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This essay argues that, in the search for truth, the findings of both science and theology are provisional. The author makes a strong case for clergy to stay informed about current science and technology, so that they can challenge their congregations to be skeptical and to develop a mature faith that serves the needs of contemporary life. He sets a healthy example, raising thoughtful questions about the nature of God and the universe.

Introduction

We are here tonight as scientists and religionists, hopefully, in a common pursuit of truth. That may be where our similarity ends. It is told that three men of different occupations were looking at the Grand Canyon. The archaeologist said: “What a wonder of science!” The clergyman said: “One of the glories of God!” The cowboy said: “A heck of a place to lose a cow!”

Some think of God as the Truth. Others of more humility reconcile themselves to finding truths. There is a Midrash that asks: If God had a signature, what would that be? The answer: God would use the first, middle, and last letter of the Hebrew alphabet. That would symbolize all knowledge. But those three letters also spell a Hebrew word, EMET, which means Truth.

We get carried away with our own powers of discovery, but given that we have minds, it would be a travesty not to use whatever capabilities we have to understand more of the universe. An anecdote is told about George Washington Carver, the botanist who achieved wonders with the humble peanut.

It is said that when he was young, Carver used to ask God to tell him the mystery of the universe. The answer that came to him was that such knowledge was reserved for God alone. So, then Carver ask for the mystery of the peanut. And God said, “Well, George, that’s more nearly your size.” And then God told him.

Those religionists who are not fundamentalists wrestle with every major scientific breakthrough from astronomy to zoology, creation, evolution, cloning, sex reversals, lobotomies, transplantations. I recently heard about placing a microchip in the brain of a stroke patient, enabling him to send out directions. The list is unending.

And now, many whose lives have been dedicated primarily to one of the numerous scientific disciplines are searching for other truths in a totally nonrational approach to religion or—to use the very popular word these days—spirituality. The cover story of a July issue of Newsweek magazine was entitled “Science Finds God.” I envy those scientists; I am still searching!
The dangers of dogmatism

Except for isolated individuals in the past, this is a new phenomenon. Most clergy are poorly acquainted even with other religions. And in my early days in the Rabbinate, I wondered how scientifically brilliant members of my congregation were not embarrassed to express such an infantile approach to faith, to the texts, to ritual in our own tradition.

The so-called conflict between religion and science was foremost—ignorance. That soon translated into a hardening of positions, wherein both became dogmatic. Instead of being partners in the search for truth, they became enemies. Each side proclaimed what the other side believed, stating the case, making the accusation, and finding them guilty.

There are those, far too many for my liking, who have not moved from that position. They know that they possess the truth and all who do not conform are either heretics or irrational dolts, depending on which camp you are in.

I must admit that I have little patience with the revelationists whose direct pipeline to God enables them to dismiss the challenges of the doubters. That is a formidable number of people in our so-called sophisticated, technologically advanced society. Statistical surveys say that approximately half of American Christians (Catholics and Protestants) are, in essence, fundamentalist. Some 40% actually believe that there is a Devil, a true being ruling the domain of Hell (wherever that is).

Orthodox Jews are also fundamentalists, who believe that only the Revelation to Moses is true while all other claims are products of creative imaginations. These Biblical literalists insist that the words of scripture are unimpeachable, and any theory of science cannot be true if it disagrees with the sacred text. The matter is not confined to Genesis, creation accounts, and evolution. Ethical behavior is of profound relevance because the Bible is the source of ethics. The Hebrew Bible posits the theory of Ethical Monotheism. That means God must act ethically—in sharp contrast to the deities of ancient Greece and Rome—being, in fact, bound by God’s own laws of ethics. But one must do many mental gyrations to justify such acts of God as a Flood that wiped out all humankind, except Noah and his family. And why did God create all those nations with their gods who demanded human sacrifice and sex acts with holy prostitutes to ensure fertility of crops? (It certainly would ensure male attendance at services!)

And why did a Jewish God who intervened so often in biblical history, and who, according to Christians, intervened once more by sending the Son of God to save humankind, suddenly do a disappearing act in modern times? Where was God when the Black Death struck down millions in Europe? Where was God during the Holocaust? Emil Fackenheim’s answer was, “In times of darkness, Jews have to contend with a silent God.” Where was God’s intervention when Stalin slaughtered millions, when Mao massacred millions more? Others posit that the ways of God are a mystery. But that turns religion into magic, and God is the disappearing magician.

