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WHEN TORAH AND SCIENCE COLLIDE

The proliferation of knowledge in the last few decades has revolutionized many branches of science. Completely new concepts that did not even exist half a century ago now occupy a central place in the modern scientific enterprise. These new ideas include big bang cosmology, punctuated equilibrium, impact theory, quantum reality, information theory, the anthropic principle, chaos theory, space exploration, pulsars and quasars, complexity theory, fractals, the Geneva accelerator, the Hubble space telescope, artificial intelligence, extraterrestrial life, cloning, the human genome, supersymmetry, mass extinctions, black holes, extra-solar planets, gravitational waves, neural networks, stem cells, genetic engineering, multiple universes, string theory, quantum gravity, compacted dimensions, etc. The list goes on and on. The simple clockwork universe of Newton, Galileo, and Laplace has been replaced by a universe so complex and so wonderful that it almost defies comprehension.

These recent scientific findings have revealed the universe to be a far richer and more subtle place than previously imagined. The relationship between science and religion is being re-examined in the light of these new discoveries, and it is natural to ask whether this scientific knowledge has any implications for the believing person. In fact, the implications are profound. Modern science has become an important tool for understanding many biblical passages that had long been enigmatic.

THE PHYSICAL UNIVERSE

Throughout the generations, people have wondered: what can one learn about God by observing His world? In earlier centuries, the physical world seemed completely self-contained. Scientists tried to explain physical phenomena without the need for a deity, comparing the world to a clock whose springs, gears, and cogs work in perfect harmony. Although exponents of this view sometimes spoke of the Divine Watchmaker who

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had created the universe, God seemed to have retired from the scene once His task of creation was completed, letting the laws of nature carry on. Human beings were described as aggregations of atoms, subject to the same laws of nature as stones and planets. It is not surprising that Laplace had cynically questioned the need for the hypothesis of God.

The problem became even more acute in 1859, when Charles Darwin proposed that the vast panorama of animals that we observe today had developed from a simple bacterium according to the principles of evolution. This seemed to imply that human beings not only shared similar origins with the crocodile and the cockroach, but that we were equally devoid of any spirituality. In short, religion was on the defensive.

All of this changed beyond recognition during the twentieth century. Today, cosmologists regularly use the word “creation” to describe the origin of the universe.¹ Secular scientists in all fields point to numerous examples of apparent design in the laws of nature, including design with human beings in mind.² Quantum theory³ and chaos theory⁴ have established the impossibility of predicting the future. Archaeologists write of the abrupt appearance of civilization “with no premonitory signs,”⁵ and speak of a sudden “revolution” in human cultural behavior.⁶

The far-reaching theological implications of these scientific findings can hardly be overemphasized. Many seemingly intractable theological dilemmas of previous generations have melted away with our increasing awareness of the laws that govern the universe. The complexity and subtlety of the universe, revealed within the last few decades, provide the framework for understanding many passages in our Holy Torah.

CONTRADICTIONS BETWEEN TORAH AND SCIENCE

The specific subject under discussion here is how to deal with the problem that arises when science and Torah collide. The most famous example

¹ See, for example, Joseph Silk, *The Big Bang* (New York: Freeman, 1989), p. 113.

² See, for example, George Gale, “The Anthropic Principle,” *Scientific American*, December 1981, pp. 114-122.

³ See, for example, Richard Feynman, *QED: The Strange Theory of Light and Matter* (Princeton University Press, 1985).

⁴ See, for example, James Gleick, *Chaos: A New Science* (London: Cardinal, 1988).

⁵ Niles Eldredge, *Time Frames* (New York: Simon & Schuster, 1986), p. 87.

⁶ Gretel Peltó and Pertti Peltó, *The Cultural Dimensions of the Human Adventure* (New York: Macmillan, 1979), p. 93.

is, of course, the first chapter of Bereshit – the Torah account of creation. The many proposed “solutions” to this problem only serve to emphasize its seeming intractability. We list a few.

A. “Read the Rishonim”

According to this approach, one need not concern oneself with this question at all. The *Rishonim* have already explained to us how to understand the words of the Torah. Indeed, it is completely inappropriate to read the Torah without guidance from “the searchlights of these Torah giants” (in the felicitous phrase of *ArtScroll*).

The difficulty with this “solution” is that the *Rishonim* often do not agree with each other about how to understand the words of the Torah, with the disagreements sometimes being quite strident. An example will clarify the point.

