

# UNCOVERING SESHAT: NEW INSIGHTS INTO THE STRETCHING OF THE CORD CEREMONY

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## Abstract

The antiquity of the Egyptian ritual of the “stretching of the cord” can be traced back to the 1st Dynasty, although the possibility that it was even older can not be absolutely discarded. Right up until the latest representations of the ceremony, which date to the Roman period, one goddess always appeared in it: Seshat. The iconography of the ritual retained throughout several features that are present in the earliest scene known, dating to king Khasekhemuy. We know that the “stretching of the cord” was used for the orientation of Egyptian constructions and that the scenes represented in several temples were accompanied by texts with astronomical references. During the Ptolemaic period, these texts referred to the constellation *Meskhetyu*. However, it is the question of the iconography of the goddess, and especially of her hieroglyphic sign, that has moved us to propose a new hypothesis for the technique developed and used during the foundation ceremony. Despite many theories, there is no definitive explanation of the sign held by Seshat over her head. The hypothesis we consider here takes into account the apparent similarities that exist between the depiction of Roman *gromae* and the hieroglyph of the goddess. The fact that they are both associated with building orientation leads us to suggest that the sign was not only used as an identification of the goddess, i.e. her emblem, but also represented an actual topographic instrument, similar to a *groma*, that would have served to orientate the buildings according to certain rules that are referred in the hieroglyphic texts.

Key words: Egyptian astronomy, Seshat hieroglyphic sign, Roman *groma*, Egyptian aspective, stars of *Meskhetyu*.

## Introduction

We do not have any information from the oldest periods of Egyptian history about how sacred structures (i.e. temples, pyramids, tombs, etc.) were orientated. However, we do have some important texts from the Greco-Roman period that mention how the foundations of a temple were established. In particular, the temple axis was laid out by stretching a rope between two stakes or poles in a ceremony known as the “stretching of the cord”. As shown in Fig. 1, this is frequently depicted on temple walls as early as the 2nd Dynasty (Miranda, Belmonte and Molinero 2007), where the pharaoh and the goddess Seshat, with her hieroglyphic sign over her head, are represented holding up the two poles. But let the king speak to us (Zaba 1953):

*I have grasped the stake along with the handle of the mallet. I take the measuring cord in the company of Seshat. I observe the progressive movement of the stars. My eye is now fixed upon Meskhet(yu). The god of time-keeping stands by me, in front of his merkhet. Then, I have established the four corners of the temple.*



This text is written on the walls of Horus’ temple in Edfu, whose foundations were laid in 237 BCE. The astronomical target observed in order to lay down the temple axis is the constellation of the Bull’s Foreleg, *Meskhetyu*, in the present day the Plough. Some additional information can be obtained from another text

(Zaba 1953) associated with the stretching of the cord, in this case at the temple of Dendera, a further 150 km to the north of Edfu:

The king stretches the rope in joy. With his glance toward the Akh of Meskhet(yu), he establishes the temple of the Lady of Dendera, as took place there before.

Here the text mentions the *Akh* of the Plough. This term, plural *akhu*, is mentioned in the Pyramid Texts and has been translated as “spirit”, “brilliant” or “blessed”. Hence, we might translate it as “the brilliant (star) of the Plough”. However, bearing in mind that the seven stars of the Plough are almost of the same brightness, we could consider, as Krupp (1983) has already suggested, that *Akh* “most likely refers to a particular position and orientation of the Plough in its circular course around the Pole”. This idea will be relevant for our proposal.

The earliest representation of a stretching of the cord ceremony is found in the Palermo Stone: it refers to the reign of an unknown king of the 1st Dynasty (ca. 3000 BCE), presumably Den (Wilkinson 2000). Here, the sign of Seshat is written in a way more similar to the Old and early New Kingdom depictions (see for example, Fig. 2) than to those of the Greco-Roman period,

i.e.  (ancient form) instead of  (modern form).

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Fig. 1. Image of the ritual of the stretching of the cord: Queen Hatshepsut (18th Dynasty, ca. 1465 BCE.) in front of Seshat, performing the ceremony for the Red Chapel of the temple of Karnak. The four corners of the building were presumably established during the ritual. Unfortunately, however, no celestial target is mentioned in the short inscriptions associated with the ceremony in this particular case. Photograph by J. A. Belmonte.

Consequently, the stretching of the cord ceremony can be traced back to the earliest stages of Egyptian history (if not earlier – Belmonte, Shaltout and Fekri 2008) and we can guess that it was very probably used to establish the axis of sacred buildings prior to starting the actual construction of the monument. Unfortunately, neither the Palermo Stone nor the earlier representations (see, e.g., Fig. 1) mention the name of the star or asterism observed at the ceremony so we have to make an informed guess from the information provided by archaeology, the Pyramid Texts and the later tradition, which, as we have seen, mentions only the constellation of *Meskhetyu*.