Where is God now, with Bosnia, Kosovo, Tibet, Rwanda, or during hurricanes, tornadoes, earthquakes, and floods?
Does God only appear only to the faithful at worship services or in an occasional vision? Is God’s relationship to ethical principles mental and not physical? Could it be indifference? Elie Wiesel has stated that this is the worst sin of modern times: to watch, to be a bystander and do nothing to reach out to one in need. Or can we admit that God is limited and not omnipotent? God might not be omniscient either.

What does *imitatio dei*—imitating God—mean for the modern, sensitive person? Who is responsible for all the evil in the world? It is not a good enough answer—unless one is a humanist—to blame all events on people. Of course if there is no God, there is no theological problem. But who wants a god less compassionate than oneself?

**Openness to uncertainty in the pursuit of truth**

Besides the fundamentalists, it may be equally difficult for more open-minded thinkers to allow every theory, scientific or religious, to be questioned, by anyone at any time. And yet, it seems to me, that is the bottom line in an honest pursuit of truth.

I was raised in a liberal, thinking and questioning home. My experiences in Bible classes in rabbinic seminary merely extended an awareness that the Creation Story was not just poetry, but myth—and, indeed, there were two versions of the myth in Genesis. My teachers also made me aware of the fact that every culture has the psychic need to create a myth of origin. It seems that same psychic need, which is deeper than curiosity, has prompted this century’s deepening astronomical research, resulting in the more or less general acceptance of the Big Bang theory.

Whether creation occurred thirteen or fifteen or eighteen billion years ago is irrelevant to me. However, being the rationalist that I am (at least some of the time), I must admit that talk about this ever-expanding universe, beginning from a pinpoint, requires greater faith and suspension of the rational than accepting even a modified version of the Biblical account of creation.

I quote from a recent article by Gregg Easterbrook in *The New Republic* magazine:

> When the Big Bang sounded, the universe expanded from a pinpoint to cosmological size in far less than one second—space itself hurtling outward in a torrent of pure physics, the bow wave or the new cosmos moving at trillions of times the speed of light. You believe that this process unleashed such powerful distortions that, for an instant, the hatchling universe was curved to a surreal degree. Extreme curvature caused normally rare “virtual particles” to materialize from the quantum netherworld in cornucopian numbers, the stuff of existence being “created virtually out of nothing,” as *Scientific American* once phrased it.

> Further, you believe that, as subatomic particles began to unbuckle from the inexplicable proto-reality, both matter and anti-matter formed. Immediately these commodities began to collide and annihilate themselves, vanishing as mysteriously as they came. The only reason our universe is here today is that the Bang was slightly asymmetrical, its yield favoring matter over anti-matter by about one part per 100 million. Owing to this, when the stupendous cosmic commencement day ended amid sundering energies beyond comprehension, a residue of standard matter survived, and from it the galaxies formed. That is to say: You believe that a microscopic, transparent, empty point in primordial space-time contained not just one universe but enough potential for 100 million universes.

It may not be difficult to see why most religious fundamentalists find this a strain on belief. Indeed, one does not even have to believe in God to find this mind-boggling. A Orthodox Jew, Gerald Schroeder—the author of two books, *Genesis and the Big Bang* and *The Science of God*—in trying to reconcile the Big Bang theory and evolution with the biblical account of creation in Genesis, writes:

> The first 6 days were no longer than the 6 days of our work week, but they contained all the ages and
all the secrets of the universe.... Einstein’s laws of relativity taught the world that the passage of time and the perception of time’s flow varies from place to place in our most amazing universe.... We look back while the Bible looks forward and as we look back, the universe becomes smaller and smaller.  

To Schroeder, “Genesis 1 and science tell the same account, but seen from vastly different perspectives.” It’s somewhat refreshing to find an Orthodox Jew accepting or even advocating such an approach, in the face of others who deny even the existence of dinosaurs. One group of fanatics in Israel protested against a company that placed pictures of these “nonexistent” creatures on milk cartons in order to deceive young Orthodox children.

