

CREATION: SOMETHING FROM SOMETHING, SOMETHING FROM NOTHING, OR SOMETHING FROM HARDLY ANYTHING?

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THE BIBLICAL TEXT

RASHI (1040-1105 CE)

Genesis starts with the Hebrew word *beresheet* (Gen. 1:1). The word is a form of "beginning," which could be translated as *In the beginning of . . .*, to be followed by the object of the preposition. However, it is not followed by an object. Instead, it is stated: *In the beginning of, God created the heavens and the earth*. This, of course, does not read smoothly, raising the question: *in the beginning of* what? Rashi declares that it should be understood as saying "Towards (or during) the beginning of the creation of the heavens and the earth." As a result of omitting the object of the preposition "of," there is no commitment to a specific point in time for entering into the description of Creation. Rashi elucidates: ". . . and the text does not come to inform us on the order of creation, to say that these preceded (the others). . . ." He argues that if that were the case, the text should have stated "*barishona* [In the beginning] He created the heavens and the earth." Thus, the text does not point to any of the listed objects of Creation as having occurred at the beginning of time. Rashi supports his thesis by adding that there is no "*resheet* [beginning of]" in the Torah text that is not attached to the word after it. He cites many places where this preposition is followed by an object, inferring that there must be a special reason why the object is omitted here, said reason being to project an ambiguity in time.

Rashi then presents the opposing view, which states that the first sentence should be understood as saying "In the beginning of everything God created the heavens and the earth. "In this reading, the word "everything" is the object of the preposition "of", and is understood without being stated. Rashi then cites support for this opposing view by citing examples from the scriptures where a word that is omitted is obviously understood.

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Rashi now reaches his ultimate conclusion, in support of his original interpretation, with two arguments which serve as a rebuttal of the opposing view. One, he cites the succeeding text, which speaks of the Godly wind blowing over the surface of the water (Gen. 1:2), even though creation of the water had not been mentioned. He points out, furthermore, that the heavens are fabricated from fire and water. Thus, water, a raw material for creation of the heavens, had to precede the heavens, yet it is mentioned after the "*beresheet*" Creation. Therefore, Genesis, in its first sentence, could not have been listing an order of Creation. and the word *beresheet* does not mean "first" or "before everything."

IBN EZRA (1089-1164)

Avraham Ibn Ezra (comments, Gen. 1:1), in a grammatical discussion, briefly cites examples showing that the Hebrew word "*bara* [created]" in the first sentence of Genesis does not necessarily mean something-from-nothing (*creatio ex nihilo*), and that *beresheet* can precede a verb in the past tense, as it does with *bara* in the present case. He states his view that this sentence refers to an ongoing process of Creation which is described in the text that follows. He thus essentially adopts Rashi's position on the meaning of *beresheet*. He, however, makes it clear that the majority view of scholars holds otherwise.

RAMBAN (NAHMANIDES) (1194 – 1270)

Another exegete with a definite view of *beresheet* is Ramban (comments, Gen.1:1) writing nearly 200 years after Rashi. He starts with a quick summary of Rashi's comments on the subject. He then proceeds with an overt description of what may be regarded as the "science" of the matter. He describes what are apparently, to him, the independent facts of Creation, before assessing the impact of the first sentence of Genesis, *beresheet* Creation is described as matter brought forth from absolutely nothing (*creatio ex nihilo*). The original form of this matter is a single substance from which all others were subsequently derived. He states that the Greeks called this substance "*hyle*."

Having provided the reader with the physical background, he proceeds to a discussion of the sentence "*beresheet* . . ." itself. He begins with the observa-

tion that the simple, straightforward meaning of the sentence is now obvious. That is: In the beginning God created the heavens and the earth, something-from-nothing, and the earth was *tohu* and *vohu* (comments, 1:2), literally meaning disorganized and deep, but given non-literal interpretations by Ramban. He then states a secondary theme, that the earth and heavens [*shamayim*] (comments, 1:1), are made of two distinct, different original materials, each having been created as something-from-nothing.¹ Ramban thereby politely, but firmly, opposes the Rashi interpretation of *beresheet* which due to lack of specificity would leave room for the possibility of other types of creation than *ex nihilo*.