Did God create the universe? Seemingly a simple question, with the answer given in the very first verse of the Torah.

Not so, writes Rambam (*Guide* 2:25), asserting that Torah *hashkafa* does *not require* one to believe that God created the universe. But what about the first chapter of Bereshit, which clearly states that God *did create* the universe? Rambam writes that one may interpret this chapter *metaphorically*, as an allegory that never happened, because “*the paths of interpretation are not closed to us.*”

Ramban strongly disagrees with this position, writing (*Commentary on the Torah* 1:1) that the belief that God created the universe is “the essence of faith” (*shoresh ha-emuna*) and anyone who denies divine Creation is a heretic (*kofer be-ikar*) who has no place in the Torah world (*ain lo Torah kelal*).

Ramban’s unequivocal words were not directed at Rambam, but rather at Rashi, who begins his famous commentary on the Torah by asking why the Torah bothers telling us that God created the universe. Why, asks Rashi, did the Torah not confine itself to describing the *mitsvot* that a Jew is required to perform? The implication of Rashi’s question, which generated Ramban’s response, is that there is no importance according to Torah *hashkafa* in believing that God created the universe.

We are here witnessing a sharp disagreement among Torah giants regarding how to understand biblical verses. As we know, the Torah is quite pluralistic (*shivim panim la-Torah*). Therefore, “reading the *Rishonim*” will not lead to a unique, “true” meaning of any particular verse, including, of course, those verses that seem to contradict science.

B. “Nonoverlapping Magisteria”

Another popular “solution” to Torah and science contradictions goes by the name of “Nonoverlapping Magisteria,” the title of the widely-quoted essay by Stephen Jay Gould of Harvard.⁷ Gould states that because science and the Bible deal with totally different topics, one shouldn’t expect to find scientific truths in the Bible.

Gould was preceded in this approach by Galileo, who is credited with the famous aphorism: “The Bible teaches us how to go to heaven, whereas science teaches us how the heavens go.” (I can’t believe that Galileo really said these words because, while snappy in English, they make no sense in Latin or Italian.) It was because of this claim that Galileo was hauled before the Court of the Inquisition, who held that it most certainly *was* within the authority of the Church to use Scripture to “teach us how the heavens go.”⁸

The most outspoken contemporary expositor of the Galileo-Gould approach was surely Yeshayahu Leibowitz, who repeatedly asserted that the Torah has nothing at all to say about the physical world (“The Torah is not a science book”). And if one thinks that the Torah is saying something about the world, then one simply does not understand what he/she is reading. In particular, the creation story in the first chapter of Bereshit is *not* an account of the origin and development of the universe. Rather, it tells us something profound about the relationship between man and God.

Leibowitz said the same thing about the Torah account of history (“The Torah is not a history book”). If the Torah is not saying anything about the patriarchs, the Flood, the Exodus from Egypt, or the remarkable capture of Canaan by the Israelites, then it follows that there are no historical questions that need answering.

The problem with the Galileo-Gould-Leibowitz approach is obvious. The Torah *does* make statements about the physical universe – quite a lot of them – and, therefore, it seems perfectly legitimate to inquire how these statements bear up under scientific scrutiny.

A more modest version of this “solution” (that the Torah is not discussing the physical universe) is to restrict it to the creation narrative. One can easily find Torah sources that state that the Creation is shrouded in divine mystery and lies beyond human understanding. For example, Ramban (*Commentary* 1:1) refers to the Torah account of Creation as “a

⁷ *Natural History*, March 1997, pp. 16-22.

⁸ Pietro Redondi, *Galileo: Heretic* (1983: transl. Raymond Rosenthal, Princeton University Press, 1987).

deep mystery, which cannot be understood by reading the verses.”

However, this does not help us because Torah-vs-Science problems are not confined to the first chapter of Bereshit. The fifth chapter records thousand-year life spans. The seventh chapter describes the Flood. The thirty-fifth chapter informs us that Isaac lived to the age of 180. And we read in Shemot that within a mere couple of hundred years, Yaakov’s family of 70 exploded into a nation nearly ten thousand times as numerous. The fact is that Torah-and-science problems are ubiquitous. Excluding the first chapter of Bereshit from consideration does not solve these problems.

