The Book of Abraham and Pythagorean Astronomy

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They called the earth a star
as being itself too
an instrument of time.[1]

The subject of Pythagoreanism is so controversial and loaded with uncertainties[2] that what follows should be considered as speculation and suggestion for future research. Also, recalling the excellent advice of Galileo in his "Letter to the Grand Duchess Christina"[3] regarding committing the Scriptures on matters of science, let me say that any interpretation of the Scriptures attempted here is likewise to be regarded as speculation and suggestion. However, there are some interesting comparisons which appear to be worth noting, and which, although some of them have been noticed before, have not been commented upon in print as far as I know.

By the Pythagorean astronomy[4] I refer to the system ascribed to Philolaus, apparently dated at about the end of the fifth century B.C. In this system the earth is a sphere revolving not around the sun, but around a central fire, which is variously termed the "Watch Tower of Zeus," the "Throne of Zeus," the "House of Zeus," wherein is located the "governing principle" and the "creative force" which gives life and warmth to the earth. The earth revolves around the central fire once a day, and also rotates on its axis once a day, thus keeping the same face directed toward the fire all the time. "Below" the earth is another planet, the counter-earth, also revolving around the central fire. Above the earth, also revolving around the central fire, are the moon, the sun, and the five planets, in that order outward from the orbit of the earth. Outside of them is the sphere of the fixed stars, and outside of that another fire surrounding the whole system. (We shall assume that, as is ascribed to the later Greek astronomy, the planets are ordered so that the slower moving ones are farther out than the faster moving ones.[5]) The sun does not shine from its own light, but transmits to the earth what it receives from the central fire, or perhaps from the outer fire. One source claims that some Pythagoreans also believed that the moon was inhabited by a superior race of plants and animals.[6]

Pythagoras himself, born early in the sixth century B.C., supposedly traveled to Babylonia and Egypt. Establishing himself in Southern Italy, he established his own order, the Pythagorean Brotherhood, with its own initiations and mysteries. There is a tradition of secrecy of doctrine among the Pythagoreans that even influenced Copernicus about two millenia later.[7]

Abraham presumably antedates Pythagoras by 1,500 years or so. According to the Book of Abraham,[8] Abraham knew Mesopotamia and Egypt and was interested, or at least informed, in astronomy; in fact, Facsimile No. 3 has "Abraham in Egypt" "reasoning upon the principles of Astronomy, in the king's court." (We

are reminded of Santillana's characterization of astronomy as the "Royal Art," or the "Royal Science," in ancient times.[9]) The astronomy of the Book of Abraham is much concerned with time reckoning, "times and seasons," a matter of concern to ancient astronomy.[10]

To compare the Book of Abraham with the system of Philolaus, we note from the Book of Abraham Chapter 3 (and Facsimile No. 2) the following: The earth moves (e.g., verse 5). There is a great star, Kolob, "nearest unto the throne of God,"[11] which is set "to govern all those which belong to the same order as that upon which thou standest" (verses 2, 3, 9). Moreover, at least according to the Egyptians, the sun borrows its light from Kolob,[12] through the medium of a "governing power" which governs, among others, "the Moon, the Earth and the Sun in their annual revolutions." (See the explanation to Facsimile No. 2, Fig. 5.) Similarities to the system of Philolaus are evident. Verse 5 indicates that the moon, "the lesser light" (see Moses 2:16), moves "in order more slow" than the earth. We are informed that "this is in order because it standeth above the earth upon which thou standest, . . ." We are reminded that in Greek astronomy the slower planets are above the faster ones.

Of course, I am not suggesting that the system of Philolaus is the Lord's astronomy, or that Philolaus is right. There are differences between Philolaus and Abraham. For example, the Book of Abraham does not follow its comments on the moon and the earth with similar comments about the sun; i.e., that the sun should move slower than the moon because it is above the moon. We are only told that *if* "the moon be above the earth, then it *may be* that a planet or star *may* exist above it" (verse 17, my italics.) We are assured, however, that there are other planets whose reckoning of time is greater than that of the moon (verses 7, 8.) In Greek astronomy the sun was above the moon, and it moved more slowly. In modern astronomy, the sun moves with the solar system around the center of the galaxy, and presumably with the galaxy through "space"; and it also rotates on its axis. The period of rotation at the surface is different for different solar latitudes; it is less than that of the moon at the solar equator, but becomes greater than that of the moon in regions sufficiently close to the solar poles. We note that the Book of Abraham makes no specific comment on the motion of the sun, except the comment about its annual revolution,[13] which may be merely an opinion of the Egyptians (see the explanation of Facsimile No. 2, Fig. 5).

