

SEEKING STARLIGHT: DREAMS OF TRANSCENDENTALISM, MYSTERY AND IMAGINATION

JUAN ANTONIO BELMONTE

President, European Society for Astronomy in Culture.

Mircea Eliade argued that a single view of the starry celestial vault would be sufficient to awake a religious experience¹. This idea can be checked even today or traced to the remote past since we are now sure that the oldest religious corpus, the Pyramid Texts, actually reflects a stellar religion that would have its roots in pre-dynastic Egypt. Hence, stars have often served as a source of inspiration for metaphysics, art or even for the creation of symbols of power or identity. Besides, uncovering their mysteries allowed, through the mapping of heavens, the development of calendars and navigation. Today, as yesterday, starry nights are able to awake our imagination and help us to find our place in the cosmos.

Here, before, we had no television nor watches, hence we were guided by the heavenly bodies.

Luis Mendoza (Chipude, May 1996)

Introduction

For uncountable generations human beings have looked at the starry sky like a source of inspiration for the most diverse aspects of their cultural heritage (Figure 1). Stars inspired painters and poets, and helped people to find their place in space and time². The genius of Van Gogh³ would perhaps have not been the same without the clear skies of Provence and the shield of Achilles would have not looked so powerful without the stars dressed on it by the mastery of Vulcan, if we are to believe the verses of Homer⁴.

Even in the most isolated spot on Earth, the pre-European inhabitants of *Rapa Nui* (Easter Island) looked at the firmament in search of signals to organize their society⁵. *Matariki's* (*Small Eyes*, as they designated the asterism of the Pleiades) cosmic rising opened the bountiful season and authorized fishing in the wildlife rich shores of the island, while its heliacal setting was the signal to the warfare period and the dark epoch of the year. Special places, such a *Ko te Papa hui Hetu'u*, the "Stone to watch the



Figure 1. The first known horoscope, where the constellation of Leo is represented in conjunction with three planets (Jupiter, Mars and Mercury) and the moon in July 7th 62 B.C., as beautifully sculpted at the *hierothesion* of Antiochus I of Commagene at Nemrud Dag (Turkey). Photograph by M. Alvarez Sosa.



Figure 2. The fifteen moais of Ahu Tongariki presumably looking at the disappearance of *Matariki* (the Pleiades) behind the slopes of the Rano Raraku volcano. Gazing the stars for ritual and practical purposes was a common practice for the natives of *Rapa Nui* (Easter Island). Photograph by M. Sanz de Lara.

Stars”, were located at crucial points of the island to observe the movements of the celestial bodies and some of their monuments were orientated accordingly (Figure 2). This tradition has persisted under the pressure of a totally new cultural context but it is being lost under new technology developments and climatic changes that have emptied the once rich ocean surrounding the island.

Notwithstanding, the utility of star-watching as a simulacra of a time-keeping device to path human activities is probably as old as civilization itself. Besides, it has been part of our common heritage until now, as the sentence at the beginning of this section clearly demonstrates.



Figure 3. The “Cielo de los Magos”, ancient peasants of the Canary Islands who used until recently the Pleiades (the “Little Goats” or the “Seven Stars”), Orion (the “Plough”), and Sirius (the “Ploughman”) as harbingers of the sowing and harvest seasons, following a practice common in the Mediterranean basin for, at least, three millennia. Diagram by M. Cruz.

The peasants of the Canary Islands, known locally in Tenerife as “magos”, imagined an elaborate and clever system of observations of certain stars and asterisms to organize their agricultural practices⁶. Curiously, these individual stars or “constellations” (Figure 3) were almost exactly the same than those used for the same purposes in the ancient Mediterranean shores several millennia before, as demonstrated by the oldest Greek references^{7,8}. These practices could even find their roots in much earlier Neolithic tra-

ditions of the 4th millennium B.C., if we are to believe some slender evidences from the megalithic temples of Malta, the earliest stone sanstuaries ever erected by humankind⁹.

