

Decoding the Astronomical Design of Dendera Zodiac

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An ancient Egyptian inscription in Dendera temple shows that the oldest cult building on this site was constructed during the lifetime of Khufu in the Old Kingdom (Kieth Grenville; Cauville, 1990), i.e., the current temple was build on the ruins of an older temple from the days of the old kingdom. Dendera zodiac was placed in the ceiling of one of the upper eastern rooms of the current temple. According to Cauville (1997, 11-13), the zodiac was dated to 50BC, by astronomical scientists, because two eclipses are represented in it, and that were occurred in that date. Their conclusion was based on imagining wrongly that the sun is represented, by a circle below Pisces, in a zodiac that displays only the night sky.

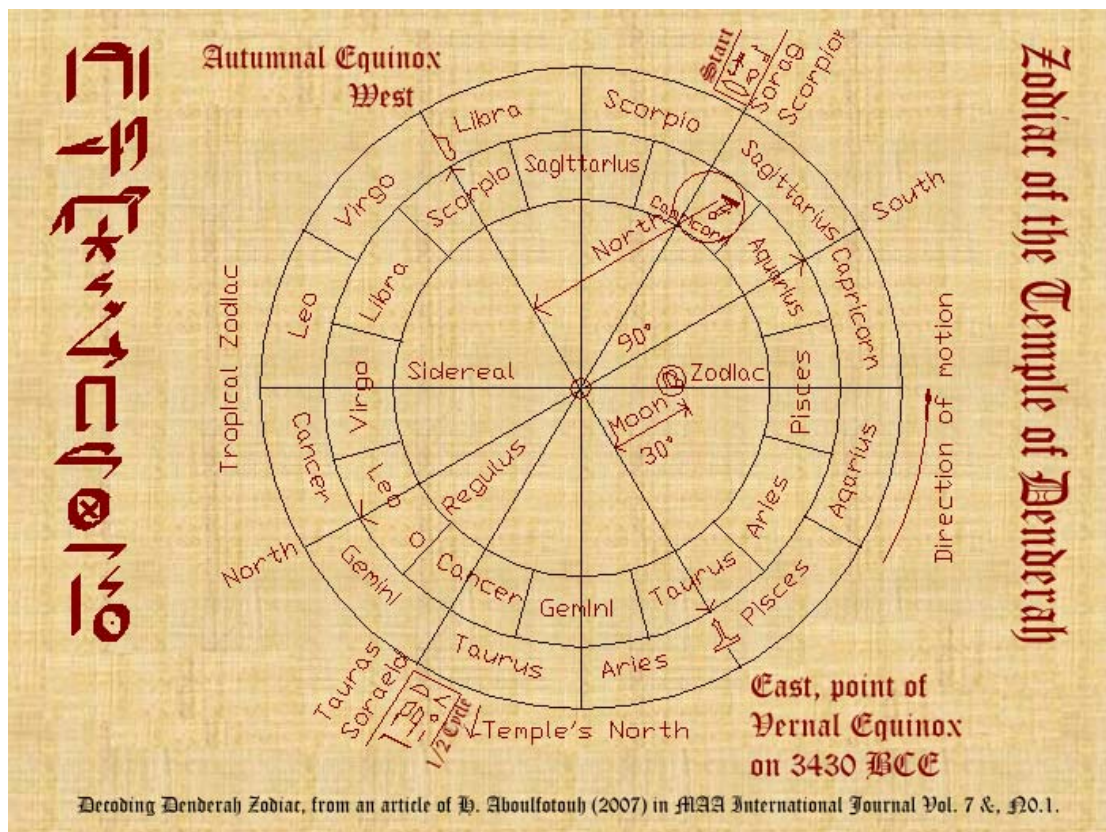






Figure-1: The diagrammatic representation of Dendera Zodiac, based on plate 21 in *Description de l'Egypte* (1809-1828) and real photos; it shows the sidereal zodiac in the middle surrounded by the tropical zodiac. And the point of vernal equinox was in the middle of Taurus, in 3430 BC approximately, the inclination of the spines of men in the circular key of the zodiac is the direction of the meridian of the place of the observer, where their heads point towards north. The full moon is located close to the eastern side of the tropical meridian at 30°, south of the east-west coordinate. And the north of the temple's site does not match the north of the tropical zodiac; it follows the north of the sidereal zodiac.

As shown in fig-1, if one carefully studied the astronomical design of Dendera zodiac, one may observe that the precession cycle of the earth is recorded in precise way, i.e., both the tropical and sidereal zodiacs are represented. It shows that the point of the vernal equinox was in the middle of Taurus constellation, represented by the *Qor* , i.e., a vertical pole in the middle of a horizon, represented in a side view, and means "the premises of". It records the date of 3430 BC, approximately. The beginning of Libra in the tropical zodiac (outman equinox) is shown by the *Gadad or Geila* , i.e., an instrument like funnel to weight the seeds, which is still used till these days in rural areas in Egypt, represented in a side view but upside down, and meant weight or judgment. Egyptologists thought it is a feather, and indicates what is right and truth and pronounced it as *Shu* or *Maat* (Budge 1910, 68), which also equates with the scales.

The key of the orientation of Dendera zodiac is represented by a circle, close to Scorpion in the tropical zodiac, that within which eight men seating on their knees and put their hands behind their backs , imaging that they are carrying the zodiac on their backs. It is not the sign that indicates a captive, since their legs are not tied with their hands. Also, fourteen of these men, putting their hands in front of them, were put around the moon in another astronomical representation in the ceiling of the first floor of Denderah temple, indicating the full moon of the night of the fourteenth day of the lunar month (plate 19 in *Description de l'Egypte* 1809-1828). The inclinations of the spines of the eight men indicate the north-south direction, where their heads point to north; then, when one observes the zodiac from below and looks towards north, the point of vernal equinox is upon his right side, i.e., the east.

Further, the inner circle of the zodiac is the spread out of the sky dome, i.e., its radius is 90° , instead of 57.29° , and its center is the projection of the zenith of the place of the observer. The full moon  is shown in the zodiac, in the southern part of the sky, close to the designed tropical meridian upon the eastern side, at a north-south distance equals 30° , from the east-west coordinate of the tropical zodiac. The zodiac shows the full noon during the vernal equinox when it passed the equatorial plane of the earth, as was seen from the latitude of 30° north, in their days, while the latitude of the temple is 26.16° north.

Besides, the zodiac was wrongly placed in Dendera temple; the north-south coordinate of the temple's site is inclined by 41.5° to the east of the designed north-south axis of the zodiac, which follows the north of its sidereal zodiac, and not the north of its tropical zodiac. We can also observe this mistake, if we notice the direction of the eye of the full moon. If we stand under the center of the zodiac and look towards its designed south direction and then look up, we can see the right east-west position of the horizontal axis of the moon's eye as shown in the above text, but if we looked towards the south of the temple's site, the horizontal axis of the moon's eye will be inclined by 41.5° . This mistake, and the date of its point of vernal equinox (3430 BC), indicates that this zodiac was not carved for that temple, and it was placed in it in wrong orientation.

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