YEHUDA HALEVI (1080-1141) AND RAMBAM (MAIMONIDES) (1135-1204)

Yehuda Halevi, in his famous work *Kuzari*,² discusses from the philosophical point of view the subject of Creation of matter through the something-from-nothing route. As a cosmopolitan, he accepts the concept that interpretations, if at all possible, should conform to reality. He concedes that the Bible does not necessarily explicitly state that Creation was something-from-nothing. Nevertheless, Jewish tradition indicates that that is the case. The Greek philosophers, including Aristotle, all taught the concept of eternal matter. However, if Aristotle had had a tradition at his disposal supporting Creation *ex nihilo*, he would have found equally strong arguments to support the latter.

The views of Rambam are similar³. He states that Aristotle taught the concept of eternal matter. However, he clearly indicates⁴ that Aristotle did not prove the eternity of the world, and hence Creation of some sort is a possibility. Furthermore, Rambam⁵ also states, "I have already made it known to you that the foundation of the whole Law is the view that God brought the world into being out of nothing."

GREEK SCIENCE

BACKGROUND

Greek science before Socrates, starting circa 650 BCE, generally denies the possibility of something-from-nothing or nothing-from-something. Thales, Anaximander, and Anaximenes, often cited by Aristotle, were the first⁶ known practitioners of Greek philosophy-science. They all consider there to

be one fundamental form of matter, which yielded all other known forms by conversion. Thales considers this fundamental form to be water. Anaximander considers it to be a form unknown in isolation, but convertible to all others. He calls it the Boundless [*epeiron* in Greek]. Anaximenes considers it to be a substance which we now call air. Anaximander speaks of fire, which, although not to him a fundamental substance, was involved in the formation of the stars and other heavenly bodies. Empedocles⁶ was the first to declare that the world consists of four elemental substances which are fire, air, earth, and water.

INFLUENCE ON EXEGETES

Ramban pretty much accepts Greek science as the representation of reality, which he overtly uses, at some length, as an aid in biblical interpretation. Nevertheless, like Rambam, he does not accept their concept of eternal matter. He does not engage in any disputation therein, but ignores their approach and flatly asserts, as a given, Creation as being something-from-nothing. Aside from this however, in his discussion of the original Creation Ramban liberally disperses terminology from Aristotle in the Greek philosophical literature.

Rashi, on the other hand, focuses almost exclusively on the text, even starting with midrashic interpretations as an alternative to the literal approach, the latter then being examined quite thoroughly. It is thus a bit unexpected to note that, albeit in a seemingly offhand manner, he also injects consideration of physical reality into the hopper. This can be seen from his statement that the heavens are made of fire and water,⁷ indicating a knowledge of, and acceptance of, Greek science as reality.

It is, therefore, a reasonable conjecture that Rashi's reluctance to interpret *beresheet* as "something from nothing" was due not only to purely philological considerations, but also was influenced, in addition, by the known unanimous views of the Greek philosopher-scientists that matter must be eternal, extending into the infinite past. This, of course, does not imply any element of bias imposed on textual integrity, but rather acceptance of perception of reality as a legitimate tool in deciding between two plausible philologically-based interpretations.

So, we have evidence of both Rashi and Ramban indicating a natural inclination to interpret the Torah to conform to known "facts" of the physical universe. Rashi uses Greek science, which insists on eternity of matter, as his baseline and is therefore reluctant to commit the Torah to a true "something from nothing" beginning of the material world. Ramban accepts much of Greek science as representative of reality, but rejects, as does Rambam, its concept of eternal matter. He presents, instead, a forceful declaration of the creation of matter from nothing.

PRESENT DAY SCIENCE: THE BIG BANG

ORIGIN OF THE THEORY

For years, ranging forward in time past the 1920s, the "size" of the universe had been controversial among astronomers. In fact, there was a classic controversy involving the astronomers Heber D. Curtis⁸ and Harlow Shapley,⁹ in the early 1920s, as to whether or not the Milky Way, of which the solar system is a part, was the entire universe. However, at that time, there was no dispute regarding the accepted notion that whatever the size of the universe, that is the way it has always been. In other words, whatever the present day macroscopic state of the universe, that is, its mass, volume, and large-scale configuration, that is the way it has always been, for an eternity extending backwards in time. There was no beginning, it was always there.

