerning God? ... These are they who have lost their own souls....*⁷⁷

The Báb, addressing the Creator, wrote,

*The loftiest station to which human perception can soar and the utmost height which the minds and souls of men can scale are but signs created through the potency of Thy command and tokens manifested through the power of Thy Revelation.*⁷⁸

Bahá'u'lláh said,

*Spirit, mind, soul, and the powers of sight and hearing are but one single reality which hath manifold expressions owing to the diversity of its instruments. ... For example, if it directeth its attention to the means of hearing, then hearing and its attributes become manifest. Likewise, if it directeth itself to the means of vision, a different effect and attribute appear. ... In like manner, when this sign of God turneth towards the brain, the head, and such means, the powers of the mind and the soul are manifested.*⁷⁹

Let us recapitulate a few points. Moses indicated that a wise heart results from the Creator's filling it with the spirit of wisdom. Zoroaster spoke of individuality as being derived from the Spirit of

the Creator, and life as something that is clothed with the body, not as something that results from the body. Buddha distinguished thoughts caused by physical conditions, such as sounds, from thoughts caused by abstract conditions, such as volition. Christ differentiated a willing spirit from a weak flesh. Muhammad described longing for food, yet giving it instead to the poor. The Báb and Bahá'u'lláh spoke of the various mental faculties as being derived from a sign of the Creator.

To summarize, in the selections quoted in this section and the previous one, the founders of religion taught that humans have a capacity for making decisions, a capacity known as free will, and that this capacity arises from some domain other than the physical realm. For example, “to know good and evil” is beyond the purely physical. Animals are not held accountable for their decisions: they are prompted by instinct and physical necessities such as hunger and self-preservation. We, however, are held to account for what we do. If it is in accord with the teachings propounded by the founders of religion, we are rewarded (that is, our lives progress in a satisfactory way); if it is contrary to those teachings, we are punished (that is, our lives go awry). One implication of this is that some thoughts, at least, originate from a domain beyond the physical realm, and it is indeed logical to place them above action in the causal hierarchy.

It is clear from science that the brain is intimately connected with the thought process. Stimulation of certain parts of the brain triggers sensations, memories, and feelings; and three-dimensional imaging of the brain shows that different kinds of thought processes are associated with different regions of the brain. We also see a possible allusion to physical origins of thought in Christ's interaction with an “unclean spirit,” which may refer to a physical impediment affecting the brain. Our legal system also recognizes a distinction between sources of thought, in allowing for a criminal to be excused by reason of insanity: the outcome of the decision-making process has been corrupted by some influence other than

the rational free will of the accused. Certain thoughts, then, arise from the physical workings of the brain.

It seems, then, that thought can originate either from physical conditions or from a realm beyond the physical. The founders of religious systems indicate that the thoughts arising from the physical world are of a lower order, and may be undesirable, whereas the thoughts arising from beyond the physical realm are praiseworthy and beneficial. Some of the thoughts that seem to originate outside of the physical realm are charity, kindness, forgiveness, creative impulses (such as give rise to music, art, and literature), and analytical faculties (such as are used in science and mathematics).

The answer to our question, then, whether it is reasonable to place thought above action, is, "It depends." It is reasonable to place thought above action in some cases, but not in others. In the cases of thought's being placed above action, the notion of gestalt does not seem to play a particular role; rather, thought originates in some domain beyond the physical. In other cases, thought is merely a response to stimuli, just like the "thoughts" of animals, and there is no reason to look beyond the physics, chemistry, and neurology of the event; in such cases, perhaps gestalt concepts are applicable.

Compartmentalization

One of our pending questions is whether it is appropriate to compartmentalize one's life, and to behave as though the different descriptions of reality can be used independently, as if applying to different realities. Here we will consider how the teachings of the founders of religion apply to this question, both in the domain of thought and in the domain of action. Let us recall that the context for this question was whether life itself is subject to different rules or laws, as are mechanics, chemistry, economics, and poetry, so that we might, for example, be justified in adhering to one standard of truth and rectitude of conduct in our dealings with our family, but a different standard in our business relationships; or in contem-

plating moral behavior for an hour or two each week, but ignoring morality the rest of the time.

Moses said,

*Honour thy father and thy mother....*⁸⁰

*Thou shalt make no covenant with [thine enemies], nor with their gods. They shall not dwell in thy land, lest they make thee sin against me....*⁸¹

*Love ye therefore the stranger: for ye were strangers in the land of Egypt.*⁸²

*If thou meet thine enemy's ox or his ass going astray, thou shalt surely bring it back to him again.*⁸³

*Unto a stranger thou mayest lend upon usury [interest]; but unto thy brother thou shalt not lend upon usury....*⁸⁴

In the Zoroastrian writings, it is recorded that the Creator spoke as follows:

*Had he sense enough to know that every creature that has been created and has had existence shall die.... (Now) when a man sets out on a journey, he takes provisions with him.... How then is it that men take no provisions for that unavoidable journey, on which one must go once for all, for all eternity? ... Blind are all those who, on this earth, do not follow the religion, do not benefit the living, and do not commemorate the dead.*⁸⁵

Buddha said,

*What, now, is Right Action? It is abstaining from killing; abstaining from stealing; abstaining from unlawful sexual intercourse. there are three things that accompany and follow upon right action, namely: right understanding, right effort, and right attentiveness.*⁸⁶

Christ said,

*[God] maketh his sun to rise on the evil and on the good, and sendeth rain on the just and on the unjust.*⁸⁷

*He that is faithful in that which is least is faithful also in much: and he that is unjust in the least is unjust also in much.*⁸⁸

*Beware of the scribes, which desire to walk in long robes, and love greetings in the markets, and the highest seats in the synagogues, and the chief rooms at feasts; Which devour widows' houses, and for a shew make long prayers: the same shall receive greater damnation.*⁸⁹

*And he said unto Jesus, Lord, remember me when thou comest into thy kingdom. And Jesus said unto him, Verily I say unto thee, To day shalt thou be with me in paradise.*⁹⁰

Muhammad said,

*If your fathers, and your sons, and your brethren, and your wives, and your kindred, and the wealth which ye have gained, and merchandise which ye fear may be unsold, and dwellings wherein ye delight, be dearer to you than God and His Apostle and efforts on his Path, then wait until God shall Himself enter on His work: and God guideth not the impious.*⁹¹

He contrasts the believers to the unbelievers:

*Men whom neither merchandise nor traffic beguile from the remembrance of God... That for their most excellent works may God recompense them.... But as to the infidels, their works are like the vapour in a plain which the thirsty dreameth to be water, until when he cometh unto it, he findeth it not aught....*⁹²

The Báb wrote,

*O my God, O my Lord, O my Master! I beg Thee to forgive me for seeking any pleasure save Thy love, or any comfort except Thy nearness, or any delight besides Thy good-pleasure, or any existence other than communion with Thee.*⁹³

*I know of a certainty, by virtue of my love for Thee, that Thou wilt never cause tribulations to befall any soul unless Thou desirest to exalt his station in Thy celestial Paradise and to buttress his heart in this earthly life with the bulwark of Thine all-compelling power, that it may not become inclined toward the vanities of this world.*⁹⁴

Bahá'u'lláh wrote to the Ottoman Sultan ‘Abdu’l-‘Azíz,

*Set before thine eyes God's unerring Balance and, as one standing in His Presence, weigh in that Balance thine actions every day, every moment of thy life. ... cleanse thine heart from the world and all its vanities.... Not until thou dost purify thine heart from every trace of such love can the brightness of the light of God shed its radiance upon it, for to none hath God given more than one heart.*⁹⁵

He said elsewhere,

*O servants! Verily I say, he is to be accounted as truthful who hath beheld the straight Path. That Path is one, and God hath chosen and prepared it. ... Whosoever hath not attained it hath failed to apprehend the truth and hath gone astray.*⁹⁶

*Walk not with the ungodly and seek not fellowship with him, for such companionship turneth the radiance of the heart into infernal fire.*⁹⁷

It seems clear from these quotations that every aspect of our lives is to be lived in accordance with the teachings of religion;

there is no indication that we can live moral lives some of the time, and immoral lives the rest of the time. In different ways and different words, the founders of religious systems promise us and warn us that if we adhere to appropriate principles, it will go well with us, and if not, we will suffer. Christ explicitly says that those who make a show of morality, but in fact live immorally, will suffer exceptional punishment.

There is frequent reference to our having two lives: one from birth until death, and another that begins after the death of the body. All of these references indicate that the nature of the second life is dependent on the way we live the first life.

There is no indication that our actions at work are separate from our actions within the family, or that kindness to family is required, while unkindness to strangers is acceptable. There is also no suggestion that the pursuit of scientific knowledge can be carried out with no consideration of its ethical implications. All of our actions are subject to the same scrutiny, and all of our thoughts are weighed in the same balance. While it may be justifiable to separate different branches of knowledge, as to technical terminology and experimental methods, we cannot separate different actions and weigh them in different balances.

There is reference to living differently with friends than with enemies. Moses tells his followers not to make covenants with their enemies, and says that charging interest to strangers, but not to family, is acceptable. Nevertheless, Moses says to love the stranger, and to return your enemy's strayed animal. Buddha and Bahá'u'lláh also warn against association with bad companions. The prohibition against association with enemies is given in the context of maintaining one's own good behavior; it cannot be taken as justification for ill-treating the stranger.

In summary, the founders of religion tell us that our lives should not be compartmentalized.

Limits of Free Will

We consider now what the founders of religious systems say about the limits of free will. We are not interested here so much in the consequences of its exercise as in the limitations of its exercise. That is, we are asking what decisions we can freely make, not whether they are good or bad, effective or ineffective decisions.