## Discussion

In the early winter of 2005, our colleague Ali Guerbabi, former director of the site Museum of Timgad (Algeria), called our attention to the similarities between the two-dimensional representations of the Roman *groma* on stone stelae and the sign of Seshat, especially in its ancient form (see Fig. 3). The *groma* was the instrument used by Roman topographers (properly termed *gromatici*) to organize space through the orientation

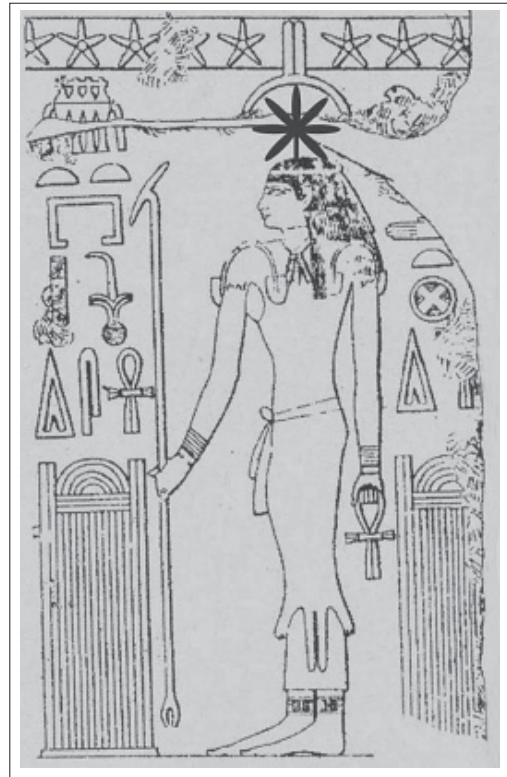


Fig. 2. Image of the goddess Seshat with her sign upon her head. This is formed by seven radial elements that form a rosette (reconstructed here, since the rosette is broken by the stone fracture). In addition, there is a semicircular arc above these radial elements surmounted by two parallel vertical “strokes”. This image shows the sign in its ancient form, which is known from the earliest dynasties. The importance of this particular representation is that we can see how the sign is introduced within a frieze of stars. The part of the sign included in the starry frieze exactly corresponds to the two vertical strokes. Abusir, 5th Dynasty (ca. 2450 BCE). Adapted from Borchard (1913).

and planning of new cities and territories. Once set up at a precise place, the instrument was able to determine the two main axes of any layout as shown in Fig. 3.

On the basis of this similarity, we propose that the sign of Seshat was actually a schematic representation of a very old transit instrument used by the ancient Egyptians, in a similar way to the *groma*, to orientate sacred buildings during one of the phases of the stretching of the cord ceremony. According to the texts mentioned in the previous paragraphs, this orientation was most probably astronomical, although we ought also to consider the possibility that topographic references were eventually used. The fundamentals of our idea are supported by Fig. 2 and Plate VII: Fig. 4 and 5.

Plate VII: Fig. 4(a) shows one of the scenes carved on the walls of the temple of King Sahure at Abu Ghurob, where the hieroglyphic sign of Seshat, borne upon a standard, is depicted as a movable object. We propose that this object is in fact the “instrument” itself. Plate VII: Fig. 5 shows the way in which aspective operated



Fig. 3. (left) Funerary stele of a *gromatic* discovered in excavations at Pompeii, showing a schematic representation of his *groma*. (right) Idealized reconstruction of the instrument from different elements unearthed during excavations at the same site. (Adapted from Adam 2002).

in Egyptian art during the Old Kingdom, demonstrating how the four radii of the *seba* parasol (a name actually meaning “star”) looked in a flat, two-dimensional representation (a), and would have looked in an actual three-dimensional representation (b) (Schäfer 2002). Applying the same principles of perspective to our “instrument”, we arrive at the three-dimensional representation shown in Plate VII: Fig. 4(b). Here, the seven radii of the Seshat rosette have been extrapolated to a horizontal wheel with eight radii, making the assumption that the eighth radius is hidden in the flat representations by the vertical pole. This wheel then becomes an essential element of our proposed mechanism, since at any moment it offers four possible directions (one for each diameter) for the orientation of the main axis of a given building.