C. “Science is Transitory”

Another “solution” is based on the idea that science is always in a state of flux, whereas the Torah is eternal. Indeed, it is often asserted that change is the most conspicuous feature of science, and that all scientific theories will eventually become discarded, to be replaced by new paradigms.

The facts are quite otherwise. Every competent scientist can distinguish between speculative theories and those that are supported by a vast array of scientific evidence. It is the former that are short-lived and whose demise is regularly reported, whereas the latter have an excellent record for longevity. For example, the theory of relativity and the quantum theory have enjoyed unqualified success since their inception a century ago in explaining hundreds of diverse physical phenomena. Well-established theories become refined and extended, but are never simply discarded as being wrong.

The excellent track record of well-established scientific theories was noted by Nobel laureate Steven Weinberg: “One can imagine experiments that *refute* well-accepted scientific theories that had become part of the standard consensus of physicists. *There are no such examples whatsoever in the past hundred years*”⁹ (emphasis in original). If not a *single* well-established theory of physics has been refuted within the past hundred years, one need not be concerned about the future.

But what about the geocentric theory of the solar system? Wasn’t that scientific theory universally believed for nearly 1500 years, until finally shown by Copernicus and Galileo to be wrong and then replaced by the very different heliocentric theory?

The answer is “no!” The geocentric theory was not a scientific theory at all; it was *pure theology*, unsupported by any scientific evidence. The theory was universally accepted for over a millennium on religious grounds

⁹ *Dreams of a Final Theory* (London: Vintage, 1993), p. 102.

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alone. The *beliefs* of the Church demanded that man's place *must be* at the center of the universe. *Religious beliefs* required that planetary orbits *must be* circular because the circle is the ideal geometric figure and God's heavens must behave in the ideal manner. When circular orbits failed to explain the planetary data, circles were not abandoned, but additional circles, called *epicycles*, were added to the geocentric theory. Eventually, *eighty* epicycles were postulated, but the details of planetary motion *still* could not be satisfactorily explained. Finally, when the telescope was invented in the early seventeenth century, accurate astronomical data became available, confirming the *first scientific theory* of planetary motion – the heliocentric solar system with elliptical planetary orbits – a scientific theory that has survived unscathed to this very day.

What about Newton's theory of mechanics? Wasn't Newtonian mechanics overturned by relativity theory in 1905 and overturned again by quantum theory in 1926?

Not at all! Newtonian mechanics was *generalized* by these theories, and shown to be *the correct limiting form* for low velocities (even a thousand miles per second is *slow* in this context!) and for large masses (even a speck of dust weighing a trillionth of a gram is a *large mass* in this context!). Newton's theory is so accurate within its wide regime of validity that to this day, every university student of physics is required to learn Newtonian mechanics.

Finally, we have the assertion of the philosophers that "we cannot have any confidence in our science" because science is empirical. Since science is based on induction, all scientific theories are derived from a finite number of data points. However, there exist an *infinite* number of theories that can explain any *finite* set of data. (In technical language, one can draw an infinite number of continuous curves through any finite number of points.) Therefore, there is no reason to think that today's scientists were lucky enough to have chosen the right theory from the infinite number of possibilities.

Research scientists are amused by this assertion. Only a non-scientist would imagine that for each set of measurements, there are a large number of theoretical explanations just lying around, waiting for the scientist to choose the one that strikes his or her fancy. This idea is so utterly removed from reality as to be ludicrous. In truth, scientists spend most of their time struggling to formulate *any theory* that might explain the observed data, or at least part of the data.

It is probably true that scientists will never achieve the "final truth," but there are good reasons for thinking that our understanding of the physical world is becoming progressively more accurate.

D. “Science is wrong”

The proponents of the “science-is-wrong” approach claim, among other things, that the asserted antiquity of the universe is based on extrapolation, which is notoriously unreliable and therefore need not be taken seriously.

The fact is that extrapolation is a completely reliable procedure, which can be explicitly verified in the following way. One can extrapolate the laws of physics back into the distant past, and use these extrapolated laws to make predictions about what happened way back then. These predictions about the distant past will generally have explicit implications for what should be observed *today*. When these implications are verified, one has solid evidence to support the extrapolation.

E. “There Are No Contradictions”

A new “solution” has recently appeared on the scene for reconciling contradictions between Torah and science. The claim is made that *there aren’t any contradictions!* A proper understanding of modern science permits one to explain away *all* apparent discrepancies in the Torah account of creation. Let’s see how well this approach succeeds.