Jewish tradition records that the Creator said to Abraham,

*Take now thy son ... and offer him there for a burnt offering.... and Abraham went and took the ram, and offered him up for a burnt offering in the stead of his son.*⁹⁸

Moses said to Pharaoh, king of Egypt,

*Thus saith the LORD God of Israel, Let my people go, that they may hold a feast unto me in the wilderness, and Pharaoh replied, Who is the LORD, that I should obey his voice to let Israel go? I know not the LORD, neither will I let Israel go.*⁹⁹

He reported the voice of the Creator:

*Thus shalt thou say to the house of Jacob, and tell the children of Israel; Ye have seen ... how I ... brought you unto myself. Now therefore, if ye will obey my voice indeed, and keep my covenant, then ye shall be a peculiar treasure unto me....*¹⁰⁰

Zoroaster said, about a king,

*He wields his power according to the wish of Ahura Mazda, the Good Spirit...; but if he chooses to perform the sacrifice and prayer to us not in the right way, he does not wield the right power, he will not reign. He will receive bad treatment in the next world, though he has been the sovereign of a country....*¹⁰¹

Buddha said,

*Whatever deeds they do—good or evil—of such they will be the heirs.*¹⁰²

*Men, driven on by thirst, run about like a snared hare; let therefore the mendicant drive out thirst, by striving after passionlessness for himself. He who having got rid of the forest gives himself over to forest-life, and who, when removed from the forest, runs to the forest, look at that man! though free, he runs into bondage.*¹⁰³

Christ said,

*With men it is impossible, but not with God: for with God all things are possible.*¹⁰⁴

*If ye have faith as a grain of mustard seed, ye shall say unto this mountain, Remove hence to yonder place; and it shall remove; and nothing shall be impossible unto you.*¹⁰⁵

*A good man out of the good treasure of his heart bringeth forth that which is good; and an evil man out of the evil treasure of his heart bringeth forth that which is evil:...*¹⁰⁶

*Whosoever cometh to me, and heareth my sayings, and doeth them... But he that heareth, and doeth not,...*¹⁰⁷

*And lead us not into temptation; but deliver us from evil.*¹⁰⁸

Muhammad said,

*O ye who believe! bestow alms of the good things which ye have acquired, and of that which we have brought forth for you out of the earth, and choose not the bad for almsgiving,...*¹⁰⁹

*And thy Lord createth what he will and hath a free choice.*¹¹⁰

*Shall man have whatever he wisheth? The future and the present are in the hand of God:...*¹¹¹

*He who desireth the recompense of this world, we will give him thereof; And he who desireth the recompense of the next life, we will give him thereof!*¹¹²

The Báb said,

*If thou art satisfied with thine own way and dost not wish to follow the Truth, then to Me be My way and to thee thine.*¹¹³

*Say, verily God hath caused all created things to enter beneath the shade of the tree of affirmation, except those who are endowed with the faculty of understanding. Theirs is the choice either to believe in God their Lord, and put their whole trust in Him, or to shut themselves out from Him and refuse to believe with certitude in His signs.*¹¹⁴

*Whatever God hath willed hath been, and that which He hath not willed shall not be.*¹¹⁵

Bahá'u'lláh said,

*I beg of Thee, O my God,... to ordain that my choice be conformed to Thy choice and my wish to Thy wish....*¹¹⁶

*Know ye that the embodiment of liberty and its symbol is the animal. That which beseemeth man is submission unto such restraints as will protect him from his own ignorance, and guard him against the harm of the mischief-maker. ... The liberty that profiteth you is to be found nowhere except in complete servitude unto God....*¹¹⁷

*Whatsoever in the contingent world can either be expressed or apprehended, can never transgress the limits which, by its inherent nature, have been imposed upon it. God, alone, transcendeth such limitations.*¹¹⁸

*...the Will of God is not limited by the standards of the people....*¹¹⁹

*For whatever the creatures have is limited by their own limits, and whatever the True One hath is sanctified therefrom....*¹²⁰

It appears from these selections that there are few limits on the choices we can make in the exercise of free will. We can choose to obey the laws of religion or not. We can believe or disbelieve in any or all of religion. We can choose to pursue material goals or spiritual goals. We can act wisely or foolishly, kindly or unkindly. The only suggestion of limits is that people who are wise and good will make wise and good choices, while those who are foolish or evil will make foolish or evil choices. Otherwise, the limits are set on the consequences of our actions, not on our choices. Just as in the physical sense we can choose to ignore the law of gravity and jump off a tall building, so we can choose to ignore the laws of religion and offend our neighbor. And just as ignoring the law of gravity has undesirable results, so does ignoring the laws of religion. The limits, though, are placed after the choices, not before them.

The Reality of Thoughts and Concepts

Another pending question is whether thoughts and concepts, including numbers, justice, love, music, art, and life, can be said to exist independently of the physical world.

We saw earlier that some thoughts are above the physical world in the causal hierarchy; such thoughts are, thus, in a causal sense, independent of the physical world. We saw also that numbers can be conceptualized (exist as thoughts) without the need for counting physical objects; thus numbers can exist independently of the physical world. The founders of religion speak of the Creator's love; this love inherently exists independently of the physical world. Indeed, all qualities attributed to the Creator must of neces-

sity be independent of physical existence, although their actualization may require physical objects. Such qualities, concepts, and attributes mentioned already in this work include radiance, glory, omniscience, kingship, watchfulness, power, forgiveness, mercy, wisdom, holiness, truth, goodness, might, singleness, inaccessibility, existence, causality, firstness, divinity, consciousness, eternality, compassion, creativity, potency, and kindness. We have also seen that the life of the soul is described as eternal, and independent of physical existence.

Let us see what other concepts the founders of religion mention in a context independent of physical existence.

Moses mentions speech or utterance as a precursor to physical reality:

*And God said, Let there be light: and there was light.*¹²¹

Zoroaster mentioned a light that exists independently of physical existence:

*There are uncreated lights and created lights.*¹²²

Buddha spoke of a truth visible only to the wise:

*And I discovered that profound truth, so difficult to perceive, difficult to understand, tranquilizing and sublime, which is not to be gained by mere reasoning, and is visible only to the wise.*¹²³

Christ mentioned perfection:

*Be ye therefore perfect, even as your Father which is in heaven is perfect.*¹²⁴

Muhammad spoke of rivers, food, shade, and fire that exist independently of physical rivers, food, shade, and fire:

A picture of the Paradise which God hath promised to them that fear Him. The rivers flow beneath its bowers: its food and its shades are perpetual. This is the reward of those

*who fear God; but the reward of the unbelievers is the Fire.*¹²⁵

The Báb wrote that the reality of feelings is non-physical:

*In reality that which takes delight in joy or is saddened by pain is the inner temple of the body, not the body itself.*¹²⁶

Bahá'u'lláh, writing about Socrates, affirmed the notion of an ideal existence, of which physical existence is an actualization or instantiation:

*He it is who perceived a unique, a tempered, and a pervasive nature in things, bearing the closest likeness to the human spirit, and he discovered this nature to be distinct from the substance of things in their refined form.*¹²⁷

He mentioned music in a pre-physical context:

*Thou beholdest, O my God, how every bone in my body soundeth like a pipe with the music of Thine inspiration....*¹²⁸

In extolling the results of the sacrifice of Christ, he indicated that wisdom, learning, art, and influence all have their source in a non-physical realm:

*The deepest wisdom which the sages have uttered, the profoundest learning which any mind hath unfolded, the arts which the ablest hands have produced, the influence exerted by the most potent of rulers, are but manifestations of the quickening power released by His transcendent, His all-pervasive, and resplendent Spirit.*¹²⁹

We see, then, that thoughts and concepts, including numbers, justice, love, music, art, and life, can indeed be said to exist independently of the physical world.

Society in Disorder: Normal or Abnormal?

The question we consider here is whether the present disordered state of human society is the normal and inevitable condition of the world, or whether it reflects a world society that is somehow malfunctioning. Further, if it is malfunctioning, how do we improve it?

It seems clear that there will always be some element of disorder in society. At present, though, society itself, on many levels and in many places, appears to be disordered. Let us see what the founders of religious systems have said about order and disorder in society.

Jewish tradition relates a transition from an era of violence to an era of peace in the following parable:

... God saw that the wickedness of man was great in the earth.... And the LORD said, I will destroy man.... But Noah found grace in the eyes of the LORD. And God said unto Noah... thou shalt come into the ark, thou, and thy sons, and thy wife, and thy sons' wives with thee. And the waters prevailed exceedingly upon the earth; and all the high hills... were covered. ... And all flesh died.... And God remembered Noah, and every living thing, and all the cattle that was with him in the ark: ... and the waters asswaged.... And God blessed Noah and his sons, and said unto them, Be fruitful, and multiply, and replenish the earth.¹³⁰

Moses commanded both war and peace:

Moses said unto Joshua, Choose us out men, and go out, fight with Amalek.... And Joshua discomfited Amalek and his people with the edge of the sword.¹³¹

He also said,

When thou comest nigh unto a city to fight against it, then proclaim peace unto it. And ... if it make thee answer of peace, then ... all the people that is found therein shall be

*tributaries unto thee.... And if it will make no peace with thee, but will make war against thee, then thou shalt besiege it....*¹³²

The writings of Zoroaster indicate that violence is overcome by adherence to the teachings of religion:

*Now I will proclaim to those who will hear the things that the understanding man should remember.... Now the two primal Spirits... are the Better and the Bad, in thought and word and action. And between these two the wise ones chose aright, the foolish not so. And when these twain Spirits came together in the beginning, they created Life and Not-Life,... Worst Existence shall be to the followers of the Lie, but the Best Existence to him that follows Right. ... So when there cometh their punishment for their sins, then, O Mazda, at Thy command shall Good Thought establish the Dominion.... Then truly on the Lie shall come ... destruction...; but they who get themselves good name shall be partakers in the promised reward....*¹³³

Buddha

*...teaches that all warfare in which man tries to slay his brother is lamentable, but he does not teach that those who go to war in a righteous cause after having exhausted all means to preserve the peace are blameworthy. He must be blamed who is the cause of war. ... Struggle must be, for all life is a struggle of some kind.*¹³⁴

Christ spoke of the kingdom of heaven and of violence:

*And as ye go, preach, saying, The kingdom of heaven is at hand. ... And from the days of John the Baptist until now the kingdom of heaven suffereth violence, and the violent take it by force.*¹³⁵

He spoke of wars:

*And ye shall hear of wars and rumours of wars.... For nation shall rise against nation, and kingdom against kingdom....*¹³⁶

He further referred to a future time at which society would be well ordered:

*Nevertheless I tell you the truth; It is expedient for you that I go away: for if I go not away, the Comforter will not come unto you; but if I depart, I will send him unto you. And when he is come, he will reprove the world of sin, and of righteousness, and of judgment....*¹³⁷

He also referred to a time at which there would be only one religious system:

*I am the good shepherd, and know my sheep, and am known of mine. ... And other sheep I have, which are not of this fold: them also I must bring, and they shall hear my voice; and there shall be one fold, and one shepherd.*¹³⁸

Muhammad spoke of both peace and war:

*Now hath a light and a clear Book come to you from God, by which God will guide him who shall follow after his good pleasure, to paths of peace, and will bring them out of the darkness to the light, by his will: and to the straight path will he guide them.*¹³⁹

*War is prescribed to you: but from this ye are averse.*¹⁴⁰

*And if they lean to peace, lean thou also to it; and put thy trust in God: for He is the Hearing, the Knowing.*¹⁴¹

*God loveth not the abettors of disorder.*¹⁴²

He also speaks of a time when justice will be universally applied:

...on the resurrection day the whole Earth shall be but his handful.... And there shall be a blast on the trumpet.... And

*the earth shall shine with the light of her lord... and none shall be wronged....*¹⁴³

The Báb wrote,

*O peoples of the earth! Verily the resplendent Light of God hath appeared in your midst, invested with this unerring Book, that ye may be guided aright to the ways of peace and, by the leave of God, step out of the darkness into the light and onto this far-extended Path of Truth....*¹⁴⁴

Bahá'u'lláh wrote,

*Religious fanaticism and hatred are a world-devouring fire, whose violence none can quench. The Hand of Divine power can, alone, deliver mankind from this desolating affliction.*¹⁴⁵

*Briefly, ... it is Our purpose, through the loving providence of God ..., to abolish... all disputes, war, and bloodshed, from the face of the earth.*¹⁴⁶

*Behold the disturbances which, for many a long year, have afflicted the earth, and the perturbation that hath seized its peoples. It hath either been ravaged by war, or tormented by sudden and unforeseen calamities. Though the world is encompassed with misery and distress, yet no man hath paused to reflect what the cause or source of that may be. ... If the rulers and kings of the earth, the symbols of the power of God, exalted be His glory, arise and resolve to dedicate themselves to whatever will promote the highest interests of the whole of humanity, the reign of justice will assuredly be established amongst the children of men, and the effulgence of its light will envelop the whole earth.*¹⁴⁷

What we may gather from these observations is that the present disorder in the world is an inevitable phase, but not a permanent condition. The founders of religious systems refer repeatedly to

periods of order and periods of disorder. The question then is, how do we move from the present disordered condition to a better-ordered condition? The short answer is that, just as we seek to understand and obey the laws of science, we should seek to understand and obey the teachings of the religious systems. This, however, immediately raises the question posed earlier, of how to obey teachings that are different, and in some cases conflicting. We will consider this shortly, after discussion of the most recent religious system.