The semicircular arc that sits upon this radial element, surmounted by a couple of parallel strokes, then becomes an independent but most important element of the instrument. According to Plate VII: Fig. 4(c), it would define a sighting device, or eyepiece, in the style of traditional hieroglyphic depictions of the *merkhet*. Actually, we wonder if the *merkhet* referred to in the

texts associated with the scenes of the stretching of the cord ceremony of the Ptolemaic period (see above) does not really refer to this element of our “instrument”. Later on, once the “observation” of the stars had been made, the instrument would have indicated the “four corners” of a temple directly, as shown in Plate VII: Fig. 4(d). In some cases, the astronomical alignment could even have indicated the diagonals of a building, thus permitting its orientation in the intercardinal directions (Shaltout, Belmonte and Fekri 2007). Some circumstantial evidence supporting the idea of a relationship between this special element of the Seshat sign and the starry sky comes from Fig. 2, where we can see that the two vertical strokes, and only this element of the sign-instrument, are introduced within a freeze of stars.

Finally, in Plate VII: Figs. 4(c) and 4(d), we have illustrated the astronomical orientation of a temple to the simultaneous vertical transit of two stars of *Meskhetyu* (Phecda and Megrez). This phenomenon corresponded exactly to a simultaneous meridian transit during the 4th Dynasty and the second author has argued that this was the stellar configuration used for the precise align-