Stars have been used like symbols of identity, a good example of which would be the flag of Australia, with the austral constellation of the Southern Cross, or even the six-pointed Star of David, recognized as the symbol of Jewish worldwide. They have even been related to the symbolism of power¹⁰, which, like a characteristic example, can still be seen in the high-reliefs of the palace of the Persian King Darius I at Persepolis. There, the fight of the King of Kings against the chimera to control the forces of nature is beautifully represented, the chimera being a composite beast with the horns of a bull, the head and arms of a lion, the tail of a scorpion and the wings and legs of an eagle. Indeed, each of these animals stands for the equivalent constellations of Taurus, Leo, Scorpius and Aquila, as symbols of spring, summer, autumn and winter, respectively, and obviously representing the power of the king to control the seasons.

Finally, one of the most conspicuous uses of star-watching through ages has been their use in navigation, as every seafaring people were forced to produce their own more or less sophisticated map of the firmament. Actually, the map of the skies of our own civilization, full of dreams of imagination, was probably developed in the ancient eastern Mediterranean by a culture of navigators, living in a area close to the terrestrial parallel 36°, like a mixture of different traditions coming from Egypt, the Aegean and the Middle East¹¹. However, it is in the ambit of metaphysics where, in our opinion, the observation of the starry-sky has played one of the most relevant roles in human culture.

Discussion and conclusions

...“a great number of gods have also derived from scientific theories about the world of nature”...

Cicero, De Natura Deorum II, 63

When the Roman lawyer and senator wrote these lines in the middle of the 1st century B.C., nearly a hundred years had elapsed since the discovery of the phenomenon of the precession of the equinoxes by the Greek astronomer Hipparchos of Nicaea and a new religion was being gestated in the southern coasts of Anatolia. This metaphysical creation was centred in the figures of the god Mithras, the *sol invictus* or “invincible sun”, who would become a formidable opponent for the expansion of Christianity in the Roman Empire. Interestingly, according to the revolutionary theory of the scholar David Ulansey¹², this new religion was derived, in agreement to Cicero, from a scientific discovery, since Mithras would

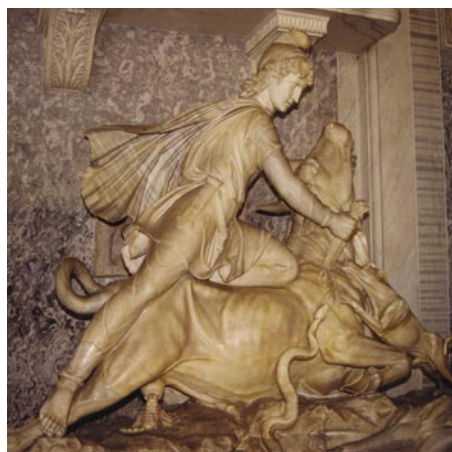


Figure 4. Mithras, the God of Precession, killing the bull of the ancient era (Taurus) assisted, among others, by Canis Major (the dog), Hydra (the snake) and Scorpius (the scorpion) to perpetuate the movement of the celestial sphere (Vatican Museum, Rome).



Figure 5. The “house of the ka” or *serdab* associated to the step pyramid of Djoser at Saqqara (Egypt). Inside, a “living” statue on the king was able to see through a couple of small narrow tubes (right wall of the room) two stars of the celestial adzes, Dubhe (α UMa) and Kochab (β UMi), turning the Pole endlessly.

not be other than the almighty god of precession, being able to move the sphere of the fixed stars, through the sacrifice of the spring bull (Taurus) in order to bring the new zodiacal era. The god would have been assisted in this formidable task by several starry beings located near the ecliptic and the celestial equator, as represented, among others, by a dog (Canis Major), a snake (Hydra) or a scorpion (Scorpius, Figure 4), while the constellation of Perseus would have been his own celestial hypostasis. Hence, the idea of

starlight as a source of inspiration for metaphysics is clearly emphasized.