The Newest Religious System

At the close of the section on “Action,” there was a reference to examining the views and teachings of two individuals with a new and variant view of truth. These two individuals, both Persians, were ‘Alí-Muhammad of Shíráz, known as the Báb, and Husayn-‘Alí of Núr, known as Bahá’u’lláh. They founded the Bahá’í religious system, known today as the Bahá’í Faith. Both were severely persecuted for their novel views, which some regarded as heretical. The Báb was executed, and Bahá’u’lláh was condemned to perpetual exile and imprisonment. The fact that their teachings have survived extensive persecution of founders and followers is a reason to give them the same careful consideration as those of earlier religious systems.

The Bahá’í Faith was founded in the mid-1800s. Because it is so recent, it cannot claim the vindication of a thousand years or more of history, as the major historical religious systems can. It stands today in religious thought somewhat as Einstein’s theories of relativity did in the scientific thought of the early 20th century: novel, and of revolutionary potential, but not widely accepted. A thousand years from now, its significance or insignificance will be obvious; today, our appraisal of its merits, and our actions in response to that appraisal, must be based on our own consideration of the writings, teachings, and claims of the Báb and Bahá’u’lláh,

of the two centuries of history of the Bahá'í Faith, and of its relevance to our individual and collective lives.

The Bábí religious system, the immediate precursor to the Bahá'í Faith, was founded by the Báb in 1844. It existed as an independent religious system until 1863. In that year, Bahá'u'lláh, the preeminent follower of the Báb, proclaimed himself as Him Whom God Shall Make Manifest, the fulfiller of Bábí prophecy, and thereby founded the Bahá'í Faith, superseding the Bábí religious system. Some views propounded by the Báb and Bahá'u'lláh have already been mentioned in the preceding sections. Many of those views are variations or restatements of views set forth by the founders of earlier religious systems, but others are novel and unique. It is these latter that interest us: what might adoption of these novel views contribute to our individual and collective well-being? Because the Báb made all of his teachings conditional on their ratification by Him Whom God Shall Make Manifest, we will focus on the statements of Bahá'u'lláh.

The basis of Bahá'u'lláh's teaching is that there is one Creator, who created all humanity as one family, and who gave rise to all the major religious systems. He referred to the founders of the religious systems, including the Báb and himself, as "Manifestations of God." He taught that these systems are like chapters in a book or grade levels in a school: each has built upon the previous one, and the Creator intends that humanity advance through these systems, as a reader advances through a book or a pupil advances through a school. He indicated that the Bahá'í religious system is designed to unite the world, while acknowledging that this process will not be quick or easy. He has invited everyone to join his faith: *O ye peoples of the earth! Turn yourselves towards Him Who hath turned towards you.*¹⁴⁸ He referred to the kings and rulers as *the exponents of power and the daysprings of glory,*¹⁴⁹ and commanded them, among other actions, to *do all in their power [to] banish discord from this world and illumine it with the light of concord.*¹⁵⁰ He has predicted that in a thousand years or more, another Manifestation will found a new religious system to succeed the Bahá'í Faith.

A newly explicit teaching is the oneness of humankind. Although this principle is implicit in the Golden Rule, expressed in different ways in all religious systems, it has not been explicitly promulgated in the past. Bahá'u'lláh wrote, *There can be no doubt whatever that the peoples of the world, of whatever race or religion, derive their inspiration from one heavenly Source, and are the subjects of one God.*¹⁵¹ He further wrote, *The well-being of mankind, its peace and security, are unattainable unless and until its unity is firmly established.*¹⁵² It is noteworthy that Bahá'u'lláh describes unity as the prerequisite for peace, not as the result of peace. He gives oneness further emphasis by declaring the equality of men and women. He extends oneness to the relationship between parents and children, requiring the parents to educate their children, and the children to obey their parents. Bahá'u'lláh further extends oneness to international relations, calling for the choice or creation of an international auxiliary language, the adoption of a single global currency system, and the reduction of armed forces to those needed for internal security.

A novel provision is the formal continuance of centralized authority in the Bahá'í Faith. This was done by Bahá'u'lláh's written appointment of a successor and interpreter, as well as of an administrative organization. The successor and interpreter was his eldest son, 'Abdu'l-Bahá, who in turn appointed his grandson, Shoghi Effendi. The administrative organization consists of elective bodies extending from the local to the international level. Because of this formal continuance, authoritative Bahá'í pronouncements include the writings of Bahá'u'lláh, 'Abdu'l-Bahá, and Shoghi Effendi, and the decisions of the Universal House of Justice. This formal continuance also assures the worldwide unity of the Bahá'í Faith.

Another novel Bahá'í teaching concerns the relation between science and religion. In modern thought, and through much of history, religion and science have been viewed as opposing systems. From the execution of Socrates, through the persecution of Galileo, to the Scopes trial, faith and reason seem to be in perpetual and irreconcilable conflict. Bahá'u'lláh, however, enunciated principles

that portray religion and science as complementary, rather than antagonistic.

He wrote,

*Arts, crafts and sciences uplift the world of being, and are conducive to its exaltation. Knowledge is as wings to man's life, and a ladder for his ascent. Its acquisition is incumbent upon everyone.*¹⁵³

He pointed out,

*Although ... the contemporary men of learning are highly qualified in philosophy, arts and crafts, yet ... most of this knowledge hath been acquired from the sages of the past, for it is they who have laid the foundation of philosophy, reared its structure and reinforced its pillars. ... The sages aforetime acquired their knowledge from the Prophets, inasmuch as the latter were the Exponents of divine philosophy and the Revealers of heavenly mysteries. ... Empedocles, who distinguished himself in philosophy, was a contemporary of David, while Pythagoras lived in the days of Solomon, son of David, and acquired Wisdom from the treasury of prophethood.*¹⁵⁴

He also wrote,

*Religion is, verily, the chief instrument for the establishment of order in the world, and of tranquillity amongst its peoples. The weakening of the pillars of religion ... cannot but lead in the end to chaos and confusion.*¹⁵⁵

‘Abdu’l-Bahá summarized these and other statements as,

*...among the teachings of Bahá'u'lláh is that religion must be in conformity with science and reason....*¹⁵⁶

He also said,

*We may think of science as one wing and religion as the other; a bird needs two wings for flight....*¹⁵⁷

Bahá'u'lláh has asserted that when his teachings are put into practice worldwide, they will bring about a world civilization and universal peace:

*These fruitless strifes, these ruinous wars shall pass away, and the 'Most Great Peace' shall come.*¹⁵⁸

He enjoined his followers to spread the Bahá'í teachings, and to invite others to become Bahá'ís, but forbade proselytizing—that is, attempts to recruit members through promises, threats, coercion, or violence:

*Teach ye the Cause of God, O people of Bahá... through the power of ... utterance....*¹⁵⁹

He indicated further that this teaching is to include deeds as well as words:

*The essence of faith is fewness of words and abundance of deeds; he whose words exceed his deeds, know verily his death is better than his life.*¹⁶⁰

We observed earlier that the Bahá'í system is too new to have been validated in a millennia-long historical context. There are, however, some criteria that support its status as a valid and independent religious system. One is that Bahá'u'lláh proclaimed it as such: that is, he made the same claims that the founders of previous religious systems made. Because he made those claims, the Bahá'í system cannot be regarded as merely a reform movement in the Muslim faith. Another criterion is that both the Báb and Bahá'u'lláh were uneducated and unread, beyond the equivalent of a modern primary education, and yet they spoke and wrote widely, deeply, and cogently on philosophical, religious, and practical topics. Even the fiercest enemies of Bahá'u'lláh acknowledged his surpassing wisdom and eloquence. Another criterion is that the Bahá'í Faith has demonstrated a number of the properties of the widely-accepted religious systems, such as persecution and martyrdom of its founders and early followers; new laws; a new calen-

dar; and inspired writings. It has vindicated, on a scale of several million members, two significant properties: inclusiveness and cohesiveness. Its inclusiveness is demonstrated by the variety of national, ethnic, and religious backgrounds of its adherents. They were born into varied, conflicting, and even antagonistic backgrounds, and now mingle and cooperate in a democratic context in support of both local and global pursuits. Its cohesiveness is demonstrated by its continued growth, as a single entity, with a single coordinating body. There have been breakaway or splinter groups, but none of them has achieved any significant size or any official government recognition, and most have died with their founders. Further evidence for the validity of the Bahá'í system is found in the degree to which Bahá'í teachings that were novel, radical, or heretical in the 19th century (particularly in Bahá'u'lláh's Persian milieu) have become accepted, either in practice or in principle, throughout the modern world. These include the equality of women and men; the prohibition of slavery; monogamy; the right to choose one's marriage partner; universal education of both sexes; replacement of war by diplomacy; and the responsibility of governments toward their citizens. The Bahá'í Faith is regarded by the United Nations, by most of its member nations, and by most of the major religious groups as an independent religion. Thus, while we cannot as yet discern a Bahá'í civilization, which would be a historical proof such as we have for earlier systems, we can discern a number of suggestive properties of a new religious system and the potential nucleus of a future Bahá'í civilization.

Obedience to the Creator, Given Multiple Conflicting Revelations

Bahá'u'lláh explicitly addresses the question of conflicting commandments of the different religious systems. He points out that humanity needed different laws at different times in its history, and states that the laws of the previous systems should be given up in favor of the laws of the newest system. However, he also stresses free will and freedom of belief; thus, while we ought to obey the

laws of the latest religious system (if any) that we accept as valid, it is up to each of us to determine that validity for ourself, and Bahá'u'lláh forbids pressuring or forcing anyone to recognize any particular religious system.

