

CHAPTER 7

UNVEILLING SESHAT: NEW INSIGHTS INTO THE STRETCHING OF THE CORD CEREMONY

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Summary. The antiquity of the Egyptian ritual of the “stretching of the cord” can be traced back to the 1st Dynasty. This ceremony involves a goddess who has always been depicted taking part in it until the final representations of the Roman period: Seshat. From the first scene known, which dates to the reign of King Khasekhemuy, the iconography of the ritual has always involved a number of similar features. We know that the “stretching of the cord” was used for the orientation of Egyptian sacred constructions and the scenes represented in several temples are sometimes accompanied by texts with astronomical references. During the Ptolemaic period, these texts indicated the constellation of *Meskhetyu*. However, it is the iconography of the goddess, and especially of her hieroglyphic sign, which has moved us to propose a new hypothesis for the technique developed and used during the foundation ceremony. The sign held by Seshat over her head has given rise to many attempts to offer an explanation for this rare feature, but none has yielded a definitive solution. The hypothesis we propose here takes into consideration the apparently existing similarities between the depiction of Roman *gromae* and the hieroglyph of the goddess. Their common association with building orientation brings us to the possibility that the sign might have been a real object that, on the one side, could be used as an identification of the goddess, i.e. the hieroglyphic sign used to write her name; and, on the other, could be an actual topographic instrument, similar to a *groma*, that would have served to orientate the buildings according to certain directions, as referred in the foundation ceremony texts.

7.1. Introduction

In fact, we do not have any information from ancient periods of Egyptian history about which celestial targets were used to orientate sacred structures (i.e. temples, pyramids, tombs, etc.), if this were the case. However, we do have some important texts that mention how the foundations of a temple were established. The façades and interior walls of several Egyptian temples, some of them beautifully preserved, show images of the so-called “foundation ceremonies” that apparently have a remote origin in Egyptian history. They were theoretically carried out by the king and several gods in different attitudes and performing various activities. However, the best information about the complete construction ceremonies is dated to certain elaborated versions of the Ptolemaic Period. These consisted of ten different steps, as recently studied by Molinero or Rossi:

1. The king departs from his palace;
2. The king arrives at the site of the new temple;
3. The king and the goddess Seshat “stretch” a cord around two poles and define the temple axis. This operation is called *pedj-sesh(r)*, stretching of the cord;
4. The king digs the foundation trench down to the water-table;
5. The king moulds four bricks for each of the four corners of the temple;
6. The king pours sand in the foundation trench, thus providing a compact surface for the construction;

7. The king places a number of stone or metal plaques at the four corners of the temple;
8. The king moves into place the first stone blocks;
9. The king purifies the completed temple by throwing natron all around the building, represented as a small shrine;
10. The king presents the temple to the god. Once more, the temple is represented as a miniature.

This entire ceremonial was determinant for the construction of temples, but the definition of the axis of the temple is the aspect in which we are most interested, since it is related to the core discipline analyzed in this volume: archaeoastronomy. In this respect, 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”, which, as shown in Figure 7.1, is frequently depicted on temple walls as early as the 2nd Dynasty, and where the king and the goddess of writing and time-keeping, Seshat, often called *Sefekhet-Abuy* (i.e. “the one of the seven horns”) since the New Kingdom onwards, are represented holding up the two poles.

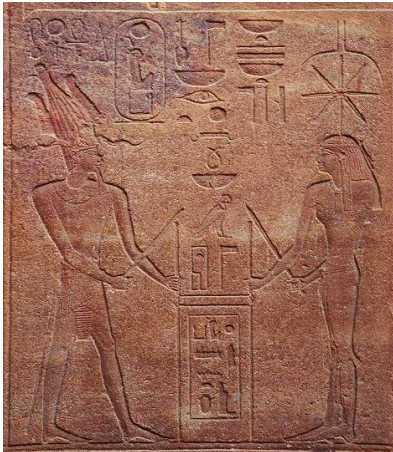


Figure 7.1. Image of the ritual of the stretching of the cord: Hatshepsut (18th Dynasty, c. 1465 B.C.), dressed as king in male attire wearing beard and the *atef* crown, in front of Seshat, performing the ceremony for the Red Chapel of the temple of Karnak. The four corners of the building were presumably established during the ritual. However, unfortunately, no celestial target is mentioned on the short inscriptions associated to the ceremony in this particular case. Photograph by J. A. Belmonte.