However, I am going to further illustrate this idea with a most striking, fascinating and perhaps the earliest starry dream of transcendentalism in human history. This ought to be found at the banks of the Nile, in Egypt. It is there, where, at the northeast corner of the famous Step Pyramid of Djoser (*ca.* 2650 B.C.) at Saqqara, and nearby his “mortuary” (north) temple, there is one of the most curious chapels one can find in the context of ancient Egyptian civilization. It consists of a trapezoidal chamber of some 2 m² with a statue of the king in its interior. It is known as the *serdab*, or secret room (Figure 5).

This is the only royal monument of this kind preserved in Egypt and it was probably an innovation, like many other elements of Egyptian architecture, of the reign of Djoser. In front of the chapel, there is a small open court with a quite clear horizon to the north. However, the most peculiar element of the building is the presence of two orifices of a few centimetres in diameter and nearly a palm long in the northern wall of the sanctuary. These are located just in front of the statue of the king and could have been used as sighting devices for the *ka* of the king, resident in the statue. A most prosaic explanation suggests that these tubes might have permitted the spirit of the king to follow the rituals performed in front of him, and this is most probably true.

However, there is an additional suggestive possibility. These orifices could have acted as connecting channels between the king and the “Imperishable Stars”. The Imperishable Stars, or *Ikhemu-seku*, were a group of stars in the northern ancient Egyptian sky, and one of the afterlife destinies of the dead king during the Old Kingdom, according to several utterances of the Pyramid Texts (hereafter PTs, ¹³), the oldest preserved religious literature of humankind which frequently included starry references. The Imperishable Stars are normally linked to the circumpolar stars, although, recently, the opinion that they should be identified with those stars that are visible every night is becoming accepted¹⁴. Apparently, there was an asterism that was the “imperishable” par excellence: *Meskhetyu*, *ikhemu sek* (PT302, 458). *Meskhetyu* is often represented in Egyptian

iconography as a Bull's Thigh or Foreleg, which is often used, together with a star, as the determinative of its name:



Indeed we are talking about the asterism of the Plough or the Big Dipper, in our constellation of the Great Bear (Figure 6). Among the Imperishable Stars, there might be other “constellations”, which are seldom mentioned. Especially interesting are the Two Adzes or *Necherty*, which are mentioned twice in the Pyramid Texts. These adzes might have been identical to those used by the priests in the Opening of the Mouth ceremonies (see Figure 7). However, the oldest references, specially the PTs, might actually refer to two blades that would have been attached to the head of the adzes. These blades were called sometimes *sebawy* (the “two stars”) in contemporary sources¹⁵, a fact seemingly connecting with the hypothesis we are defending here, since it is frequently accepted that the Two Azdes could refer to the distinct asterisms, of similar form, of the Big and Little Dippers.

There are no doubts that *Meskhetyu* ought to be identified with one of the celestial adzes since both at the Pyramid Texts and at the Coffin Texts (a similar collection of sacred literature mostly produced during the Middle Kingdom) the name of the “constellation” is at least once written with the determinative of the instrument used in the Opening of the Mouth ceremony¹⁶:



If still there were any doubt, a sentence in the Spell 399 of the Coffin Texts reads as: *Meskhetyu who opens the mouth of Mr. so and so*. Hence, as in our present culture, where the same asterism is known as the Big Dipper (USA), the Plough (UK), the Chariot (continental Europe) or with the official name of Great Bear (Ursa Major), ancient Egyptians would have recognized both a Bull's Foreleg and one of the celestial Adzes in this conspicuous group of stars, simultaneously. Consequently, the identification of the Small Dipper with the second celestial adze is made on the basing of the ample similarity of both asterisms and the circumpolar character of the two. However, it is important to notice that this has never been adequately proven.

Coming back to the *serdab*, our work on site¹⁷ would suggest that the tubes were actually facing the near lower culmina-



Figure 6. The circumpolar constellation of *Meskhetyu* (the Plough, Big Dipper or Chariot), the most important of the “imperishable stars”, a celestial destiny of the king in the afterlife according to the Pyramid Texts, identified by ancient Egyptians as the foreleg of a bull and as one of the adzes used in the “open of the mouth” ceremony. Adapted from a photograph of A. López.