He writes,

*That the divers communions of the earth, and the manifold systems of religious belief, should never be allowed to foster the feelings of animosity among men, is, in this Day, of the essence of the Faith of God and His Religion. ... Consort with all men, O people of Bahá, in a spirit of friendliness and fellowship.*¹⁶¹

It is important to recognize that the practices of the professed adherents of a given religious system do not always conform to the teachings of the founder of the system, and that following the current practices of a system is not always the same as obeying the laws enjoined by the founder of the system. To cite just one example among many, Christ commanded his followers, *And unto him that smiteth thee on the one cheek offer also the other; and him that taketh away thy cloak forbid not to take thy coat also.*¹⁶² While this indicates clearly that the Christian standard is forgiveness and charity rather than retaliation and revenge, the norms and expectations in predominantly Christian countries do not always hold to such a standard. On a personal level, consider how often people do seek vengeance rather than granting forgiveness. On a societal level, consider that beyond the criminal law, which is necessary to the functioning of society, there is an enormous body of civil law, set up to allow individuals to exact not only restitution but retribution from other individuals. Similar contrasting examples may be found in every nation and every religious or secular system.

As Bahá'u'lláh explains,

It is unquestionable that... the teachings, laws, commandments, and prohibitions which have been established in the

*preceding Dispensation, and which have overshadowed the people of that age, become darkened, that is, are exhausted, and cease to exert their influence.*¹⁶³

Obedience to the Creator, then, means to conform our lives to our best understanding of the Creator's will, to allow others to do the same, and to encourage our societies, our governments, and the international organizations to create conditions that will enable all people to likewise conform their lives to their best understanding of the Creator's will.

Questions No Longer in Abeyance

Let us briefly review what answers the founders of religious systems have given to the questions that were left in abeyance.

- Question: What is the nature of the first cause, the cause of our consciousness and of physical existence? Brief answer: It is unique, creative, conscious, loving, eternal, and beyond our comprehension.
- Question: Are humans “merely” animals, and if not, what is our place in creation and what is the purpose of our lives? Brief answer: Humans are greater than animals and qualitatively different from them. Our place and purpose are to love and worship our Creator, to love one another, and to promote human progress.
- Question: What is the nature of our individual consciousness? Brief answer: Our consciousness is a state or product of the soul. It is independent of physical existence and continues to exist after the death of our body.
- Question: Is one's existence continuous, or is it interrupted during periods of unconsciousness? Brief answer: It is continuous.
- Question: What is the nature of reality and its relationship to consciousness? Brief answer: Reality includes both the

physical world and a greater reality. Physical existence is real but transient; our consciousness is independent of it.

- Question: Is it reasonable, given that the brain is physical, to place thought above action, and if so, what is the most tenable explanation, such as gestalt, origin of thought in some higher domain, or some other explanation? Brief answer: Yes, it is reasonable: those thoughts that originate in a domain beyond the physical can be placed above action.
- Question: Is it appropriate to compartmentalize one's life, and to behave as though the different descriptions of reality can be used independently, as if applying to different realities? Brief answer: No.
- Question: Is there free will? If so, what are the limits to the choices we can make in its exercise? Brief answer: Yes, there is, and our choices are effectively limitless, although the results of those choices are constrained in various ways.
- Question: Can thoughts and concepts, including numbers, justice, love, music, art, and life, be said to exist independently of the physical world? Brief answer: Yes.
- Question: Is the present disordered state of human society the normal and inevitable condition of the world, or does it reflect a world society that is somehow malfunctioning? If the latter, how do we improve its functioning? Brief answer: It is a symptom of malfunctioning, which can, in time, be improved through obedience to the Creator.

Further Truths According to the Founders of Religious Systems

Examining the foundational writings of the various religious systems gives rise to some additional topics. Here we examine the founders' writings concerning three such topics: characteristics of the founders of religious systems; the concept of love in religious systems; and the role of truth in religious systems.

The Founders of Religious Systems

The founders of religious systems were different from the rest of us. How different were they, though, and in what ways? Were they ordinary babies who became extraordinary men? Were they all different from each other? Were they all the same as each other, but different from the rest of us? Let us look at what they said about themselves and about each other.

*...Moses said unto God, Who am I, that I should go unto Pharaoh, and that I should bring forth the children of Israel out of Egypt?*¹⁶⁴

*...say unto the children of Israel, the LORD God of your fathers, the God of Abraham, the God of Isaac, and the God of Jacob, hath sent me unto you....*¹⁶⁵

*Moses said unto the LORD, O my LORD, I am not eloquent.... And the LORD said unto him,... go, and I will be with thy mouth, and teach thee what thou shalt say.*¹⁶⁶

*And Moses said unto the LORD, The people cannot come up to mount Sinai.... And the LORD said unto him, ... let not the priests and the people ... come up unto the LORD....*¹⁶⁷

*The LORD thy God will raise up unto thee a Prophet from the midst of thee, of thy brethren, like unto me; unto him ye shall hearken....*¹⁶⁸

From the Zoroastrian (Zarathustran) writings:

Zarathustra asked Ahura Mazda: ... Who was the first mortal, before myself, ... with whom thou... didst converse, whom thou didst teach ... the law of Zarathustra? Ahura Mazda answered: The fair Yima, the great shepherd, O holy Zarathustra! he was the first mortal, before thee... with whom I... did converse.... O Maker of the material world, thou Holy One! Who is the lord and ruler there? Ahura

*Mazda answered: 'Urvatad-nara, O Zarathustra! and thyself, Zarathustra.'*¹⁶⁹

Buddha said,

*Those only who do not believe, call me Gotama, but you call me the Buddha, the Blessed One, the Teacher. And this is right, for I have in this life entered Nirvana, while the life of Gotama has been extinguished. Self has disappeared and the truth has taken its abode in me.*¹⁷⁰

*I am not the first Buddha who came upon earth, nor shall I be the last. In due time another Buddha will arise in the world, a Holy One, a supremely enlightened One, endowed with wisdom in conduct, auspicious, knowing the universe, an incomparable leader of men, a master of angels and mortals. He will reveal to you the same eternal truths which I have taught you. He will preach his religion, glorious in its origin, glorious at the climax, and glorious at the goal, in the spirit and in the letter. He will proclaim a religious life, wholly perfect and pure; such as I now proclaim.*¹⁷¹

Christ spoke as follows:

*My Father worketh hitherto, and I work. ... The Son can do nothing of himself, but what he seeth the Father do.... He that honoureth not the Son honoureth not the Father which hath sent him.*¹⁷²

*... the works which the Father hath given me to finish, the same works that I do, bear witness of me, that the Father hath sent me. And the Father himself, which hath sent me, hath borne witness of me. ... Do not think that I will accuse you to the Father: there is one that accuseth you, even Moses, in whom ye trust. For had ye believed Moses, ye would have believed me; for he wrote of me. But if ye believe not his writings, how shall ye believe my words?*¹⁷³

*Your father Abraham rejoiced to see my day: and he saw it, and was glad. ... Verily, verily, I say unto you, Before Abraham was, I am.*¹⁷⁴

*I and my Father are one.*¹⁷⁵

*...my Father is greater than I.*¹⁷⁶

*He that hateth me hateth my Father also.*¹⁷⁷

*But when the Comforter is come, whom I will send unto you from the Father, even the Spirit of truth, which proceedeth from the Father, he shall testify of me....*¹⁷⁸

*Howbeit when he, the Spirit of truth, is come, he will guide you into all truth: for he shall not speak of himself; but whatsoever he shall hear, that shall he speak.... He shall glorify me....*¹⁷⁹

Muhammad said,

*Moreover, to Moses gave we 'the Book,' and we raised up apostles after him; and to Jesus, son of Mary, gave we clear proofs of his mission, and strengthened him by the Holy Spirit. So oft then as an apostle cometh to you with that which your souls desire not, swell ye with pride, and treat some as impostors, and slay others.*¹⁸⁰

*Verily, Jesus is as Adam in the sight of God. He created him of dust: He then said to him, 'Be' - and he was.*¹⁸¹

*Say: We believe in God, and in what hath been sent down to us, and what hath been sent down to Abraham, and Ishmael, and Isaac, and Jacob, and the tribes, and in what was given to Moses, and Jesus, and the Prophets, from their Lord. We make no difference between them.*¹⁸²

*Muhammad is not the father of any man among you, but he is the Apostle of God, and the seal of the prophets: and God knoweth all things.*¹⁸³

The Báb wrote,

*Thy purpose in performing thy deeds is that God may graciously accept them; and divine acceptance can in no wise be achieved except through the acceptance of Him Who is the Exponent of His Revelation.*¹⁸⁴

*In the estimation of God..., what is meant by the Day of Resurrection is this, that from the time of the appearance of Him Who is the Tree of divine Reality, at whatever period and under whatever name, until the moment of His disappearance, is the Day of Resurrection. For example, from the inception of the mission of Jesus—may peace be upon Him—till the day of His ascension was the Resurrection of Moses. For during that period the Revelation of God shone forth through the appearance of that divine Reality, Who rewarded by His Word everyone who believed in Moses, and punished by His Word everyone who did not believe; inasmuch as God's Testimony for that Day was that which He had solemnly affirmed in the Gospel. And from the inception of the Revelation of the Apostle of God [Muhammad]... till the day of His ascension was the Resurrection of Jesus.... And from the moment when the Tree of the Bayán [i.e. the Báb] appeared until it disappeareth is the Resurrection of the Apostle of God, as is divinely foretold in the Qur'án.... The perfection of the religion of Islam was consummated at the beginning of this Revelation; and from the rise of this Revelation until its setting, the fruits of the Tree of Islam, whatever they are, will become apparent. The Resurrection of the Bayán will occur at the time of the appearance of Him Whom God shall make manifest.*¹⁸⁵

*It behooveth you to await the Day of the appearance of Him Whom God shall manifest... though indeed He is I and I am He. ... The Bayán [Revelation of the Báb], notwithstanding the sublimity of its station, beareth fealty to Him Whom God shall make manifest, and it is He Who be- seemeth most to be acclaimed as the Seat of divine Reality, though indeed He is I and I am He.*¹⁸⁶

*In the time of the First Manifestation the Primal Will ap- peared in Adam; in the day of Noah It became known in Noah; in the day of Abraham in Him; and so in the day of Moses; the day of Jesus; the day of Muhammad, the Apos- tle of God; the day of the 'Point of the Bayán' [the Báb]; the day of Him Whom God shall make manifest; and the day of the One Who will appear after Him Whom God shall make manifest. Hence the inner meaning of the words ut- tered by the Apostle of God, 'I am all the Prophets', inas- much as what shineth resplendent in each one of Them hath been and will ever remain the one and the same sun.*¹⁸⁷