Not until Hubble's¹⁰ analysis of astronomical data in the late 1920s was it realized that the universe is expanding. If it is expanding now, it may always have been expanding. Hubble's analysis, therefore, led to the modern "big bang" theory, developed by Gamow,¹¹ which followed through on the assumption that it has always been expanding. This resulted in extrapolating the expansion backwards in time, from today's volume to smaller and smaller volume, until the initial near-zero volume is reached.^{12, 13, 14}

ESSENCE OF THE THEORY

The essence of what is now called the big-bang theory may then be resolved into three components:

1. the universe had a beginning in time
2. it proceeded to expand in volume continuously
3. the expansion began at a very high temperature.¹⁵

BEFORE THE BIG BANG - RELATIVISTIC APPROACH

Historically, the big bang theory, which can be viewed as an outcome of general relativity, does not concern itself with the state of the universe before its beginning at zero time, which is regarded as a "singularity," therefore the furthest back one can extrapolate with scientific theory. On that basis, there may have been nothing or something before time as we know it came into existence. That is, the big bang may have occurred on previously existing material (something from something), or the material may have come into existence at the instant of the big bang (something from nothing).

QUANTUM GRAVITY AND STRING THEORY

In fact, however, a sub-discipline now exists which deals with pre-big-bang phenomena. One approach is to consider empty space as really consisting of a foam-like quantum-mechanical entity,¹⁶ in which particles appear and disappear according to the Heisenberg uncertainty principle. We then have here an actual fudging of the meaning of empty space or "nothing."

Another approach to pre-big-bang, used especially in "string cosmology," is to consider pre-big-bang "empty space" as containing a scalar field, the self interaction of which is ultimately convertible to energy, of which present-day observable matter can be a form. The scalar field can be viewed as composed of "particles" called dilatons.¹⁷ Thus, in all non-singular approaches, the empty space is not really empty, and the creation of "something" cannot be cleanly regarded as having come either from "something" or from "nothing." The classical terminology is simply inadequate.

HOW SIGNIFICANT IS "SOMETHING FROM NOTHING"?

The concept of a beginning and of something-from-nothing seemingly go hand-in-hand. If something has come from nothing once, with all subsequent development utilizing the once-created matter, then something-from-nothing necessarily includes a beginning. However, does a "beginning" have to be something from nothing? It would seem not. Certainly, in our use of the word in everyday living it has no such connotation. If a carpenter collects wood which he then starts to nail together or otherwise form, that activity is regarded as the beginning of the crafting of the final product. If two chess

players are interested in a game, the first move is the beginning. Reading the first word of the first page can be regarded as beginning of the reading of a book. Thus, the big bang which starts the expansion and crafting of space-time as we know it is certainly a beginning regardless of the nature of the starting material, if there is any starting material.

Something-from-nothing has in the past been convenient as a way to contradict paganism, since paganism dealt with gods of limited powers operating within a pre-existing universe. However, paganism is no longer the issue. The issue now is the beginning of a programmed development of the universe versus no program. The latter is considered a series of random events, preferably with no beginning, while the former, which asserts a programmed development with a beginning, implies a programmer, usually called God. The account in the first chapter of Genesis describes a programmed development with a beginning, but the beginning is not necessarily a state of zero matter.

Of course, an old-fashioned, possibly simplistic, view of the nature of God-instigated Creation finds it easiest to view the transcendence of God by picturing Him as having existed before there was a world, which in turn is easiest to picture as a situation without matter or energy; that is, without anything physical. However, in stating the problem in that manner, for the sake of an idealization that we find easy to handle, we have insisted on a mental pictorialization which may not fit into the framework of modern-day science, and we have created an article of faith which is unnecessary and perhaps lacking in meaning.

SUMMARY

Yehuda Halevi and Rambam discuss the primary Creation problem from the philosophical point of view. They agree that although the view of matter as eternal is permissible, the concept of creation of something-from-nothing is traditional, is not contradicted by logic, and should be accepted as the Jewish belief.

Rashi approaches the problem with a literal and grammatical approach to the text in Genesis. He insists that the opening sentences of Genesis, which start with the word *Bereshheet*, do not propose an order of Creation, nor do they deal with the actual beginning of Creation. It is clear that he does not

regard the concept of something-from-nothing Creation as having been stated in the Bible. We show evidence that his approach incorporates an acceptance of reality as understood from Greek "philosophy-science."

