

Copernicus and the Jews (continued)

1. John Maynard Keynes, *Newton: The Man* (1942)

In the eighteenth century and since, Newton came to be thought of as the first and greatest of the modern age of scientists, a rationalist, one who taught us to think on the lines of cold and untingered reason. I do not see him in this light. I do not think that any one who has pored over the contents of that box which he packed up when he finally left Cambridge in 1696 and which, though partly dispersed, have come down to us, can see him like that. Newton was not the first of the age of reason. He was the last of the magicians, the last of the Babylonians and Sumerians, the last great mind which looked out on the visible and intellectual world with the same eyes as those who began to build our intellectual inheritance rather less than 10,000 years ago.

2. Rabbi Judah Loeb [Maharal] (16th century Prague), *Netivot Olam, Netiv haTorah* 14

Just as an individual came along, who was called the master of a new science, and he presented a model contradicting all that the early ones gave as a model describing the path of the stars and constellations and celestial causes. He gave a model from a new wisdom – and he himself wrote that he still could not resolve all of the issues. And when Israel calculates cycles and constellations and gives good logic and knowledge, it is because that which [secular scholars] debate, regarding the time in which the Sun circles its sphere and the Moon its sphere, they don't agree with each other, for how could they agree? Each one is clever via his own knowledge and intellect...

3. Rabbi David Gans (16th-17th century Prague), *Nechmad v'Naim*, Introduction, pg. 9

Nicolaus Copernicus of Prussia was a great sage, extraordinary in knowledge of astronomy beyond any of his contemporary sages. The sages of our own age, too, unanimously testify to his sharp intellect and deep comprehension of this field of knowledge. They say of him that since the days of Ptolemy the likes of him has not been seen. And with his extraordinarily sharp intellect, his heart moved him to show that the earth revolves in a perpetual, circular orbit. This is not new; the ancient [Greeks], too, had such an idea two thousand years ago...

And you, the reader, based on all that was said above, you will think that the essence of astronomy came to us from the nations, but you should know that it is not so, for the essential knowledge of this field came first from our nation...

4. Andre Neher, *Copernicus in the Hebraic Literature*, *Journal of the History of Ideas* 38:2 (1977) pg. 215

[F]or the Jews, the problem was not that of a contradiction between science and Bible, but between science and the traditional Jewish reading of the Bible which the Talmud gave. The verses of the Bible which the authority of the Christian Churches cited in opposition to the Copernicans: the miracle of Joshua's stopping the Sun, or Psalm 19:6, or many other passages. How easy it was to bring such verses into harmony with Copernicus after the impressive flowering of Jewish exegesis in the Middle Ages had proposed interpretations of many such passages, e.g., "the sparks leaping from the rock on being struck by a hammer" (Rachi). The sun had not been stopped at Gibeon (Joshua 10:12,13); it had been "silenced" into a momentary stillness of the heavenly spheres, admirably confirmed by the musical theory ("harmony of the spheres") constructed by Kepler on Copernicus' theory.

5. Tuvia Kohn (a.k.a. Tuviah haRofei, 17th-18th century Poland), *Maaseh Tuviah II*

Every godly philosopher should oppose the view of Copernicus and his allies. All of the proofs brought by him and his allies are against the sacred scriptures and the words of the prophets of truth, who are honest in their words... Know how to respond to him, for he is *bechor Satan* (see Yevamot 16a and Rashi there!).

6. Rabbi David Nieto (17th-18th century England), *Kuzari Sheni, Vikuach IV*

The holders of this [Copernican] belief have struggled to answer this challenge [from Joshua halting the sun], but they have strained for naught, for their answer is inadequate...

7. Rabbi Yehonatan Eibeschutz (17th-18th century Prague, Germany), Ya'arot Dvash I 4

Because of this, many of the astronomers, Copernicus and his entourage, have been foolish, saying that the earth revolves. They have inherited falsehood, and the truth testifies to itself that the earth stands eternally.

5777 or 13 Billion?

8. Talmud, Sanhedrin 97a

Rav Ketina said: The world will exist for 6,000 years, and be desolate for 1,000, as Isaiah 2:11 says, "And Gd will stand alone on that day." Abbaye said it would be desolate for 2,000, as in Hosea 6:2, "He will revive us after two days; on the third day He will raise us up, and we will live before Him." We have learned in support of Rav Ketina: Just as the Sabbatical year releases one year every seven, so the world will release 1,000 years every 7,000 years...

9. NASA, How old is the Universe? https://map.gsfc.nasa.gov/universe/uni_age.html

Until recently, astronomers estimated that the Big Bang occurred between 12 and 14 billion years ago. To put this in perspective, the Solar System is thought to be 4.5 billion years old and humans have existed as a genus for only a few million years. Astronomers estimate the age of the universe in two ways: 1) by looking for the oldest stars; and 2) by measuring the rate of expansion of the universe and extrapolating back to the Big Bang; just as crime detectives can trace the origin of a bullet from the holes in a wall...

If we compare the two age determinations, there is a potential crisis. If the universe is flat, and dominated by ordinary or dark matter, the age of the universe as inferred from the Hubble constant would be about 9 billion years. The age of the universe would be shorter than the age of oldest stars. This contradiction implies that either 1) our measurement of the Hubble constant is incorrect, 2) the Big Bang theory is incorrect or 3) that we need a form of matter like a cosmological constant that implies an older age for a given observed expansion rate.

Some astronomers believe that this crisis will pass as soon as measurements improve. If the astronomers who have measured the smaller values of the Hubble constant are correct, and if the smaller estimates of globular cluster ages are also correct, then all is well for the Big Bang theory, even without a cosmological constant.

Responses

10. Maimonides (12th century Egypt), Guide of the Perplexed 2:25

Know that our flight away from the idea of a "first" [non-created] universe is not because of the Torah's verses which speak of a created world. The texts which teach creation of the world are no greater than the texts which teach that Gd is physical, and the gates of interpretation are not sealed before us, and they are not withheld from us regarding creation of the universe. We could explain them, as we did in distancing the idea of physicality, and it may even be much easier, and further, we could explain those texts to support [the idea] that the universe was first, as we have explained texts to distance the physicality of Gd. In truth, what caused us not to do this, and not to believe it, are two factors...

11. Rabbi Abraham Isaac Kook (20th century Israel), Igrot haRa'ayah I 91

The Torah certainly sealed the act of Creation, and it spoke in hints and parables, for everyone knows that the act of Creation is among the secrets of Torah, and if the account were to be understood simply then what secret would there be here?!