Bahá'u'lláh wrote,

*And when the days of Moses were ended, and the light of Jesus, shining forth from the dayspring of the Spirit, en- compassed the world, all the people of Israel arose in pro- test against Him. They clamoured that He Whose advent the Bible had foretold must needs promulgate and fulfil the laws of Moses, whereas this youthful Nazarene, who laid claim to the station of the divine Messiah, had annulled the law of divorce and of the sabbath day—the most weighty of all the laws of Moses.*¹⁸⁸

Every discerning observer will recognize that in the Dis- pensation of the Qur'án both the Book and the Cause of Je- sus were confirmed. As to the matter of names, Muhammad, Himself, declared: 'I am Jesus.' He recognized the truth of the signs, prophecies, and words of Jesus, and testified that

*they were all of God. In this sense, neither the person of Jesus nor His writings hath differed from that of Muhammad and of His holy Book, inasmuch as both have championed the Cause of God, uttered His praise, and revealed His commandments.*¹⁸⁹

*Say, O followers of the Son! ... Open the doors of your hearts. He Who is the Spirit verily standeth before them. ... Lo! The Father is come, and that which ye were promised in the Kingdom is fulfilled! This is the Word which the Son concealed, when to those around Him He said: 'Ye cannot bear it now.'*¹⁹⁰

*Consider the sun. Were it to say now, 'I am the sun of yesterday,' it would speak the truth. And should it, bearing the sequence of time in mind, claim to be other than that sun, it still would speak the truth. In like manner, if it be said that all the days are but one and the same, it is correct and true. And if it be said, with respect to their particular names and designations, that they differ, that again is true. For though they are the same, yet one doth recognize in each a separate designation, a specific attribute, a particular character. Conceive accordingly the distinction, variation, and unity characteristic of the various Manifestations of holiness, that thou mayest ... discover the answer to thy question as to why that everlasting Beauty should have, at sundry times, called Himself by different names and titles.*¹⁹¹

If ye be intent on crucifying once again Jesus, the Spirit of God, put Me to death, for He hath once more, in My person, been made manifest unto you. ... If ye cherish the desire to slay Muhammad, the Apostle of God, seize Me and put an end to My life, for I am He, and My Self is His Self. ... If it be your wish to riddle with your shafts the breast of [the Báb], lay hands on Me and persecute Me, for I am His Well-Beloved, the revelation of His own Self, though My

*name be not His name. ... If ye have resolved to shed the blood of Him Whose coming the Báb hath proclaimed, Whose advent Muhammad hath prophesied, and Whose Revelation Jesus Christ Himself hath announced, behold Me standing, ready and defenseless, before you. Deal with Me after your own desires.*¹⁹²

*Let none, in this Day, hold fast to aught save that which hath been manifested in this Revelation. Such is the decree of God, aforesaid and hereafter—a decree wherewith the Scriptures of the Messengers of old have been adorned.*¹⁹³

*When I contemplate, O my God, the relationship that bindeth me to Thee, I am moved to proclaim to all created things ‘verily I am God!’; and when I consider my own self, lo, I find it coarser than clay!*¹⁹⁴

‘Abdu’l-Bahá said,

*You will realize that if the Divine light of truth shone in Jesus Christ it also shone in Moses and in Buddha.*¹⁹⁵

He also said,

*...the essential foundation of the teachings of Moses, Zoroaster, Jesus and Bahá’u’lláh is identical, is one; there is no difference whatsoever.*¹⁹⁶

Bahá’u’lláh wrote,

Wert thou to ponder in thine heart the behavior of the Prophets of God thou wouldst assuredly and readily testify that there must needs be other worlds besides this world. The majority of the truly wise and learned have, throughout the ages ... borne witness to the truth of that which the holy Writ of God hath revealed. Even the materialists have testified in their writings to the wisdom of these divinely-appointed Messengers, and have regarded the references made by the Prophets to Paradise, to hell fire, to future re-

*ward and punishment, to have been actuated by a desire to educate and uplift the souls of men. Consider, therefore, how the generality of mankind, whatever their beliefs or theories, have recognized the excellence, and admitted the superiority, of these Prophets of God. These Gems of Detachment are acclaimed by some as the embodiments of wisdom, while others believe them to be the mouthpiece of God Himself. How could such Souls have consented to surrender themselves unto their enemies if they believed all the worlds of God to have been reduced to this earthly life? Would they have willingly suffered such afflictions and torments as no man hath ever experienced or witnessed?*¹⁹⁷

Let us review briefly what the founders of religion have said about themselves and other founders. Each of them claims to speak with the Creator and to speak for the Creator, and they claim to act only in accordance with what the Creator requires of them, not of their own accord. Each of them refers to earlier founders and later founders. Note that while some founders spoke by name of previous founders, none of the founders spoke by name of those who would follow them. Reading the various scriptures, we find qualitative descriptions of future founders, and allusions to time periods, but Moses did not say, “a man named Jesus will arise with the title of Christ,” nor did Christ say, “An Arabian man of the family of Banu Hashim will take the title of Muhammad.” Nevertheless, Christ said that Moses had spoken of Him, and Muhammad indicated that Jesus was like Himself.

The Christian Apostle Paul alludes to this one-way view:

*For we know in part, and we prophesy in part. But when that which is perfect is come, then that which is in part shall be done away. ... For now we see through a glass, darkly; but then face to face: now I know in part; but then shall I know even as also I am known.*¹⁹⁸

To the followers of later systems, the earlier prophecies seem clear; whereas to the followers of earlier systems, the later systems seem either blasphemous or irrelevant. Colloquially, “Hindsight is 20-20.”

What records we have of the founders’ births and childhoods indicate that they were special from the very beginning of their lives. They were unusually peaceful babies, and they were precocious children. They were known for their honesty, their wisdom, and their preoccupation with spiritual matters. They were not trained in theology, but were able to expound on theological topics. They were not interested in following the professions or occupations of their parents, beyond what was necessary for a modest living. They were opposed by the rich and powerful of their day, but refused to compromise. They were self-effacing; yet after their death their teachings became the guidance for millions, even billions, of people.

In summary, the founders of religious systems had a great deal in common with one another, but they were different from the rest of us, both at birth and throughout their lives.

Love

Love is generally thought of in scientific circles as an emotion. When we examine the texts of religion, however, we find that it is a much broader concept. Let us examine what some of the founders of religious systems have said about love.

Moses spoke of the Creator’s

*...showing mercy unto thousands of them that love me, and keep my commandments.*¹⁹⁹

He further said,

*And thou shalt love the LORD thy God with all thine heart, and with all thy soul, and with all thy might.*²⁰⁰

And now, Israel, what doth the LORD thy God require of thee, but to fear the LORD thy God, to walk in all his ways,

*and to love him, and to serve the LORD thy God with all thy heart and with all thy soul, To keep the commandments of the LORD, and his statutes, which I command thee this day for thy good?*²⁰¹

*For the LORD your God... loveth the stranger.... Love ye therefore the stranger....*²⁰²

*Thou shalt not avenge, nor bear any grudge ... but thou shalt love thy neighbour as thyself....*²⁰³

Zoroaster said,

*O Maker of the material world, thou Holy One! Which is the first place where the Earth feels most happy? Ahura Mazda answered: 'It is the place whereon one of the faithful steps forward ... fulfilling the law with love....*²⁰⁴

*'Listen unto our sacrifice, O Mithra! ... Accept our libations! ... Gather them together with love...!*²⁰⁵

*...far from Thy love the wicked has his portion....*²⁰⁶

Buddha said,

*...they are transported by emotions of love and compassion.... Thus ... in truth, they too are already in Nirvana because in their emotions of love and compassion there is no rising of discrimination.... The Bodhisattva's Nirvana is perfect tranquillisation, but it is not extinction nor inertness.... Here is perfect solitude, ... blissfully peaceful with the serenity of Perfect Love.*²⁰⁷

*Rid yourself of love: fear is born of love, fear and suffering. He neither fears nor suffers who no longer knows love.*²⁰⁸

*If a man foolishly does me wrong, I will return to him the protection of my ungrudging love....*²⁰⁹

Christ said,

*Ye have heard that it hath been said, Thou shalt love thy neighbour, and hate thine enemy. But I say unto you, Love your enemies, bless them that curse you, do good to them that hate you, and pray for them which despitefully use you, and persecute you....*²¹⁰

*A new commandment I give unto you, That ye love one another; as I have loved you, that ye also love one another.*²¹¹

*Greater love hath no man than this, that a man lay down his life for his friends.*²¹²

*The Father loveth the Son, and hath given all things into his hand.*²¹³

Muhammad said,

*...he is pious who believeth in God, and the last day, and the angels, and the Scriptures, and the prophets; who for the love of God disburseth his wealth to his kindred, and to the orphans, and the needy....*²¹⁴

*Yet there are men who take to them idols along with God, and love them with the love of God: But stronger in the faithful is the love of God.*²¹⁵

*If ye love God, then follow me: God will love you, and forgive your sins, for God is Forgiving, Merciful.*²¹⁶

*And one of his signs it is, that He hath created wives for you of your own species, that ye may dwell with them, and hath put love and tenderness between you.*²¹⁷

The Báb wrote of

*...spontaneous love for the True Word of God, .. utter humility and lowliness ... one of the mightiest signs of true love....*²¹⁸

*...I am Thy servant, O my God.... I have found no contentment save in Thy love....*²¹⁹

*I beg Thee to forgive me, O my Lord,... for every joy but the joy of Thy love....*²²⁰

*Exalted art Thou, O my God! The ... love I cherish for Thee is far sweeter to my taste than the knowledge of all things....*²²¹

*I have yearned for Thy love, but failed to find it except in renouncing everything other than Thyself. I have been eager to worship Thee, yet have I failed to achieve Thy adoration, except by loving those who cherish Thy love.*²²²

Bahá'u'lláh, speaking from the viewpoint of the Creator, said,
*Make My love thy treasure and cherish it even as thy very sight and life.*²²³

*Love Me, that I may love thee. If thou lovest Me not, My love can in no wise reach thee.*²²⁴

*Out of the clay of love I molded thee....*²²⁵

He also said,

*Observe My commandments, for the love of My beauty.*²²⁶

*As My tribulations multiplied, so did My love for God and for His Cause increase....*²²⁷

*Purge your hearts from love of the world....*²²⁸

*The journeys in the pathway of love are reckoned as four: From the creatures to the True One; from the True One to the creatures; from the creatures to the creatures; from the True One to the True One.*²²⁹

*It is the warmth that these Luminaries of God generate, and the undying fires they kindle, which cause the light of the love of God to burn fiercely in the heart of humanity.*²³⁰

[The true seeker] *must purge his breast, which is the sanctuary of the abiding love of the Beloved, of every defilement.... He must so cleanse his heart that no remnant of either love or hate may linger therein, lest that love blindly incline him to error, or that hate repel him away from the truth.*²³¹

We see in these quotations that love is described not only as an emotion, but as a force. Two aspects of love are unconditionally good: the love of the Creator for the creatures, and the love of the creatures for the Creator. Human love can be seen in two forms. On the one hand there is unselfish love, which the founders exhort us to express toward family, friends, strangers, and even enemies. On the other hand there is selfish and passionate love for riches, power, and leadership. The founders warn us against the second form of love.