Ramban supports the opposite view, namely, that *Beresheet* refers to a Creation at the beginning of time. He also works from the text within the context of accepted Greek-philosophy-oriented reality, but rejects the Greek idea of eternal matter in favor of what he sees as the traditional and biblical Jewish concept of something-from-nothing Creation.

Since the modern big-bang can accommodate the something-from-nothing concept, but not the old cosmological steady-state approaches, it would seem that the Rambam-Halevi-Ramban view has been vindicated.

However, the big-bang can also accommodate a something-from-something or something-from-hardly-anything beginning to the universe. In fact, big-bang and pre-big-bang scientific speculation often implies an uncertainty in definitions of "something" versus "nothing" which may make the controversy obsolete. So, Rashi's caution was well advised.

None of the exegetes or philosophers operates in a vacuum. The perceived state of reality is a factor in all their interpretations of the biblical text.

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NOTES

1. This seems to contradict his own assertion that *hyle* was the one and only substance to have been created "something from nothing." However, his interpretation of the word *shamayim*, translated as "heaven," is not necessarily physical. He regards the word *shamayim*, when used the first time, as the world of the spirit which was created simultaneously with the physical world.
2. Yehuda ha-Levi. *Kuzari*, trans. by N. D. Korobkin as *The Kuzari: In Defense of the Despised Faith* (Northvale, N.J.: Jason Aronson, 1998).
3. Maimonides. *Guide* 2.30, Rev. Ed. (May 2000), Friedlander tr. (1904).
4. David Novak, "The Mind of Maimonides," *First Things* 90 (Feb. 1999) pp. 27-33.
5. Kenneth Seeskin, "*Maimonides on the Origin of the World*" (Cambridge: Cambridge University Press, 2005).
6. E. Zeller, *Outlines of the History of Greek Philosophy*, 13th ed., trans. L.R. Palmer, revised by W. Nestle (London: Routledge and Kegan Paul, 1931).
7. Although this may come about as an interpretation of *shamayim*, the idea still has to be from Greek science.

8. H.D. Curtis, "The Scale of the Universe," *Bulletin of the National Research Council* 2 (1921) p. 171.
9. H. Shapley, "The Scale of the Universe," *Bulletin of the National Research Council* 2 (1921) p. 194.
10. Edwin Hubble, "A relation between distance and velocity among extragalactic nebulae," *Proceedings of the National Academy of Science* 15 (1929) pp. 168-173.
11. R. A. Alpher, H. A. Bethe, G. Gamow, "The Origin of Chemical Elements," *Physical Review* 73 (1948) p. 803.
12. The theory's origin is attributed partially to Alexander Friedmann and Georges Lemaitre, independently solving Einstein's equations of general relativity.
13. A. Friedmann, "Über die Krümmung des Raumes," *Zeitschrift für Physik* 1922, 10:377-386 (English translation in: *General Relativity and Gravitation* 1999, 31:1991-2000).
14. G. Lemaitre, "Un univers homogène de masse constante et de rayon croissant rendant compte de la vitesse radiale des nébuleuses extragalactiques," *Annals of the Scientific Society of Brussels*, 1927, 47A:41 (Translation: "A homogeneous universe of constant mass and growing radius accounting for the radial velocity of extragalactic nebulae", *Monthly Notices of the Royal Astronomical Society*, 1931, 91:483-490).
15. Ramban in his commentary on Genesis describes the origin of the world in a manner more or less consistent with the first two of the above precepts. He writes of a beginning in terms of fundamental universal matter, appearing, in effect, from an initial vacuum, at first consisting of a point of almost no volume or substance, then increasing in size to ultimately form the world. This could be described as a sort of cold big bang, with the addition of the something-from-nothing concept. The something-from-nothing concept can be accommodated by the big bang theory, but is not necessary to it.
16. M. Gasperini and G. Veneziano, "Birth of the Universe as Quantum Scattering in String Cosmology," *General Relativity and Gravitation* 28 (1996), 1309. Reviews 'Wheeler-De Witt scattering and reflection of the wave-function representing initial string vacuum in superspace,' and, 'tunneling from nothing in superspace', the latter is conventional quantum cosmology.
17. Gabriele Veneziano "A Simple/Short Introduction to Pre-Big-Bang Physics/Cosmology" *CERN-TH/98-43* (1998).