Figure 7. The “Opening of the Mouth” ceremony as represented at the tomb of Reni in the early New Kingdom necropolis of El Qab (Egypt). The eldest son of the defunct is touching the mouth of the mummy with an adze with the form of *Meskhetyu*. Below, a butcher is severing the foreleg of a living bull (a symbol of *Meskhetyu* once more), a most important offering of the funereal banquet.

tion of Dubhe (α UMa), for an interval 2370 ± 255 B.C., and Kochab (β UMi), for 2705 ± 220 B.C., respectively. The common interval of time [2625-2485 B.C.] agrees on a date for the reign of Djoser in rough agreement with a mid or lower chronology¹⁸. Dubhe and Kochab are located at that precise section of the Two Celestial Adzes (the Big and the Little Dippers), ritually used to touch and open the mouth of the deceased, as beautifully represented in the tomb of Reni in El Qab (ca. 1500 B.C., Fig. 7), and where the star blades would have been attached. This painting is much more recent than the *serdab*, but there are no serious reasons to believe that the ritual was differently executed during the Old Kingdom. Indeed, we could actually define the tubes in the *serdab* as devices to travel to the stars or stellar-channels. As a matter of fact, this example clearly illustrates the early connection between star-watching and metaphysics which is the node of my argumentation.

Indeed, forty-five centuries later, the science of astrophysics is still playing exactly the same role. When we point our huge telescopes to distant quasars, when our instruments detect huge emissions of γ rays (GRBs) in the most far away corners of

the universe or when our satellites scrutinize the sun and the solar system, we are simply trying to find answers to the eternal questions: where do we come from? or where do we go?; in a most serious challenge of Einstein’s “God does not play dice with the Universe”¹⁹. In the last decade, our vision of the cosmos has even suffered a new profound transformation with the discovery of the first extrasolar planets²⁰ and the answer to the old question “are we alone?” have probably come nearer than ever in the history of humankind. The discovery



Figure 8. One of our current dreams is to find an exoplanet, or a related moon, with a huge ocean of liquid water where life could survive. This would probably be the major change in our metaphysical view of nature for generations. Image by J. Whatmough.



Figure 9. Nearly 60% of humans live in cities where the stars are hardly visible, or even completely invisible, as in the commercial quarter of Pudong, in Shanghai (China). People worldview is certainly changing accordingly for the first time in human history. Photograph by M. Sanz de Lara.

of life outside our tiny, overpopulated planet would probably produce the most important change of paradigm in our metaphysical view of nature in human history (Figure 8). I suspect that religious experience on Earth would never be the same.

Actually, I am convinced that the absence of the starry sky in our lives due to the lights of our huge cities (Figure 9) is certainly, and already, changing our worldview and that other kind of cosmivision is slowly penetrating our neuronal system. Does the reader know what is the phase of the moon today? probably not, unless he/she is an observational astronomer or a fisherman. As Luis Mendoza argued at the beginning of this essay, now we have television, atomic clocks, mobile-phones, video-consoles, *ipods*, etcetera and we are not guided by the stars anymore. The old “religion” is dead! However, there is still a chance for hope.

When I was a young student of Physics in Barcelona, with still not very clear ideas about my future, a TV series, followed by a book²¹, changed completely my view of the Cosmos (*sic*), opening my mind and widening my horizons to a level I would have never dreamed. A quarter of a century later, being an experienced astronomer and an observer of human behaviours across cultures, I am still amazed of how the observation of the starry skies is able to produce “religious experiences” in

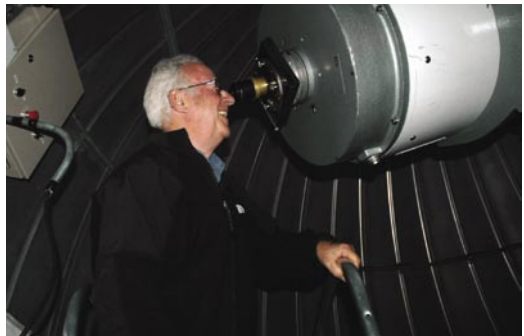


Figure 10. However, today like yesterday, old and young, every single person gazes the stars with a mixture of admiration, surprise and joy in an attempt to find his/her own place in the cosmos. Photographs by M. Sanz de Lara (Mons Telescope, OT).

persons of all ages and conditions of our technified society (Figure 10), allowing them to still envisage dreams of mystery and imagination, helping them to find their tiny, but extremely important, place in the universe.