Truth

What did the founders of religious systems say about truth?

Moses said in reference to the Creator,

*He is the Rock, his work is perfect: for all his ways are judgment: a God of truth and without iniquity, just and right is he.*²³²

*Moreover thou shalt provide out of all the people able men, such as fear God, men of truth, hating covetousness....*²³³

*... The LORD, The LORD God, merciful and gracious, longsuffering, and abundant in goodness and truth....*²³⁴

The holy Zarathustra said aloud:

*'This I ask thee: teach me the truth, O Lord! ...'*²³⁵

*For the reciting of that word of truth, O Zarathustra! the pronouncing of that formula ... increases strength and victory in one's soul and piety.*²³⁶

Buddha based his teachings on four truths:

*They are the Noble Truth of Suffering, the Noble Truth of the Origin of Suffering, the Noble Truth of the Extinction of Suffering, the Noble Truth of the Path that leads to the Extinction of Suffering.*²³⁷

He said further,

*Give ear then, for the Immortal is found. I reveal, I set forth the Truth. As I reveal it to you, so act!*²³⁸

Christ said,

*To this end was I born, and for this cause came I into the world, that I should bear witness unto the truth.*²³⁹

*And ye shall know the truth, and the truth shall make you free.*²⁴⁰

*Jesus saith unto him, I am the way, the truth, and the life....*²⁴¹

Muhammad said,

*Have thou no doubts about that Book, for it is the very truth from thy Lord.*²⁴²

*... judgment is with God only: He will declare the truth; and He is the best settler of disputes.*²⁴³

*And clothe not the truth with falsehood, and hide not the truth when ye know it:...*²⁴⁴

Speaking as the mouthpiece of the Creator, Muhammad warned of the consequences of rejecting the truth:

*Verily we have sent thee with the truth; a bearer of good tidings and a warner; nor hath there been a people unvisited by its warner. ... Then chastised I the unbelievers: and how great was my vengeance!*²⁴⁵

The Báb wrote,

*No God is there besides Him, the supreme Ruler, the resplendent Truth.*²⁴⁶

*... God, besides Whom there is none other God but Him, the Sovereign Truth, the Just....*²⁴⁷

*... unless God accomplish what He willeth through the power of truth.*²⁴⁸

*... Thou art none other but the Servant of God, sustained by the power of Truth.*²⁴⁹

*...those endowed with the eyes of the spirit circle like moths round the Light of Truth....*²⁵⁰

*How often a person, having inclined his ears to the holy verses, would bow down in humility and would embrace the Truth, while his leader would not do so. Thus every individual must bear his own responsibility, rather than someone else bearing it for him.*²⁵¹

Bahá'u'lláh wrote,

*One should not ignore the truth of any matter, rather should one give expression to that which is right and true.*²⁵²

*Indeed one's righteous deeds testify to the truth of one's words.*²⁵³

*Endeavour to the utmost of thy powers to establish the word of truth with eloquence and wisdom and to dispel falsehood from the face of the earth.*²⁵⁴

*God, the Eternal Truth....*²⁵⁵

Referring to the founders of religious systems, Bahá'u'lláh said, *...whatsoever proceedeth from these Mines of divine Wisdom and these Treasuries of eternal knowledge is truth, and naught else but the truth.*²⁵⁶

In sum, the founders of religion declared truth as central to their missions, and they confirmed that it is vital to the well-being of mankind.

Actions

Situational Review

We have looked at truth and proofs; it remains to consider actions. Let us first see what our human situation looks like, based on all that we have considered so far.

Simple reflection and personal experience convince us that we are conscious, thinking, creative creatures, inhabiting a physical world subject to the laws of cause and effect. We make use of various proof techniques to arrive at our views of truth. We have a personal realm of experience, and presumably, we accept that everyone else must similarly have a personal realm. We also have a joint realm, shared both directly through common experiences and indirectly through spoken and written language. We recognize that language can be truthful or untruthful. We see that science and culture evolve over time, and that truths in these domains are relative. We determine that there must be a First Cause of some sort, but our inherent limitations prevent us from fully comprehending the nature and characteristics of that First Cause. We find a number of other questions that are not amenable to introspective or scientific analysis, and we turn to the various religious systems for elucidation.

The world view propounded by the founders of religious systems elaborates on the nature of the First Cause. It tells us that the physical aspect of reality is not its primary or most important aspect: it denies that materialism is a valid philosophy. It confirms, in a sense, one aspect of the naive and intuitive view of ourselves: that our consciousness is our primary reality, and all other aspects of our being are secondary. However, it also advises us that there is a purpose to our existence, and that satisfying the transient whims of our consciousness runs counter to that purpose. It tells us that

we have moral and ethical responsibilities, and that our personal experience, both during our physical lifetime and after our physical death, will be joyous and satisfying precisely to the extent that we accept those responsibilities and shape our lives around them. It also sets out societal norms and structures that enable us to cooperate effectively in a moral framework. These norms and structures have a common core, but details have changed over the millennia.

Let us now turn to the topic of actions.

Actions

Our choice of actions, like our search for truth, is a lifelong endeavor. The purpose of discovering new truths is not only the satisfaction of understanding the world and ourselves, but the benefit of having sound guidance for our actions. We have considered truths ranging from the trivial to the metaphysical realms, from personal to global validity, from mathematical to religious bases. There is no need to dwell on actions dependent on simple physical truths; and the implications of complex scientific truths are beyond the scope of this work. What is of interest here is to consider some implications of existential truths for the conduct of our lives.

Since it is the founders of religious systems who have provided existential truths, we will examine how the truths they expounded can be used, individually and collectively, to improve our value assignments in both personal and collective domains, and thereby to have better lives in well-functioning societies. We will consider what additional advantages we can find in the new views of truth set forth by the Báb and Bahá'u'lláh, beyond those of the older and widely accepted religious systems. We will begin with the personal, and work towards the global.

In all our actions, it seems clear that as lovers of truth, we should try not to violate our own understanding of truth: that is, to intentionally and willingly engage in actions that we believe to be contrary to what is true and right, or to participate in discussions

that require us to agree with what we believe to be false. In the course of our actions and discussions, our understanding may change, so that in the end, we may do and say things contrary to what we previously believed; but this does not justify short-circuiting the process by undertaking actions and making statements that we believe to be wrong and false.

At the same time, and by the same token, we should remain aware and respectful of others' points of view, and refrain from actions that would violate their own imperative to act and speak, within legal and social limits, according to their own understanding.

Private Comportment

Our private comportment is the touchstone for our understanding of truth, and for putting that understanding into effect in the world. Our thoughts, our meditations, our prayers, our fears, our hopes, what we read and write, what we watch and listen to, what we sing and play, what we make or draw or paint, how we walk and run and dance, how we earn our living and spend our money, all are expressions of our inward and private understanding of truth.

As we discover new truths, we are bound to re-think our daily patterns of behavior, to conform them better to our new understandings. This is as true in the moral domain as in the intellectual domain. When we learn new aspects of mathematics or science, we work problems in order to become proficient. Likewise, as we learn new aspects of personal and social reality, we need to put our new understandings into practice. We can read and study books that embody and express new truths. We can pray and meditate daily, as recommended in every religious system. We can examine our character and our behavior, looking for defects to correct, missing material to fill in, and strong points to enhance.

The materialistic view of existence asserts that the life of our consciousness ends with the death of our body. This in turn tends toward hedonism, toward regarding one's own physical gratifica-

tion (immediate or deferred) as the supreme goal. Materialistic culture urges that we should restrain ourselves only from actions with bad material consequences such as ill health, loss of employment, or legal action. This attitude is so prevalent that if someone acts according to moral standards, we look for some hidden self-interest: Is he just trying to make himself look good? Is she angling for a job? Someone who abstains from drugs, alcohol, and promiscuity is likely, in some circles, to be regarded as a prude or a spoilsport.

The view propounded by the founders of religious systems is quite different from the materialistic view. It promotes altruistic behavior, which was practiced to an exemplary degree by the founders. It asserts that our physical life is only the first stage of an eternal existence. It sets forth standards of behavior, including required actions, recommended actions, discouraged actions, and prohibited actions. It exhorts us to consider our well-being in spiritual rather than material terms.

The exhortations of religion have led some people to believe that complete rejection of material comforts, even to the extent of starving or whipping themselves, is the best way to demonstrate their love of truth. Bahá'u'lláh clarified this issue, indicating that we should avoid materialism, but not to the extent of asceticism. He said, *Living in seclusion or practising asceticism is not acceptable in the presence of God. ... Deprive not yourselves of the bounties which have been created for your sake.*²⁵⁷

Bringing our lives into better conformance with the teachings of religion can be challenging. We are members of societies that emphasize either the individual or the society, setting these in opposition to each other. Our challenge is to internalize and act on the principle that the good of the individual and the good of the group are not, in fact, in opposition. They are, rather, complementary. We cannot be fully secure and content if our sisters and brothers are not secure and content, and we cannot have a prosperous and joyous society if the individuals within it are not prosperous and joyous.

Individual Interactions

Let us next consider our interactions with family, friends, coworkers, clients, clerks, salespeople, and others with whom we have direct relationships. This is our most immediate level of interaction with the rest of humanity. It is where private comportment puts on a public face. It is the most basic level at which our personal understanding of truth may be tested, confirmed, challenged, or harmonized with others' understanding. If our view of truth is valid and sufficiently broad, we should find others' behavior reasonable and predictable. If we are surprised or puzzled by others' behavior, then by definition, our view of truth is incomplete, and we need to revise it in light of what we have encountered. We may not agree with another's view of truth that leads to their unexpected behavior, but we would do well to recognize its existence and allow for its consequences in order to avoid being surprised.

The materialistic interpretation of our interactions with others assumes that we are animals with reasoning power. Under this assumption, the primary drivers of human interactions are instinct and conditioned learning, while our reasoning power allows us to intentionally modify our animal behavior. A consequence of this is that interpersonal conflict is seen as an inevitable aspect of our interactions with others. Studies of primates and other social animals show that there are instinctual bases for cooperation, but there are also instinctual bases for dominance and aggression. It is these latter tendencies that give rise to interpersonal conflict and exploitation.