Scientific research has brought to light another serious problem: the aspect of randomness, which also brings in the subject of chance. What truly opened my eyes to that other world were the writings of Carl Sagan. To the pure scientist he might be looked upon as a mere popularizer. To me he was a Rebbe, a teacher of EMET, more truth, more knowledge. Following are several ideas Sagan has taught me.

The universe doesn’t care about itself. It creates beyond its control, creatures of destruction, from dinosaurs to viruses, such as cancer. Darwin laid the groundwork; many have brought much of his research up to date. He wrote of natural selection and survival of the fittest. Natural selection is ruthless. Survival of the fittest is not necessarily true. A present estimate of all species is over 10 million. Scientists hold that 100 species become extinct each day and we are acquainted with less than 10% of the total. Many species are becoming extinct before we even know of their existence.

Most of the billions of species of life that have ever lived are extinct. Extinction is the norm; survival is the triumphant exception. 65 million years ago most of the species on earth were snuffed out, probably because of a massive cometary or asteroidal collision.

Let us assume that the universe is fifteen billion years of age. Was that original pinpoint hovering in space, or where did it come from? Was that all of existence, including space? Was space, too, nonexistent? Or did space always exist? Did God come into being with the Big Bang? Or was God that high-energized pinpoint? Or did God exist before the Big Bang?

How self-confident was God the Creator? The Midrash says that God created several worlds before this one. They didn’t please God, so they were destroyed. God wasn’t enamored of this one either, but just gave up.

I saw a cartoon recently that pictured God as a bearded figure, sitting behind a desk with a globe of the Earth on it. It was entitled: “God complains about his job.” The second frame had God saying, “The hours stink and there’s no chance to move up.” So, is God the imperfect Creator, or among the created?

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Is it part of God’s nature to create, come what may? The prophet Isaiah says that God is the ultimate source of everything—“I form the light, and create darkness; I make peace and create evil.”

Too often Jews and Christians, especially in the Western hemisphere, believe they have a monopoly on the truth. Listen to a passage from Hindu sacred literature. The major deities, Vishnu, Siva, and Devi have a
supporting cast of thousands of gods. The Brahman poets in the Rg-Veda voiced their courageous doubt in their Hymn of Creation:

Who verily knows and who can here declare it, whence it was born and whence came this creation?
The gods are later than this world’s production. Who knows, then, whence it first came into being?

He, the first origin of this creation, whether he formed it all or did not form it,
Whose eye controls this world in highest heaven, he verily knows it, or perhaps he does not.4

What does “eternity” mean? Was there time before fifteen billion years ago? Could eternity exist in nonexistence? Is God eternal? Or are these terms essentially meaningless now? To me it is ludicrous when people talk about life eternal. Of course, they are talking about the future and not the past.

Black smokers bubbling up from the ocean floors at temperatures exceeding 200 degrees Fahrenheit may have been where life in the form of microbes first appeared. Recent tests show these microbes can also survive extremes of cold. Sagan writes about a self-replicating, catalytic RNA molecule as the first living thing in the ancient oceans about four billion years ago, its close relative, DNA, being a later evolutionary refinement. There was an endless chain of adaptations, many of which didn’t work. Molecules simply produce a steady stream of varieties. Every DNA is vulnerable to mutation. Randomness is more prominent that natural laws of progress. Life just doesn’t know where it’s going.

We are continually barraged by new scientific theories. They are fascinating to say the least. About fifteen years ago, the existence of stars composed exclusively of quarks was hypothesized. A quark, as I understand it, is composed of both a strong and weak force within each atomic particle. Scientists named these hypothetical stars “strange stars.” However, as yet no strange stars have been identified. That one must take on faith!

In mid-October, a Nobel Prize was awarded to scientists who were able to divide the charges in an electron. This was affirmed by a team of physicists at the Weizmann Institute of Science in Israel. Electrons have traditionally been defined as tiny particles that carry the smallest negative charge in nature. A current made up of fractions of electronic charges would therefore seem just as absurd as describing a crowd as being composed of fractions of people. However, the only explanations scientists can devise for certain behavior of electrons are based on the assumption that electrons only seem to be fractionated.

Not too long ago, scientists posited the theory that most galaxies probably have a black hole—which is like a vacuum cleaner.