Acknowledgements

I wish to express my acknowledgement to the organizers of the Starlight Conference for providing such an excellent venue for such an imaginative topic, and especially to Cipriano Marín and Giuseppe Orlando for counting on me to discuss the cultural aspects of the starry skies. The ideas stressed in this paper have come from the work developed, and partially financed, within the framework of the projects P310793 “Arqueoastronomía” of the Instituto de Astrofísica de Canarias, and AYA2004-01010 “Orientatio ad Sidera” of the Spanish Ministry of Education and Science.

Notes and References

1. ELIADE, M., 1992, *Lo sagrado y lo profano*, Labor, Barcelona.
2. KRUPP, E.C. 1991. *Beyond the Blue Horizon*. Oxford University Press.
3. CABANNE, P., 1969, *Van Gogh*, Círculo de Lectores, Barcelona.
4. HOMER, *Iliad* (XVIII, 481).
5. EDWARDS, E. and BELMONTE, J.A. 2004, “Megalithic astronomy of Easter Island: a reassessment”, *Journal for the History of Astronomy* 35, 421-33.
6. BELMONTE, J. A. and SANZ DE LARA, M., 2001, *El Cielo de los Magos*, La Marea, La Laguna.
7. HESIOD, “Proemio del Labrador”, *Los trabajos y los días*.
8. PÉREZ SEDEÑO, E., 1986, *El rumor de las estrellas*, Siglo XXI, Madrid.
9. HOSKIN, M., 2001, *Temples, tombs and their orientations. A new perspective on Mediterranean Prehistory*, Ocarina Books, Bognor Regis.
10. KRUPP E.C., 1996, *Skywatchers, chamans and kings*, Wiley Popular Science, New York.
11. BELMONTE, J. A., 1999, *Las Leyes del Cielo*, Temas de Hoy, Madrid.
12. ULANSEY, D., 1989, *The origins of the Mithraic Mysteries*, Oxford University Press.
13. FAULKNER, R. O., 1969, *The Ancient Egyptian Pyramid Texts*, Oxford University Press.
14. KRAUSS, R., 1997, *Astronomische Konzepte und Jenseitsvorstellungen in den Pyramidentexten*, Ägyptologische Abhandlung 59, Wiesbaden.
15. ROTH, A. M., 1993, “Fingers, stars and the opening of the mouth: the nature and function of the *necherwy*-blades”, *Journal of Egyptian Archaeology* 79, 57-79.
16. WALLIN, P., 2002, *Celestial cycles. Astronomical concepts of regeneration in the ancient Egyptian coffin texts*, Uppsala University.
17. SHALTOUT, M, BELMONTE, J. A. and FEKRI, M., 2007, “On the orientation of ancient Egyptian temples: (3) key points in Lower Egypt and Siwa Oasis” Part II, *Journal for the History of Astronomy* 38, Vol. 4, in press.
18. HORNUNG, E., KRAUSS, R. AND WARBURTON D. A. (eds.), 2006, *Ancient Egyptian chronology*, Handbuch der Orientalistik vol. 83, Berlin.
19. HAWKING, S., 1996, *Historia del tiempo ilustrada*, Crítica, Barcelona.
20. DEEG, H. J., BELMONTE, J. A., APARICIO, A. and SÁNCHEZ F. (eds.), 2007, *Extrasolar Planets*, Cambridge University Press.
21. SAGAN, K., 1982, *Cosmos*, Planeta, Barcelona.