

Heavens Turning in the Sky

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Hamlet's Mill, An Essay on Myth and the Frame of Time, By Giorgio de Santillana and Hertha von Dechend. Boston, Mass.: Gambit, Inc., 1969. xvi + 505 pp.

Recent research indicates that certain ancient peoples had a much greater interest and proficiency in observational astronomy than they have generally been given credit for in the past. The evidence to support such a position has become impressive in some cases. The idea itself, that the ancients knew some astronomy, is not new. Isaac Newton had the unconventional opinion that others besides Aristarchus believed the earth went around the sun. Josephus mentions Abram teaching arithmetic and astronomy to the Egyptians. Both the Book of Mormon and the Book of Abraham refer to astronomical matters (Helaman 12:15 and Abraham 3) in ways which sometimes seem curiously modern, and sometimes simply curious. I recall when, as a young city-bred student, I first looked seriously at the astronomical parts of the Book of Abraham. I was surprised and considerably disappointed to find that physical questions were slighted; the text was given over to a discussion of cycles and revolutions that seemed to me at that time to be of no particular interest. Such a concern with cycles of time seemed strange to me then, and probably has seemed strange to others as well. It should not seem so strange, however, to the readers of *Hamlet's Mill*.

In *Hamlet's Mill*—the title refers to the heavens turning in the sky—Giorgio de Santillana and Hertha von Dechend

credit the ancients with an extensive knowledge of observational astronomy; they argue that the ancients were aware of (and impressed by) the precession of the equinoxes "some thousand years" (or more) before the accepted date of its discovery by Hipparchus in 127 B.C. Their case rests on their interpretation of a large body of mythical, epic and sacred writings, which they see as the remains of an arcane astronomical technical language of ancient high culture and civilization. They trace similar stories and recurrent themes, many of them influential in later literature, in the ancient writings and traditions of Greece, Rome, Northern Europe, Iran, India, China, Polynesia, America, Egypt, the fertile crescent and Palestine.

Senior author de Santillana, professor of the history and philosophy of science at the Massachusetts Institute of Technology, has written extensively on the history of science. The prologue to one of his earlier books, *The Origins of Scientific Thought*, notes that analogous "rites, tales, and traditions" found around the world point "to a time of great migrations and also to a center of diffusion somewhere in the Middle East," and that "someone before history" must have marked out and named the constellations "with such an authority that they were repeated without question, substantially the same from Mexico to Africa and Polynesia," an event which he dates between 4000 and 6000 B.C. (Some of the quotations below are from this prologue.) Co-author von Dechend, assistant professor for the history of nat-

ural science at the J.W. Goethe University, Frankfurt, describes how her work in ethnology led her to astronomical considerations against her initial inclination.

According to de Santillana and von Dechend, the ancients were much concerned with the cycles of time defined by the revolutions of the various heavenly bodies and the recurrence times of certain celestial phenomena, which define days, months, and various kinds of years, great years, etc. In particular, the precession of the equinoxes (in a 25,920 year cycle) seemed to them a changing of the frame of the cosmos; the great turning mill of the sky was unhinged or wrecked, and another had to be made for a new world age. The ecliptic circle helped to form a so-called "earth" in the sky. This flat "earth" in the sky had four corners—the two points of the equinoxes and the two points of the solstices. Part of this "earth" was in the northern sky (north of the celestial equator) and was termed "dry land", while the rest of it lay in the "waters below," in the southern sky. The points of the equinoxes mark the boundaries of the "dry land." As the vernal equinox moves with the precession into a new constellation of the zodiac, this constellation rises from the "waters below"; there is a new heaven and a new "earth" rising from the waters; and one world age is succeeded by another.

The situation described above did not necessarily always hold. At one time it was "always midday," and then by some sort of cosmic original sin the ecliptic was separated from the equator, and the cycles of change began. Hamlet (Saturn) was the ruler of the Golden Age "when the Mill ground out peace and plenty." True to the cyclic nature of time he will return—the "Once and Future King." The Milky Way was the way between heaven and the (real) earth; it was also, apparently, the path for spirits of the dead returning to the sky (not to some place under the real ground), or the place for spirits to wait after death to be reincarnated. At "time zero," about 5000 B.C., in the Golden Age of Gemini (the twins), all three circles (equator, ecliptic, and Milky Way) intersected at the vernal equinox, and communication between heaven and earth was easy. The inexorable precession brought on the Age of Taurus (the bull) and new arrangements had to be made.

Such were the parts of what our authors call "The Lost Treasure." The stories and legends encoding the astronomical knowledge persisted long after their meaning was forgotten. Though the knowledge was lost, the authors suggest that flashes of it break forth "preserved almost intact" in Plato and the Pythagoreans, thus contributing to the Greek "Renaissance."