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But if we get wrinkled now in our eighties, imagine what we would look like after a few billion years! And I assume the earth will continue at least for that period.

Carl Sagan has written:

Evolution suggests that if God exists, God is fond of secondary causes and factotum processes: getting the universe going, establishing the laws of nature, and then retiring from the scene. A hands-on Executive seems to be absent: power has been delegated.5

Evolution suggests that God will not intervene, whether beseeched or not, to save us from ourselves. Evolution suggests we’re on our own, that if there is a god, that god must be very far away.

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sucking in debris, stars, whatever comes its way. Our own Milky Way probably has one at its center. A black hole cannot and will never be seen, and yet the theory further states that its weight is three million times that of the sun. It is governed by quantum gravity. Is this where all existence might end up? Might this theory also be sucked up?

Religion’s internal impetus to change

Religion is also undergoing challenges from within its own ranks. We can make peace with scientific discoveries easier than reconciling ourselves to religio-philosophic views of our theologians over the millennia.

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The first real departure in Judaism from a personal deity came with the medieval Jewish philosophers, in particular Maimonides, who concluded that God was the Intelligence of the universe. It’s a school of thought that has led to Einstein and the acceptance that laws of Nature point to such a power. Randomness and chance are not considered.

A modern Jewish thinker, Mordecai M. Kaplan, the founder of Reconstructionist Judaism, referred to God as “the Power that makes for salvation.” He called his religious approach “transnaturalism,” denying absolutely a supernatural deity, while not wholly satisfied with a down-to-earth humanism. However, salvation for Kaplan would be the this-worldly, fulfilling, psychological ideals of such writers as Fromm and Maslow.

The most recent challenge of and by Jewish and Christian thinkers is called Process Theology. The thoughts I now share with you are from my colleague Rabbi William Kaufman’s book, The Case for God. He begins by accepting the atheistic challenge, which, he admits, is formidable. When he once asked the American philosopher, Willard Van Orman Quine, why he pronounced a theory of atomistic materialism, Quine told him that God is an unnecessary hypotheses. Quine sees science as the only route to truth. Questions of ethics and moral values are completely human in origin. Quine readily admits that belief in God can be comforting, but rejects the argument that design is enough of a reason for belief in a Creator.

Alfred North Whitehead admits that we cannot know anything beyond this temporal world, so that if a God exists, that God must be immanent and not transcendent. God is eternal while all other entities are temporal. But since everything is in God, part of God is also temporal. Whitehead concludes that the world is too complex to be random. For Whitehead, the order we find in nature cannot be accounted for without the assumption of the existence of God as the “ordering entity.” However, we must think of God in a completely different way than religions have in the past—and most, up to the present. God is not King of Kings. In fact, Whitehead’s God is very much limited, working by persuasion rather than force. This God is the source of all new possibilities—good and evil—incorporating themselves, as well as all events, natural phenomena from electrons to tornadoes, chaos and order, novelty and structure. Nature makes choices and we make choices. However, the bifurcation of nature into mind and matter is wrong and leads to our sense of alienation. But ultimately Whitehead, philosopher, mathematician, man of sciences, thoroughly conversant with the theory of evolution, takes a leap of faith. God is not only the continuing source of becoming and
the ordering entity of the universe, but is a being with whom one can enter a relationship of communion and trust. He even says that God suffers, which seems to me an attempt to restore some of his early Christology and wrap it in sheepish mysticism.

I would say that the foundation for all process theologians is Spinoza. His pantheistic view of Deus sive Natura—God and Nature are the same—is the starting point for modern theories. Just as every individual is both being and becoming, as is Nature, so do the modern thinkers devise new concepts of God to reflect this same process. Charles Hartshorne extends Spinoza's pantheism to panentheism, i.e., the universe is within God. Hartshorne writes that it is inconceivable to think of non-being, of pure nothingness. Therefore, there must be at least one individual—God—who exists necessarily. Kaufman points out that much of Hartshorne's philosophy is intuitive. Hartshorne also states that complete cosmic chaos is inconceivable. Are there not laws of nature? This old argument from design is frequently challenged by scientists and is part of a running argument that will continue, at least for decades. To Hartshorne, it is irrational to choose not to believe in God. Humanism is inadequate, because "to say nature is godless is to say that it is not basically intelligible." For him, the ultimate intelligibility and integrity of the universe is basic, an ontological presupposition.

