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The results of the Uppsala project on Minoan astronomy

Abstract

The project has had as its main objectives the definition of Minoan astronomy, the uses of that astronomy by the Minoans, and its possible influence on Mycenaean and Greek astronomy.

As far as we are aware, this subject has not been studied systematically before. An obvious impediment is the lack of written sources surviving from the Minoans. However, the development of archaeoastronomical methods to determine the orientations of ancient structures and the profiles of the landscape opposite them, as well as our computer programs that exactly recreate the positions of the celestial bodies as they were in the far distant past have made the study feasible. In addition, statistical analysis, iconographical studies of Minoan artifacts, and the study of Mycenaean and Greek documents for possible Minoan influence were also part of our method.

The project is a pilot study of representative examples of Minoan peak sanctuaries, palaces, manor houses and shrines. In the case of large monuments, we measured the most likely places for astronomical activity, for example generally accepted religious or ceremonial areas. Of the peak sanctuaries we chose: Chamaizi, Juktas, Modi, Petsophas, Philioremos (Gonies), Pyrgos and Traostalos; the palaces at Knossos, Malia, Phaistos and Zakros; the manor houses at Agia Triada, the Southeast House at Knossos, Tyliisos A and C and Vathypetro: the bench shrine, portico and west shrine at Gournia, the tripartite shrine at Vathypetro and the oblique shrine at Malia – 22 buildings in all. We measured the orientation of foundations, walls, and the horizon profiles opposite them with a digital theodolite. In the case of foundations, we measured each stone on both sides and computed the orientation by least squares fit.

Although we have not yet completed our analysis of three of the buildings, the manors at Agia Triada and Tyliisos A and C, the results of the remaining 19 give a clear picture of Minoan focus on motions of the celestial bodies and some of their achievements in astronomical knowledge. Seventeen buildings were oriented to major celestial events: sunrise and sunset at the equinoxes and solstices, major standstill of the moon and heliacal rising and setting of bright stars. Most of these had deliberately arranged artificial or natural foresights. Eleven buildings had one such orientation, four had two orientations, one had three, and one had four. The other two, as well as one of the seventeen, had orientations to sunrise at the times of year that would make it possible to identify the beginning of the months not signified by the other orientations.

The analysis of the orientations of these buildings has helped to define the Minoan calendar and has also indicated that three of the shrines were probably made by or for the Mycenaeans, thus sharing light on a thorny problem in Late Minoan history.

A brief presentation of the results will be presented.