An obvious discrepancy relates to the time scale. How does one reconcile the “Six Days of Creation” with the multibillion-year-old universe of the scientist?

In an essay bearing the fascinating title, “The Age of the Universe: Six Days and Fifteen Billion Years,”¹⁰ the “Six Day” rabbit is pulled out of the “multibillion year” hat. The explanation goes like this. According to Einstein’s theory, time is relative. The rate at which time passes varies from place to place in the universe according to the local strength of the force of gravity – an effect called “time dilation.” Therefore, to reconcile the biblical Six Days of Creation with the 14 billion-year-old universe of the scientist, one need only assume that the “Bereshit clock” was located at a place where large gravitational forces were present. Therefore, “Torah time” passed much more slowly – so slowly that the “Bereshit clock” only advanced six days while 14 billion years were passing elsewhere in the universe.

This explanation fails because time dilation is an extremely small effect. For example, a year measured on the very massive sun is only *one minute* shorter than a year measured on earth, a change of two parts per million. Such a small effect cannot possibly compress 14 billion years into a mere six

¹⁰ *Jewish Action*, Summer 1991, pp. 44-48.

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days. This is no place in the universe where extremely large gravitational forces exist now or where they existed in the past. Indeed, this proposed explanation for the Bereshit time scale was characterized by a distinguished physicist as “a fundamental misunderstanding of basic physics... immediately recognized as fallacious by professional physicists.”¹¹

Recently, an attempt was made to reconcile the biblical and the scientific time-scales by invoking the “cosmological red shift” (the change in the color of spectral lines of distant galaxies that are receding from us). This shift in the color of light waves is the analogue of the Doppler shift for sound waves, an effect first proposed by Christian Doppler back in 1842. The Doppler shift for sound waves can be illustrated as follows. When a train approaches, the pitch of the sound made by the train seems to increase to higher notes, whereas as the train recedes, the pitch of the train sound seems to decrease to lower notes. A change in pitch for sound waves is equivalent to a change in color for light waves, and is called the “red shift.” However, this observed shift in the color of spectral lines has nothing at all to do with a change of the rate at which time passes.

F. “It Just Looks Old”

A very different, quite imaginative “solution” to reconciling the biblical and the scientific time scales is popular in certain circles. This view asserts that the universe is in fact very young, just as the Torah states, but it *appears old* to the scientist because God created the universe to look old. For example, if Adam were created as a 20-year-old man, then the day after his creation, anyone who examined him would declare that Adam had already lived for twenty years. It is similarly asserted that dinosaur bones and other fossils were created *recently* and then placed in the ground. These fossils lead scientists to conclude, erroneously, that the Earth is billions of years old.

This approach is unassailable from the standpoint of logic – for who can prove the contrary? However, in my view, a satisfactory reconciliation between science and Torah should be accomplished *without* invoking miracles.

APPROACH OF RAMBAM

Having criticized all other approaches, I am finally forced to lay my cards on the table and reveal that my preferred solution is the approach of

¹¹ Barry Simon, *Jewish Action*, Spring 1992, p. 10.

Rambam. In what is arguably the most important chapter ever written in the area of Torah and science (*Guide* 2:25), Rambam explains how to interpret the narrative portions of the Torah (how to interpret halakhic verses is a different subject entirely). Rambam states that one should first attempt to interpret the biblical text literally. However, if the literal meaning contradicts well-established knowledge, then one should interpret the Torah words *metaphorically*, because “*the paths of interpretation are not closed to us.*”

We apply Rambam’s principle to the present case. If one interprets the Six Days of Creation literally – as six periods of 24 hours each – then a wealth of well-established scientific knowledge is completely contradicted. Therefore, according to Rambam’s principle, one should understand the creation “days” metaphorically, as referring to epochs or eras or phases in the development of the universe, without any indication of how long each phase lasted.

What is particularly relevant to our discussion is the fact that Rambam used the creation narrative of Bereshit as his example to illustrate his principle regarding how to interpret the words of the Torah. In his time (twelfth century), the accepted view was that the universe was eternal and that no act of creation had ever occurred – which, of course, completely contradicts the entire first chapter of Bereshit. Rambam states that he rejects the eternity of the universe, but “*not because it disagrees with the words of the Torah.*” Rather, he rejects this view because it was not convincingly proved. However, states Rambam, if this view were to be proved, then, from the Torah point of view, there would be *no problem* in accepting the idea of an eternal universe, *in spite of the fact* that a denial of creation flatly contradicts the Torah. One would simply interpret the entire first chapter of Bereshit figuratively, as an allegory.