The Pythagoreans were important in the history of science, mathematics and philosophy; secular history accords them the first known doctrines of the motion of earth. De Santillana and von Dechend, however, do not ascribe heliocentric doctrines to the ancients they are talking about. The myths sometimes include catastrophes, as one age ends and another begins; for the authors these catastrophes are in the sky; they represent the regular cycles of heaven, not cataclysms on earth. The authors do not look for historical data in the myths; there may have been many floods in the fertile crescent, but for them the flood of Deucalion and the Bible was in the sky. Samson (Orion, alias Nimrod) is in the sky, as is the jawbone (Lehi?) of an ass (the Hyades, in Taurus) with which he slew the thousand Philistines. They mention, however, that these legendary heroes "often lend their names to historical persons in passing and then vanish." Their deeds can also become attached to historical figures, as has apparently occurred with Alexander the Great, who can hardly be spared from history for the sake of astronomical myth.

The authors know that they have espoused an unconventional thesis; they do not appear to let it worry them. Nor do they waste much sympathy on modern astrology; on scholars who drag in psychoanalytical explanations and fertility rites, while missing things that "would make clear sense to scientists"; or, in language reminiscent of Hugh Nibley, on scholars who try to force history into an evolutionary frame—the time span of biological evolution does not justify us in regarding our ancestors of a few thousand years ago as significantly less intelligent than ourselves, even if they lived in the stone age.

Noted astronomer Cecilia Payne-Gaposchkin in her review of *Hamlet's Mill* for *The Journal for the History of Astronomy* discusses errors in the book and points out problems in style and orga-

nization that hinder understanding. She concludes that although the authors "know their stuff" they have not proved that the ancients knew about the precession, although she does not deny the influence of the heavenly bodies on ancient myth. I think that the reader will agree with her that the case is not proved, although it appears to me that the fact that proof is even mentioned in connection with this kind of material shows that the authors have accomplished something—they themselves term their work "a first reconnaissance." The organization of the material does not help the reader to make an overall evaluation of the evidence; still there are some things which are suggestive. If the identity of the mill with the heavens is admitted, then the fact that the mill is unhinged and another has to be constructed is very suggestive. So also is the statement quoted from the Book of Enoch to the effect that stars were punished for not rising "at their appointed time". Suggestive also is the boast of Kai Khusrau that his dominion extends over the whole world "from Pisces downward to the Bull's head", a region of the zodiac comprising the constellation of Aries.

Recent studies in the relationship of astronomy to ancient buildings and other structures seem to strengthen the case of de Santillana and von Dechend. This field has been reviewed in *Current Anthropology* by Elizabeth Chester Baity, who discusses, among other things, the work of G. S. Hawkins on Stonehenge, and the work of A. Thom and his associates on Stonehenge and other British stone circles. Thom concluded that these structures were excellently engineered and were used as accurate lunar observatories. R. J. C. Atkinson (writing in the *Journal for the History of Astronomy*) has pointed out that the astronomical studies involved would require more than the expected working lifetime of one worker, and that therefore records of some kind seem a necessity. He states that there is no evidence of "even the simplest tally of numbers," and the difficulty of oral transmission seems forbidding to him. He says that he has "no acceptable solution to offer." De Santillana and von Dechend consider that the myths were used to transmit astronomical information orally, but I do not know that they would consider oral transmission adequate for the kind of studies that

Atkinson is talking about.

The equinoxes shift about one degree every 72 years. This would add up to an appreciable amount during the perhaps 900 years or more that Stonehenge was in use. Of course this does not prove that the ancients noticed the precession, but it indicates that they could have. Also, we have already indicated that the vernal equinox was once in the Milky Way. If this situation was really of significance to the ancients for a long enough time, one would expect that even in this case they could eventually notice that it had changed, and without needing records of great extent.

Alexandre Koyre has emphasized the destruction of the Medieval-Aristotelian idea of the cosmos during the scientific revolution and its replacement by the idea of an infinite universe. Modern astronomy put the earth in the sky, among the wandering stars. Theological and philosophical notions based on the old system were challenged. If the earth were in the heavens, where were the heavens of God and angels?

The Book of Abraham, presented by Joseph Smith in 1842, placed the throne of God near certain stars in a universe in which the earth moved. Yet the text was presented, not as an entirely new revelation, but as the inspired restoration of an ancient text—a lost treasure, not post-Copernican but pre-Aristotelian. Although one would not expect the astronomy which the Lord would reveal to Abraham to be the same as that of his contemporaries, it seems to have been intended that it be taught to the Egyptians. Thus it may legitimately be compared to what we know of the ancient astronomy. We find no obvious mention of the precession. We do find, however, an interest in the time periods defined by the revolutions of the heavenly bodies—a concern with number, cycles, and time which reminds us of the matters treated in *Hamlet's Mill*. Besides the obvious concern with time cycles, however, there are numerous details in *Hamlet's Mill* which should be of interest to students of the scriptures.