Religion provides a different interpretation. It regards love, rather than instinct, as the primary motivator of human behavior. It proclaims the human being as a spiritual creature clothed in an animal body, and teaches that if we allow our spiritual nature to dominate our animal nature, interpersonal harmony will be normal to us. Instinct is seen as one of many natural forces, like heat, gravity,

and light, which must be taken into account in planning our actions, and which should be harnessed to worthy ends.

How can we work to improve our interactions? We can become more patient and less demanding, more generous and less covetous. If we lose our temper we can apologize, and if someone else loses theirs we can excuse them. We can look for the best in others, and avoid showing the worst in ourselves. We can rejoice in others' good fortune as well as our own. We can be open-minded and equitable, and strive to engage in consultation rather than argumentation. We can look for opportunities to be of service to others, and even to regard their welfare as more important than our own. According to Bahá'u'lláh, *Blessed is he who preferreth his brother before himself.*²⁵⁸

We can be trustworthy and truthful. Bahá'u'lláh said, *Trustworthiness is the greatest portal leading unto the tranquillity and security of the people. In truth the stability of every affair hath depended and doth depend upon it.*²⁵⁹ The Bahá'í writings state, *Truthfulness is the foundation of all human virtues. ... When this holy attribute is established in man, all the divine qualities will also be acquired.*²⁶⁰

We can avoid gossip and backbiting. This is more difficult than it may appear. Much of what passes for news could be described as gossip, as could much of our conversation. Gossip causes us to focus on the doings of others, and inevitably degenerates into backbiting. Bahá'u'lláh reminds us that *every one of you knoweth his own self better than he knoweth others,*²⁶¹ and warns that *backbiting quencheth the light of the heart, and extinguisheth the life of the soul.*²⁶²

Family Life

The family is the basic unit of society. If we seek to achieve a better society, we must begin our efforts in the family. It is easy, of course, to see various aspects of dysfunction in other families, and to enumerate the changes they should make. It is within our own family, however, that we can have the greatest effect; and within

the family, it is our own attitudes and behavior that we can change. If we read the newspaper advice columns, we see a great many letters complaining about the problems caused by other family members, but very few asking, "How can I change myself to make my family better?" Yet our own self is the only self we can change. It is possible, even probable, that improving ourselves will inspire other family members to improve themselves; but that cannot be our motive. A sincere effort to be loving and giving will give us joy, and will make for a more harmonious family.

Marriage is the core institution of family life. Bahá'u'lláh calls it *a fortress for well-being and salvation*.²⁶³ It is one of the oldest human institutions, being dependent only on a competent authority to define it and enforce its provisions. Its contract has been variously between one man and one woman; one man and several women; one woman and several men; two men; two women; or among a group of men and women. Bahá'u'lláh defined it as consisting of one man and one woman, and indicated that its primary purpose is the rearing of children. He said, *Enter into wedlock, O people, that ye may bring forth one who will make mention of Me amid My servants*.²⁶⁴ Elsewhere in the Bahá'í writings it is clarified that marriage is a recommendation, not a binding command, the alternative being to remain single and celibate. Bahá'u'lláh said with respect to children, *He that bringeth up his son or the son of another, it is as though he hath brought up a son of Mine...*²⁶⁵ In view of the Bahá'í principle of equality of the sexes, it is clear that "he" and "son" can be understood as "he or she" and "son or daughter."

As mentioned earlier, Bahá'u'lláh required that parents educate their children. Likewise, he wrote of filial duty: *The fruits that best befit the tree of human life are trustworthiness and godliness, truthfulness and sincerity; but greater than all, after recognition of the unity of God, ... is regard for the rights that are due to one's parents.....*²⁶⁶

The extended family offers us a larger scope in which to exercise our understanding of truths about personal interaction. It in-

volves several generations, giving us the opportunity to observe and bridge generational differences. We may find ourselves challenged by the proverbial in-law problems, trying to find ways to reconcile different assumptions, beliefs, customs, and traditions, as well as to reduce the distrust that often seems to be at the root of in-law difficulties. Bahá'u'lláh's requirement of parental permission is germane in this regard: ... *marriage is dependent upon the consent of both parties. Desiring to establish love, unity and harmony amidst Our servants, We have conditioned it, once the couple's wish is known, upon the permission of their parents, lest enmity and rancour should arise amongst them.*²⁶⁷

Workplace

For many of us, the workplace is “a job”—that is, a means to earn money, rather than a career or profession to which we feel dedication and commitment. Bahá'u'lláh offered a new and helpful perspective on work. He said that everyone should have an occupation of some kind (which includes unpaid occupations such as homemaking, child rearing, and elder care) and says, *We have exalted your engagement in such work to the rank of worship of the one true God.*²⁶⁸ That is, “working” no longer means just earning money, and “worship” no longer means stopping everything else to think about the Creator. Work thus becomes something noble, and worship becomes an ongoing activity whenever we are working. The Bahá'í writings also encourage us to approach our occupation in a spirit of service. These novel and noble ideas provide a foundation for improving the workplace, give a sense of wholeness to our work, and enhance continuity between our personal and workplace lives.

The workplace reflects both the functioning and malfunctioning of modern society. The challenges and opportunities of life in the workplace are similar in some ways to those of the family. We may be called upon to lead, to follow, and to cooperate, depending on our role in a particular organizational effort. Each of these roles has its own opportunities and challenges. When we lead, we have

to be assertive without being tyrannical; when we follow, we have to be obedient without being passive. In our cooperation, we need to make our own voice heard and also encourage others to speak their minds. We need to be continually alert to the tension between truth and convenience, and to make our views known without being insistent or stubborn.

Employees are often treated as expendable commodities rather than as valued human beings. Efficiency of production is increased while product quality and job satisfaction are decreased. Clearly such attitudes are not in keeping with the true nature of human beings. It may not be possible for an individual to change the structure of the workplace, but it is always possible for each of us to contribute effectively, to make others feel valued, and to speak out in support of the benefits of a workplace that implicitly recognizes the spiritual nature of human beings.

Neighborhood

A neighborhood can be of many different forms, according to whether we live in an urban area, a town, or a rural district; and whether we live in a single-family house, a shared unit, or a high-rise apartment. A harmonious neighborhood depends, at a minimum, on trust and mutual respect. There are well-functioning neighborhoods in which people leave their doors unlocked and children play unsupervised. There are also poorly functioning neighborhoods in which doors are double-locked, windows are barred, and people avoid going out alone. Most neighborhoods function somewhere between these extremes.

While it may be beyond an individual's power to transform a poorly functioning neighborhood into a well-functioning one, we can still ask ourselves, "What part can I play in improving my neighborhood?" One beneficial approach is, *Be worthy of the trust of thy neighbor, and look upon him with a bright and friendly face.*²⁶⁹ On a larger scale, we can actively look for opportunities to become acquainted with our neighbors, to be of service to them, to visit them, to invite them to visit us, and to foster the growth of

neighborhood children. We can do this either individually or as part of various community outreach organizations. Inviting neighbors to one's home to join in interfaith prayer and devotional gatherings is one way to build trust and friendship in a diverse neighborhood.

Community

Community-wide actions are naturally more formal and organized than our individual neighborhood interactions. Committees, civil organizations, and religious groups all play a part in fostering a healthy community life. Some examples of community organizations with international coordination and support include Scouting, Grange, Rotary, Boys and Girls Clubs, and the Junior Youth Spiritual Empowerment Program, which focuses on the spiritual aspect of adolescent energy and channels it into cooperation and service. Membership or leadership in community organizations provides wide-ranging opportunities to promote healthy communities.

The Bahá'ís of Iran have been putting Bahá'u'lláh's teachings on education and equality of the sexes into practice for over a century. They established some of the first Iranian schools for girls. One such school, the Tarbiyat School for Girls, open to girls of all faiths, was successful and well-attended from 1911 until 1934, when it was closed by antagonistic authorities. As of the early 21st century, Bahá'ís are systematically excluded from institutions of higher education in Iran, and have resorted to creating their own private educational networks. Graduates of these networks have been accepted for continuing study in other countries, while within Iran the networks have been disrupted by repeated government raids and confiscations. Teachers and coordinators of these efforts have been sentenced to lengthy prison terms, solely because they have offered educational opportunities to young Bahá'ís. The educators in these institutions are demonstrating the highest degree of devotion to community well-being. Throughout the world, Bahá'ís and other participants are engaged in a coordinated process of distributed learning, called the Institute Process, which promotes spir-

itually-based education among children, adolescents, youth, and adults. This process has generated spiritual, intellectual, and material benefits in diverse communities of different nations and continents.

Closely related to “community” is the notion of “civil society.” From volunteers at local schools to non-governmental organizations at the United Nations, civil society provides services that complement those of governmental and business entities. It provides a grass-roots approach to otherwise intractable social problems. As of 2016, there were about 30,000 Civil Society Organizations working with the United Nations²⁷⁰, including about 4,000 that have consultative status.²⁷¹ These organizations embody and promote the truth that all humankind forms an interdependent organization. The Bahá’í International Community has played a strong role, ever since the founding of the United Nations, in fostering the influence of civil society on that institution.

Government

Government is the formal means of maintaining order in society. As collateral to this objective, it may have many other functions such as education, health, care of the needy, and protection of children. The avowed focus for government may be the individual, society collectively, or a monarch. The founders of religious systems have been seen, by the government of their day, as dangers to the existing social order; while the founders themselves advised their followers not to interfere with the government. In the words of Christ, *Render therefore unto Caesar the things which be Caesar's, and unto God the things which be God's.*²⁷² In the centuries after each founder’s death, new systems of government gradually developed that were either based explicitly on the new religious system, or at least in harmony with it. Today there is no government that seems well aligned with the teachings of any religion, although some of them claim to be.

As lovers of truth, we can hardly condone lies and dissimulation, tyranny and self-aggrandizement on the part of governments

or their representatives. At the same time, none of us can hope to “fix” what we regard as wrong with the government, especially since there is no single standard for what is right. What can we do, then? We can participate in public discourse, make our views known, try to understand the views of others, and look for the best resolution of our differences. If we live in a democracy, we can vote; if not, we can appeal to the government through official channels. The Bahá’í writings forbid participation in partisan politics; encourage statesmanship; and allow administrative service and other non-political support of government functions.

Bahá’u’lláh wrote, *In every country where any of this people reside, they must behave towards the government of that country with loyalty, honesty and truthfulness.*²⁷³

Societal Transformation

We try to live our lives in accordance with our understanding of the truth, and likewise, we want to see society function in accordance with that understanding. Obviously, this means that we would like others to share our understanding. If we occupy a position of power in society, it is tempting to simply impose our views of truth on those we control. This has been tried repeatedly over the ages and in modern times, and has never produced good results. Kings and generals, popes and caliphs have imposed their laws and decrees, died detested, and been forgotten. The founders of religious systems, on the other hand, have imbued their followers with new beliefs and values. These followers have never been the powerful and elite, but rather the humble and downtrodden. They have shared their new beliefs with their friends and neighbors, and raised their children according to those beliefs. Over centuries, the followers have grown in number, and their beliefs have become custom or law. Time and truth have conquered, where temporal might has failed. This cycle has been repeated in the past, and will surely continue to be repeated today and in the future. If our understanding of truth is valid, then the societal goals we strive for will be reached, though perhaps not in our lifetime.