Rambam is not the only major *Rishon* to promote the view that Torah words need not be taken literally. The *Book of Hosea* discusses (6:2) “the two days” (*yomaim*) and “the third day” (*yom ha-sheleishi*). Rashi comments on this verse that each of these three “days” refers to a different *period* in Jewish history.

This approach is sometimes criticized as being *very dangerous*, because it forces one to re-interpret Torah passages when a new scientific theory emerges (“endeavor fraught with danger...can lead to serious theological repercussions”¹²). Why is it dangerous to periodically re-interpret the words of the Torah? When someone proposes a new interpretation of a passage in the Talmud or in *Rishonim* that eliminates

¹² Howard Shapiro and Reuben Rudman, *Jewish Action*, Summer 2005, pp. 80, 81.

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previous difficulties, it is considered praiseworthy. Only when studying the Torah, altering one's opinion and proposing new interpretations seems to arouse suspicion and antagonism.

RECONCILIATION

The approach of Rambam immediately raises the question of the need for reconciliation. According to Rambam, there *cannot be* any contradictions between Torah and science. Whenever Torah and science collide, one interprets the Torah words figuratively, and the contradiction disappears. Therefore, why bother striving for reconciliation?

Rambam himself has given the answer (*Guide* 2:25): "There is an obligation (*hovah behehlet*) to clarify the words of the Torah." The "paths of interpretation" are indeed open to us, but *only* if the literal interpretation fails, because "it is inappropriate to discard [the literal meaning of] Torah words without sound reason." According to Rambam, seeking reconciliation between Torah and science is an *obligation*.

What is quite surprising is the extent to which reconciliation is possible. Indeed, if one interprets the creation "days" figuratively, then many of the *events* recorded in the Torah account of Creation are in agreement with modern science.¹³

At least, that is what we Torah-and-science fellows like to think. But is it really so? There are erudite articles which claim that the proposed reconciliations are more an exercise in wishful thinking than a description of reality ("fails on the level of details... a simple jab of the finger will bring the house down"¹⁴). Harsh words indeed. But, as they say, the proof of the pudding is in the eating. An example will let the reader judge for himself/herself the extent of the correspondence between the words of the Torah and the findings of modern science.

THE ORIGIN OF THE UNIVERSE

Where did the universe come from? A person of faith would probably answer that the universe was created, as stated in the first verse of Bereshit. Such an answer was long considered a scientific impossibility, because it contradicted the law of the conservation of matter and energy.

¹³ Nathan Aviezer, *In the Beginning: Biblical Creation and Science* (Hoboken, NJ: Ktav Publishing, 1990).

¹⁴ David Shatz, *Tradition*, Summer 2008, pp. 228, 229.

According to this law of science, which was established in the middle of the nineteenth century, matter and energy can be changed from one form to another, but something cannot come out of nothing. Therefore, scientists viewed the universe as eternal, thus neatly avoiding questions regarding its origin. The Bereshit assertion that the universe was created, presumably from nothing, became an area of conflict between Torah and science. That is how matters stood for many years.

But this situation has now changed. The twentieth century witnessed an unprecedented proliferation of scientific knowledge, nowhere more dramatic than in cosmology, the discipline that deals with the origin and development of the universe. Important advances in cosmology during the past few decades have, for the first time, permitted scientists to construct a coherent history of the origin of the universe.¹⁵ Today, an overwhelming body of scientific evidence supports the “Big Bang” theory of cosmology.¹⁶ There are four major pieces of evidence: (1) discovery of the initial ball of light, (2) measured hydrogen-to-helium ratio in the universe, (3) observed recession of the galaxies, and (4) perfect black-body spectrum of the microwave radiation measured by the COBE (1989) and the MAP (2001) satellites. Only the big bang theory can account for all these observations and, therefore, this theory is accepted by mainstream cosmologists. According to the prestigious *Scientific American* (April 2004, p. 30): “The big bang theory works better than ever.”

The central assertion of the Big Bang theory is that *the universe began through an act of creation*. It is instructive to quote some of the world’s leading authorities.