To some extent the controversy about the Pythagoreans does not affect our discussion here—the similarities exist regardless of who was responsible for the various parts of the system of Philolaus and when they first appeared. They suggest to me the following queries:

1. How much information regarding these matters was unavailable to Joseph Smith, or available only with difficulty? Since our sources are ancient authors, (e.g., Aristotle), they were presumably not absolutely unavailable, but it would not appear to be exactly trivial to use them correctly.

2. Can evidence be found of a public or secret astronomical tradition[14] from Abraham's day, passing perhaps through Egypt or Babylon, which could have reached the Pythagoreans, perhaps in corrupted form? (Of course further corruption or misunderstanding could easily have occurred from the Pythagoreans to us.)

3. What astronomical knowledge and belief might Abraham have had already

when further knowledge was given to him by revelation? This information might increase our understanding of the framework and terminology in which the new information was given.

Notes

[1]Simplicius, as quoted by Thomas Heath, in *Aristarchus of Samos, the Ancient Copernicus* (Oxford, The Clarendon Press, 1913), p. 97.

[2]See, for example, the introductory (and other) sections of J. A. Philip, *Pythagoras and Early Pythagoreanism* (Toronto, Canada: University of Toronto Press, 1966), and Walter Burkert, *Lore and Science in Ancient Pythagoreanism*, translated by Edwin L. Minar, Jr. (Cambridge, Mass., Harvard University Press, 1972). See also Giorgio de Santillana, *Reflections on Men and Ideas* (Cambridge, Mass:, MIT Press), pp. 190-201, chapter entitled "Philolaus in Limbo, or: What Happened to the Pythagoreans?" For comic relief see also T. D. C. Kuch, "Metrodorus of Chios," *The Worm Runner's Digest*, 8, No. 2 (Nov. 1966), p. 89.

[3]Stillman Drake, *Discoveries and Opinions of Galileo* (Garden City, New York: Doubleday Anchor Books, 1957), pp. 175-216.

[4]See Thomas Heath, *op. cit.*, Chapter XII, especially pages 94-100; Morris R. Cohen and I. E. Drabkin, *A Source Book in Greek Science* (Cambridge, Mass.: Harvard University Press, 1966), especially pp. 93-97; J. A. Philip, *op. cit.*, Chapter 7; D. R. Dicks, *Early Greek Astronomy to Aristotle* (Ithaca, New York: Cornell University Press, 1970), Chapter IV; Walter Burkert, *op. cit.*, Section IV. We have centered our attention on Pythagoras, rather than on Aristarchus (also of Samos) for obvious reasons.

[5]D. R. Dicks, *op. cit.*, p. 66. Note that we are ignoring problems raised by claims that the Pythagoreans believed that the outer planets moved faster than the inner ones. (See Morris R. Cohen and I. E. Drabkin, *op. cit.*, p. 96.)

[6]D. R. Dicks, *op. cit.*, p. 74. See also Walter Burkert, *op. cit.*, p. 346, noting Heraclides' claim that the Pythagoreans believed that "the stars are a kind of earth," as Burkert puts it. Note also Moses 1:33-35.

[7]Arthur Koestler, *The Sleepwalkers* (New York: Grosset & Dunlap, 1959 and 1963), pages 148-149 for Copernicus and pages 26-50 for Pythagoras. For Pythagoras see also J. A. Philip, *op. cit.*, chapters 3 and 11; Walter Burkert, *op. cit.*, Section II, Chapter 2.

[8]In *The Pearl of Great Price* (Salt Lake City: The Church of Jesus Christ of Latter-day Saints, 1952). For an interesting comparison of *The Pearl of Great Price* with modern astronomy, see R. Grant Athay, "Astrophysics and the Gospel," *The New Era*, 2 (September, 1972), 14-19.