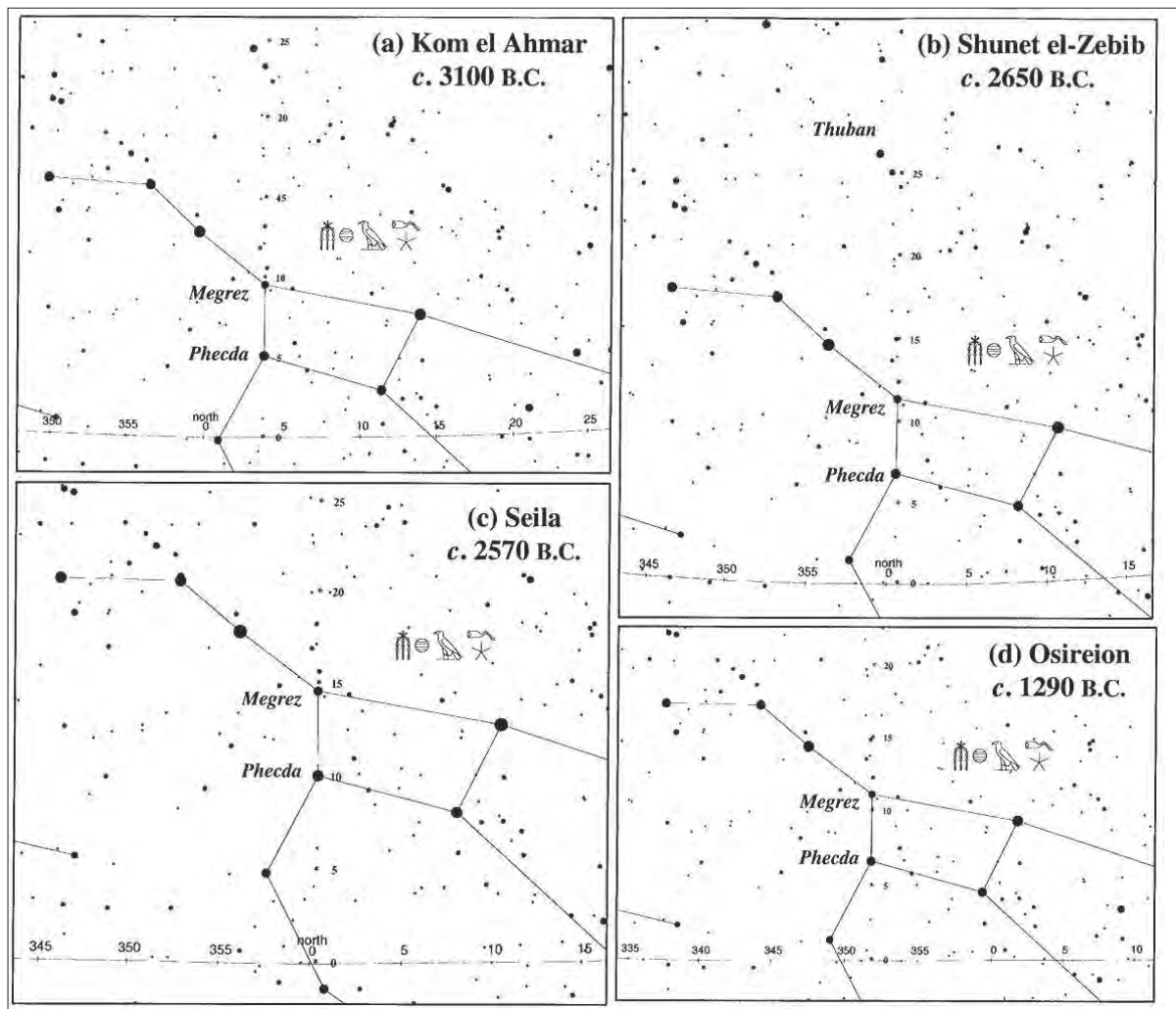


Fig. 6. These diagrams show a particular configuration of the constellation *Meskhetyu* (the Plough), identical to that used as an example in Plate VII: Fig. 4(c), in different historical periods of ancient Egyptian civilization. They show that this asterism could have been used as the target for cardinal and intercardinal orientations long before the Ptolemaic Period. The lower meridian transit of Phecda and Megrez could have been used to establish due north, with an accuracy limited only by human error, in the year 2562 BCE and might have served to orientate the Old Kingdom pyramids (Belmonte 2001). Other important structures such as HK29A in Hierakonpolis (Kom el Ahmar) and Shunet el-Zebib or the Osireion in Abydos could have been oriented in the same manner with lower precision (Belmonte, Shaltout and Fekri 2008). The stars of this constellation were prominent members of the select group of Egyptian “imperishable” stars, probably due to their circumpolar character, with the celestial pole located near Thuban ( $\alpha$  Draconis) during the Pyramid Age (see panel b).

ments of the pyramids in that epoch (Belmonte 2001). However, as shown in Fig. 6, this particular configuration of *Meskhetyu* would have offered a marvellous method for the astronomical orientation of sacred buildings in ancient Egypt from the late Pre-Dynastic period onwards, even through to the New Kingdom, either on a north-south axis (cases b and c) or in the intercardinal directions (cases a and d, see Belmonte, Shaltout and Fekri 2008; see also Belmonte et al. 2008).

We want to make it clear that this particular configuration of *Meskhetyu*, used here as a suggestive example, was not the only astronomical target that the Egyptians could have used to orientate their monuments during the stretching of the cord ceremonies (we must even

consider the possible use of topographic features such as the Nile or a prominent mountain – Shaltout and Belmonte 2005). In Dendera, for example (see above), it is most likely that the rising of the complete constellation (the *Akh* of *Meskhetyu*) was the observation used to align the temple of Hathor. Other temples were most probably orientated to the sun and to the brightest stars in the Egyptian skies (Belmonte, Shaltout and Fekri 2008). However, *Meskhetyu*, as the northern asterism *par excellence*, was presumably the most important astronomical reference for temple orientation in any of the eight cardinal and intercardinal directions of the compass. These directions would have been indicated directly by a remarkable survey device that, as we have argued in this paper, may have been developed by the

ancient Egyptians: the Seshat sign-instrument or “*se-shatium*”. We hope that future tests will help either to further support or else to refute this evocative, but nonetheless controversial, hypothesis.

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## DEIVĖ SEŠATA: NAUJOS ĮŽVALGOS APIE VIRVĖS ĮTEMPIMO CEREMONIJĄ

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### Santrauka

Senovės Egipto „virvės įtempimo ceremonijos“ ritualas siekia I-os dinastijos laikus, tačiau galimybė, kad šis ritualas gali būti ir senesnis, taip pat nėra visiškai atmetina. Iki šių dienų seniausia žinoma „virvės įtempimo ceremonija“ datuojama romėniškuoju laikotarpiu, ir deivė Sešata visada minima šio ritualo kontekste. Ikonografija išsaugojo kelias minėto ritualo detales, kurios yra užfiksuotos ankstyviausiose žinomose scenose, datuojamose faraono Chusechemvio valdymo laikais. Mes žinome, kad ši ceremonija Egipte buvo naudota statybose pastatams orientuoti pagal pasaulio šalis ir kad keliose šventyklose prie šias ceremonijas vaizduojančių scenų yra pateikti įrašai su astronomine informacija. Ptolemajų dinastijos valdymo metu šiuose tekstuose minimas *Meskhetyu* žvaigždynas (Ursa Major). Mus domina deivės ikonografijos klausimas ir ypač jos hieroglifas, kuris mums suteikė impulsą pateikti naują hipotezę apie specialiai šventyklos pamatų dėjimo ceremonijai skirtos technikos naudojimą.

Nepaisant daugybės teorijų, nėra galutinio paaiškinimo, ką Sešata laiko virš galvos (virš jos galvos vaizduojamas septyniakampės žvaigždės pavidalo ženklas – vert. past.). Mūsų hipotezė remiasi pastebimu panašumu tarp romėniško *gromae* (*groma* – romėniškas topografinis instrumentas) – vaizdavimo ir deivės hieroglifo. Faktas, kad abu ženklai yra susiję su pastatų orientavimu, leidžia mums kelti prielaidą, kad ženklas buvo naudojamas ne tik deivei identifikuoti, t. y. buvo jos emblema, bet vaizdavo ir topografinį instrumentą, panašų į *gromą* ir tarnavusį pastatams orientuoti, vadovaujantis tam tikromis taisyklėmis, kurios yra perteikiamos hieroglifais rašytuose tekstuose.

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