There are many other process theologians: I just wish to give you a taste, because it seems to me that no further analysis of ancient and medieval views of God is needed or relevant for contemporary seekers after truth. Talmudic pilpil and medieval scholasticism are diversionary blemishes on the continuum of philosophic and religious inquiry.

Other perplexities, religious and scientific

Both Hebrew and Christian scriptures, although each has different emphases, are books of faith. They are not scientific texts. There were no stenographers trailing along with Moses or Jesus, and the record of their revelations is, at best, secondhand reporting. Any individual's claim, in any period of history, is his or her reality only. Others may wish voluntarily to accept it as truth and even form groups of followers. So be it. But that claim is not empirical nor subject to any rational testing. Any group's dogmatic claim to exclusivity is nonsense. If there is a god, that god must be god of the universe and all humanity. Also, it seems to me there is little difference if a certain culture believes in one God while others hold to many deities. The bottom line is the ethics of existence. Any interpretation of a tradition is morally bankrupt if it justifies the bombing of abortion clinics and cold blooded murder of physicians, or portrays acts of terrorism as warranted and pleasing in the eyes of God. But can we complain about moral bankruptcy among peoples, if God can and yet does not intervene with all the human tragedies that abound? Where do we get our sense of ethical?

I mentioned several problems presented by scientific findings. Here are a few more questions: How fast is our universe expanding? Despite the enormity of our universe with a hundred million galaxies, and billions and billions of stars, is it the only universe? Might there be other universes, some smaller, some larger, out in infinite space? Why not multi-universes? Is there a God for each universe? Polytheism might be right after all!

So many scientific theories are mathematical constructs. Most of us think of reality in terms of four dimensions. Several years ago I read about ten dimensions. The last six, I was told, are mathematical formulae. Under the same rubric comes the more recent 'superstring theory,' in which all fundamental particles are made of incredible tiny loops of enormous tensile strength. The way they vibrate generates the entire two hundred particles. What are superstrings made of? Nothing. They are a mathematical construct.
How does the brain remember, and how did consciousness come about? How did it emerge from the brain's complicated molecular structure? What will the human brain be like in the next millennium? Arthur Koestler has written that in the course of evolution human beings have progressed from instinct to emotion to rationality. As you recall, Aristotle wrote that "man is a rational animal." My own postscript is: Yes, every once in awhile. Of course, tonight is one of those rare moments!

Why are we usually mired in our emotion? Why are our animal needs so overpowering? Why can we not get a handle on our hostility? And yet there is something special about human beings. We are creators of art, music, and literature. Why this aesthetic need? We do not need these for survival, but they certainly enhance our lives.

TOE is the abbreviation for Theory of Everything. That is what we really seek. Some believe science will arrive at the ultimate unifying equation. Some believe religion already has arrived there in the being of God. And some of us are humble enough to admit that we don't know very much about either. Martin Gardner, in a recent essay entitled "Science and the Unknowable," wrote:

There is no escape from the superultimate question: Why is there something rather than nothing, and why is the something structured the way it is? As Stephen Hawking recently put it, "Why does the universe go to all the bother of existing?"

For fifteen billion years our universe, we suppose, has been in existence. Ever since our first ancestors began seeking answers to their origins, the quest has been unrelenting. If we don't destroy ourselves in the meantime, we should arrive at a few more answers every billion or so years.

Works cited:


Endnotes:

1. See Begley.
4. Rg-Veda 10.129. See Renou, p. 68.
6. See Kaufman.
7. See Jones.
8. See Kaufman.

Dr. Kaplan is the founding Rabbi of Congregation Klal Yisrael, Stoughton, Massachusetts. After receiving his bachelor’s degree from the Johns Hopkins University, he received his ordination and Doctor of Divinity from Hebrew Union College. An adjunct faculty member at Stonehill College, he teaches courses in the departments of History and Religious Studies. He is an active participant in both Jewish/Catholic and Jewish/Protestant dialogue groups.

He gave this talk in November 1998, opening the annual lecture series of the Center for Faith and Science Exchange.