[9]Giorgio de Santillana, *The Origins of Scientific Thought* (New York: Mentor Books, 1961), p. 11; Giorgio de Santillana and Hertha von Dechend, *Hamlet's Mill* (Boston: Gambit, Inc., 1969), p. 3.

[10]See, for example, Giorgio de Santillana, *op. cit.*, Prologue; Morris R. Cohen and I. E. Drabkin, *op. cit.*, pp. 90-142; Giorgio de Santillana and Hertha von Dechend, *op. cit.*, in general.

[11]One should note the "Throne of God" figures in Fawn M. Brodie's attempt to relate the Book of Abraham to the writings of Thomas Dick. For a discussion of this controversy and references, see Edward T. Jones, "The Theology of Thomas Dick and its Possible Relationship to that of Joseph Smith," MA thesis, College of Religious Instruction, Brigham Young University, 1969.

[12]The current theory is that the source of solar energy is nuclear fusion within the sun. It appears to me that the existence of this scriptural passage taken by itself does not require rejection of the current theory. However, we should note that there are relevant matters concerning the sun which are not understood, as evidenced by the current neutrino problem. See, for example, Virginia Trimble and Frederick Reines, "The Solar Neutrino Problem—A Progress (?) Report," *Reviews of Modern Physics*, 45 (January, 1973), 1-5.

[13]One is tempted to identify this annual revolution with the annual (or nearly annual) revolution of the sun around the central fire in the system of Philolaus—or perhaps even with the much longer revolution of the sun around the center of the galaxy in the modern system. It appears possible that the Book of Abraham uses the term *revolution* in two senses—the *revolution* of one object around another, and the *rotation* of an object about its own axis. Glancing at verse 5, one is tempted also to compare the moon's days, months, and years with

its periods of revolution around its own axis, the earth, and the central fire (all three of which would presumably be of about the same length) in the system of Philolaus. This is very speculative, however, and others may wish to consider revolutions around various objects in more modern systems.

[13]One must note (with caution) the Hermetic tradition of the Renaissance and earlier which purported to reach back to Hermes Trismegistus in Egypt at about the time of Moses. See Lawrence S. Lerner and Edward A. Gosselin, "Giordano Bruno," *Scientific American*, 228, No. 4 (April, 1973), especially p. 91; and also Frances A. Yates, *Giordano Bruno and the Hermetic Tradition* (Chicago: The University of Chicago Press, 1964), especially Chapters I and XXI. Note also Isaac Newton, *Mathematical Principles of Natural Philosophy and His System of the World*, Translated by Andrew Motte, translation revised by Florian Cajori, (Berkeley and Los Angeles: University of California Press, 1934, 1962, 1966), Vol. II, *The System of the World*, pp. 549-550.

Geological Specimen Rejuvenates an Old Controversy

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Under the title "Puzzling Fossils Unearthed," the *Deseret News* of 13 June, 1968 reported the discovery of "a fossilized footprint" which was said to pose a "dilemma for geologists." The discovery was made in the Antelope Springs area of the House Range, Millard County, Utah. A photograph accompanying the article shows two pieces of fine-grained stone, obviously halves of a larger block, split apart along a natural plane of weakness. On one half is a shallow foot-shaped or shoe bottom-shaped depression about 10 inches long, 3⅝ inches wide at the widest and 3 inches wide near the "heel." The other block shows a raised area that fits into the corresponding depression. The entire edge of the front part of the impression is rounded and not squared off so that the specimen is referred to by the finders as a "sandal print" rather than a "shoe print." The imprint of the "heel" is separated from the "sole" by a ledge which is said to indicate that a separate piece of material had been shaped and affixed as a low heel. Finally, embedded in the "heel" area is the remains of a small fossil trilobite, an extinct arthropod of the Cambrian Period.

The discovery was reported in many newspapers throughout the country and I and my colleagues in the Department of Geological and Geophysical Sciences at the University of Utah received letters from as far away as Hawaii and Florida either asking for more information or condemning us as athiests for not accepting the find as proof of the Genesis account of creation. The most thorough discussion appeared in the *Creation Society Research Quarterly* for December 1968 which contains illustrations and three articles on the specimens. Incidentally, the Creation Research Society is an organization of research scientists committed to full belief in the Biblical record of creation and early history. In the first article, Dr.