Any lasting change in society must begin with the children. The Bahá'í writings point out, *It is extremely difficult to teach the individual and refine his character once puberty is passed. ... Therefore it is in early childhood that a firm foundation must be laid. While the branch is green and tender it can easily be made straight.*²⁷⁴ Fostering the development of children begins in the family and continues in the schools. We should make every effort, then, to create loving families of our own, to encourage and facilitate the same for others, and to support a strong and nurturing educational system.

World Society

In ancient times, humans lived in small social groups. With the passage of time, society organized into families, tribes, and clans. Still later, cities and nations appeared. Today there are nations and groups of nations, although the latter are far weaker than the former. If we consider a hierarchy of governmental power and authority, we see the nations at the top, then below them their states, provinces, republics, or other national divisions, and below them their local regions and cities. The groups of nations are also below the nations, even though they are larger. If we turn to the economic sphere, however, we see that national boundaries are practically meaningless. Large multinational corporations may have a nominal headquarters in one nation, an effective center of power in another nation, and subsidiaries in dozens or hundreds of nations. Likewise social and religious networks extend across the world, enabled by international communications from mail to television to the internet.

Is there something wrong with this picture? It is, of course, the world we live in, and so we take it largely for granted. There are, however, many people who are disturbed by this situation and find it chaotic. Their responses to this chaos are diverse and contradictory. Some want to return to a simpler time: break up the multinationals, impose tariffs, buy only from their own country, prevent immigration. Others want to take advantage of the situation: keep

their money in Switzerland, register their ships in Panama, base their production in China, and build their call center in India. It seems obvious that history never runs backward, and that the world will not return to a collection of independent nations with very little trade between them. We are thus faced with the necessity of regulating the affairs of the entire world in some way that minimizes the chaos while preserving individual, national, and regional self-determination.

There is no present structure to accomplish comprehensive world regulation. The groups of nations, with the partial exception of the European Union, are subsidiary to the nations that form them, and the United Nations is primarily an advisory body. The constitution of each nation places it at the top of the governmental hierarchy, which means that no world regulatory structure can be created without every nation's revising its most fundamental governing document. This, for most nations, requires that a large majority of its citizens support such a change. There is thus an enormous barrier to the construction of a world regulatory structure.

And yet, without such regulation, economic, social, and military chaos is bound to increase. The same channels of communication, transport, and fiscal interchange that allow a world society to thrive are being used for economic exploitation, oppression of workers, far-flung military operations, and terrorism. The threat of nuclear holocaust still hangs over the world, increasing as additional nations develop their own capabilities. Heavy-handed police and military intervention on the one hand, and pseudo-religious fanaticism on the other, are spreading insecurity into impoverished and wealthy regions alike. Educational and professional opportunities, which seemed to be continually increasing through the 20th century, are in decline. The world's wealth is being concentrated in ever-greater amounts in ever-fewer hands.

In the second half of the 1800s, the western world foresaw a future of limitless industrial expansion that would provide everyone in the world with all they needed to be happy and prosperous. Writing in that same period, Bahá'u'lláh warned, *The world is in*

*travail, and its agitation waxeth day by day. Its face is turned towards waywardness and unbelief. Such shall be its plight, that to disclose it now would not be meet and seemly.*²⁷⁵ Again, *The winds of despair are, alas, blowing from every direction, and the strife that divideth and afflicteth the human race is daily increasing. The signs of impending convulsions and chaos can now be discerned, inasmuch as the prevailing order appeareth to be lamentably defective.*²⁷⁶ He also prescribed a remedy: *The time must come when the imperative necessity for the holding of a vast, an all-embracing assemblage of men will be universally realized. The rulers and kings of the earth must needs attend it, and, participating in its deliberations, must consider such ways and means as will lay the foundations of the world's Great Peace amongst men. Such a peace demandeth that the Great Powers should resolve, for the sake of the tranquillity of the peoples of the earth, to be fully reconciled among themselves. Should any king take up arms against another, all should unitedly arise and prevent him. If this be done, the nations of the world will no longer require any armaments, except for the purpose of preserving the security of their realms and of maintaining internal order within their territories. This will ensure the peace and composure of every people, government and nation.*²⁷⁷

The Bahá'í Faith is administratively organized along the principle of world unity. The Bahá'ís of every city and of every nation have a democratically elected governing body. The national governing bodies join in electing a world governing body. The Bahá'í writings refer to this as *a system which is at once the harbinger, the nucleus and pattern of a future world order.*²⁷⁸ These writings say further, *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 personal freedom and initiative of the individuals that compose them are definitely and completely safeguarded.*²⁷⁹

As to economics, ‘Abdu’l-Bahá, the son of Bahá’u’lláh, stated in a speech in 1912, *All the governments of the world must be united and ... plan with utmost wisdom and power so that neither the capitalist suffer from enormous losses nor the laborers become needy. ... Otherwise, the labor problem will lead to much destruction, especially in Europe. Terrible things will take place. For instance, the owners of properties, mines and factories should share their incomes with their employees and give a ... percentage ... of the general income of the factory...*²⁸⁰

Creation of a world regulatory system is a daunting task, and one that many people, fearful of world-wide tyranny, believe should not even be attempted. However, the same feelings and arguments have been proffered at the beginnings of many modern nations. It is hard to imagine that fifty separate States would be faring better than one United States, or that thirty-four separate provinces would be stronger, happier, or more prosperous than one French nation. It is true that many of the nations of the Soviet Union left the Union when they were able, but they had not entered the Union voluntarily. With proper safeguards and universal voluntary participation, a World Federation will someday be achievable and will be preferable to a world in its present state of constant imbalance and commotion. Working toward such an accomplishment is a worthy endeavor at any scale, from conversations with friends to international convocations.

Conclusion

The search for truth is an unending exploration, for each of us and for all of us. Each newly discovered truth answers some questions and raises further questions. We have explored various aspects of truth, from the trivial to the unknowable, from commonly accepted to hotly contested, from scientific and mathematical to philosophical and religious, with attention to both prerequisite proofs and consequent actions. Mathematical and scientific meth-

ods of proof, and of putting into action the truths discovered, provide a paradigm for discovering, proving, and acting on existential truths. The relative nature of statements of mathematical and scientific truth is reflected in the relative nature of statements of existential truth. We have looked at a few instances of truth, and the changing nature of our comprehension of truth, in the domains of mathematics, science, and religion. We have considered ideas propounded by founders of religious systems over the last several millennia, beginning with early Jewish, Greek, and Persian times, and extending into the current century.

We have paid particular attention to the new expositions found in the writings of the Báb and Bahá'u'lláh. The Bahá'ís work to align their own behavior with these expositions and to make them more widely known. They invite all, whether or not they accept the stations of the Báb and Bahá'u'lláh, to make use of the truths embodied in these expositions, and to put them into practice in their individual lives and in the collective life of humankind. They invite those who do accept the stations of the Báb and Bahá'u'lláh to formally enroll in the Bahá'í Faith.

We close with these words of Bahá'u'lláh: *We fain would hope that, God willing, thou wilt not return, deprived and still athirst, from the shores of the ocean of divine mercy, nor come back destitute from the imperishable Sanctuary of thy heart's desire. Let it now be seen what thy search and endeavours will achieve.*²⁸¹

Notes and References

Definitions

This section collects the definitions given throughout the text into one alphabetical list for quick reference. Terms not listed here are to be understood in their normal range of dictionary meanings.

Absolute truth: Truth on which everyone will agree.

Action: An action that arises from having accepted a given truth or set of truths.

Authoritative proof: The assertion that a notion is valid based on some authoritative source.

Belief: A notion that may or may not have an associated proof.

Deductive proof: A proof that starts with a set of premises (hypotheses) and uses formal or informal rules of logic to arrive at conclusions.

Degree of confidence: Assessment of the level of correctness of a proof.

Figurative truth: Truth expressed in a form that is evocative but not literal.

Gestalt: The notion that the whole is not just the sum of its parts.

Hierarchy: Any systematic ranking. Usually based on a value system.

Hypothesis: A notion that one is in the process of proving or disproving.

Inductive proof: A proof that starts from observed conclusions and attempts to find a valid set of premises that explains the observations.

Literal truth: Truth that is expressed in words and phrases that reflect as closely as possible the notion that is to be expressed.

Materialism: A conception of reality as primarily physical, with all other aspects of reality being by-products of physical existence.

Objective confidence: Degree of confidence based on a proof.

Prejudice: A belief that is maintained in the face of contrary evidence; distinguished from understanding.

Proof: A procedure that causes us to accept a notion as true.

Rationalization: An ex-post-facto chain of reasoning that seeks to justify one's actions or beliefs.

Reality: That which is described by the set of true notions.

Relative truth: A statement or notion that may be true or false depending on the context.

Religion: A system of beliefs and practices, based on a belief in a universal force, essence, or being, and having two main purposes: the well-being of the individual and the harmonious regulation of society.

Science: A body of knowledge and system of reasoning having for its object the discovery of truth.

Self-evident: The assertion that a certain notion is true without any need of proof.

Spiritual: Concerning those aspects of life that are not specifically physical or scientific.

Statistical proof: Synonym for inductive proof.

Subjective confidence: Degree of confidence based on untested or unconscious assumptions.

Truth: Reliable notions.

Understanding: Belief held on the basis of proof; distinguished from prejudice.

Value: An attribute that allows us to decide whether one item is an equal, better, or poorer alternative to another. Used in creating hierarchies.

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The philosophical and theological underpinnings of this work are explanations given by the Báb, Bahá'u'lláh, 'Abdu'l-Bahá, and Shoghi Effendi. The notion of different kinds of proofs is inspired by 'Abdu'l-Bahá, who spoke of four kinds of proof: "first, through sense perception; second, through the reasoning faculty; third, from traditional or scriptural authority; fourth, through the medium of inspiration."²⁸² The general structure of the exposition in support of the validity of religion is inspired by William Hatcher's *Minimalism: A Bridge between Classical Philosophy and the Bahá'í Revelation*, which is a rather terse presentation using formal logic, whereas the present exposition uses extensive examples and informal logic. In particular, the notion of hierarchy in causation is drawn from *Minimalism*, while the motivation for accepting this notion is the present author's. Most specific examples throughout this work are the author's, as are the specialized definitions. The example of the painting's not comprehending the painter is from 'Abdu'l-Bahá²⁸³. The author's family provided encouragement, support, and editorial assistance.

Any errors or inconsistencies, whether of commission or omission, logical fallacy, expositional obfuscation, or any others, are entirely the author's.

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