Nobel laureate Paul Dirac writes:

“It seems certain that there was a definite time of creation.”¹⁷

Alan Guth, of the Massachusetts Institute of Technology, writes:

“The instant of creation remains unexplained.”¹⁸

Stephen Hawking, of the University of Cambridge, writes:

“The creation lies outside the scope of the known laws of physics.”¹⁹

¹⁵ Steven Weinberg, *The First Three Minutes* (London: Andre Deutsch, 1977).

¹⁶ For a readable account of the Big Bang theory, see Nathan Aviezer, *In The Beginning* (Hoboken, NJ: Ktav Publishing, 1990), chap. 1.

¹⁷ *Commentarii*, vol. 2, no.11 (1972), p. 15.

¹⁸ *Scientific American*, May 1984, p. 102.

¹⁹ *The Large Scale Structure of Space-Time* (Cambridge University Press, 1973), p. 364.

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Today, it is not possible to carry on a meaningful discussion of cosmology without the creation of the universe assuming a central role.

When cosmologists use the term “creation,” to what are they referring? Precisely what object was created? Scientists have discovered that the universe began with the sudden appearance of an enormous *ball of light*. This “explosion of light” was dubbed the “Big Bang” by the British astrophysicist Fred Hoyle. The remnant of the initial ball of light was detected in 1965 by two American physicists, Arno Penzias and Robert Wilson, who were awarded the Nobel Prize for their important discovery.

In addition to confirming the creation of the universe, the discovery of the initial ball of light also answers another long-standing puzzle regarding the Bereshit account of creation. On the First Day of Creation, the Torah states: *And there was light*. But at that time, there existed neither stars, nor sun, nor moon, nor people, nor any other known source of light. Therefore, how can one understand the “light” of Bereshit?

Scientists have now discovered that *there was light at the very beginning of time*: the primeval ball of light whose appearance heralded the origin of the universe.

Is there a valid correspondence here between Torah and science? I think so. In fact, I cannot imagine a scientific theory that could be more compatible with the biblical text than the big bang theory.

What do scientists think? Do secular cosmologists discuss a correspondence between the big bang theory and Bereshit? Joseph Silk, a well-known cosmologist at the University of California, wrote a book about the Big Bang theory, appropriately entitled, *The Big Bang*. His opening sentence is: “The big bang is the modern version of creation.” Professor Silk does not, of course, attribute any meaning to this correspondence.

“THE TORAH WAS WRITTEN IN THE LANGUAGE OF MAN”

The Christian philosopher Peter van Inwagen has proposed an extremely interesting thesis for dealing with contradictions between science and Genesis.²⁰ Inwagen points out that Genesis had to be written in a way that could be understood by the “agricultural laborers in Ancient Palestine” because they have “equal value in God’s eyes to holders of endowed professorships.” Modern concepts, such as the Big Bang, Permian ice age, punctuated equilibrium and Neolithic Revolution, would have been so

²⁰ *God, Knowledge and Mystery* (Cornell University Press, 1995), pp. 128-162.

much gibberish to previous generations. Therefore, getting the science *wrong* is “a price worth paying” to make Genesis comprehensible to the “agricultural laborers in Ancient Palestine.”

This is a great thesis, but the truth is that God is smarter than Peter van Inwagen imagined. God wrote a text that could be understood *both* by the agricultural workers of Ancient Palestine *and also* by the scientists of the twentieth century. Of course, this requires a certain degree of sophistication and flexibility on the part of the scientists. For example, they have to recognize that “ice” and “water” are the same material – H₂O. Therefore, the “*water above the heaven*” (on the Second Day of Creation) can legitimately refer to the enormous quantities of ice that have been discovered at the edge of the solar system. There are no separate words for molten gold and solid gold; both are called “gold.” The delicious chicken soup (liquid) that my wife serves me every Friday night and the chicken soup that she freezes (solid) so that I can also enjoy it later in the week, are both called “chicken soup.” Although different words are used in modern Hebrew for liquid and solid H₂O, the term “water” in Be-reshit refers to both forms of H₂O in order to make the Holy Torah comprehensible throughout the ages.

CONCLUSION

Questions regarding apparent contradictions between Torah and science are not new. They have furnished grist for the mills of philosophers, theologians, and scientists throughout the centuries. There are, of course, more aspects to these complex matters that could be dealt with here. But I hope that even the restricted discussion has contributed something of value to this old conundrum.