Figure 7.2. A close-up of the skin of a leopard showing the starry aspect of its spots. Leopard skins became necessary accessories in the attire of divinities, notably Seshat, and priests connected with certain astronomical aspects of ancient Egyptian religion. Photograph by J.A. Belmonte.



The iconography is always strikingly similar. The king (even when this position is occupied by a woman, as in Figure 7.1), often wears the *atef* crown, while the goddess appears dressed in the “starry” skin of a leopard, or perhaps a cheetah (see Figure 7.2) as discussed by Castel, and with the hieroglyph sign of her name above her head. Nevertheless, there are a few exceptions to this rule. For example, the role of the king is occupied by the divine adoratrice, the actual ruler of Upper Egypt, in certain chapels of the Late Period in the area of Thebes, as shown by the reliefs of Amenirdis I (see Figure 7.3).



Figure 7.3. The ceremony of the stretching of the cord as represented in the funerary chapel of the divine adoratrice Amenirdis I in Medinet Habu. She is represented here according to the inscriptions, performing the rite accompanied by *Sefekhet-Abuy*, another name of Seshat. Photograph by J.A. Belmonte.

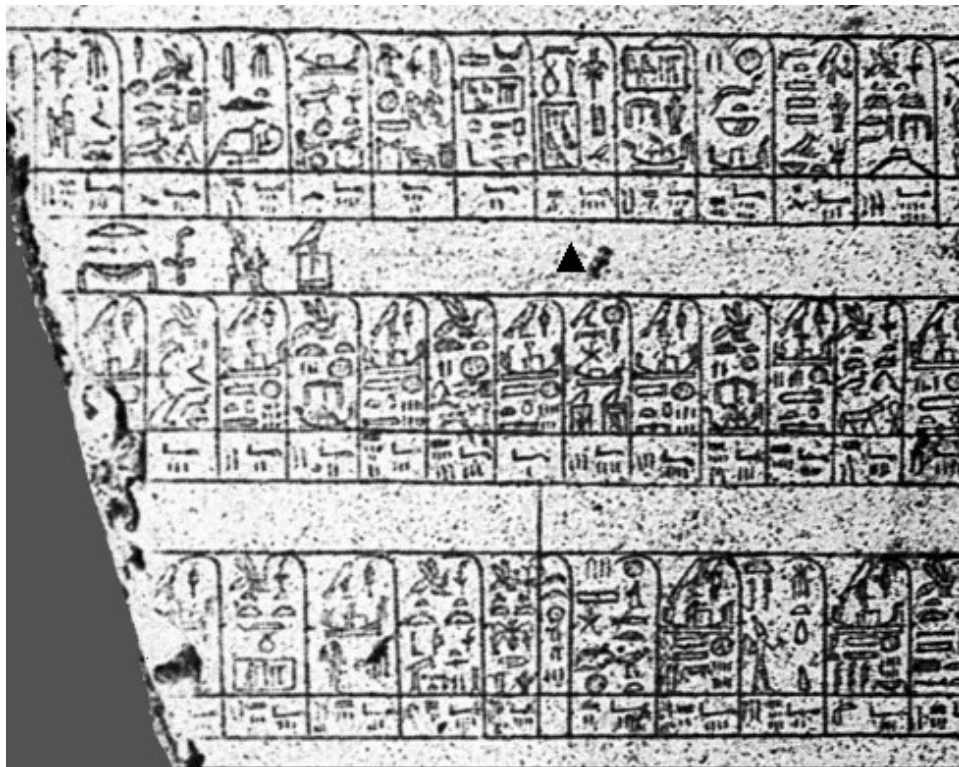


Figure 7.4. The Palermo stone offers the first mention of the *stretching of the cord* ceremony (1st row, 6th column from right to left), presumably in the reign of Den, fourth or fifth king of the First Dynasty (c. 2800 B.C.). The monument itself, with the annals of the kings of the first five dynasties, is presumably dated to some time in the 5th Dynasty. Photograph by J. A. Belmonte; courtesy of the Palermo Museum of Archaeology.

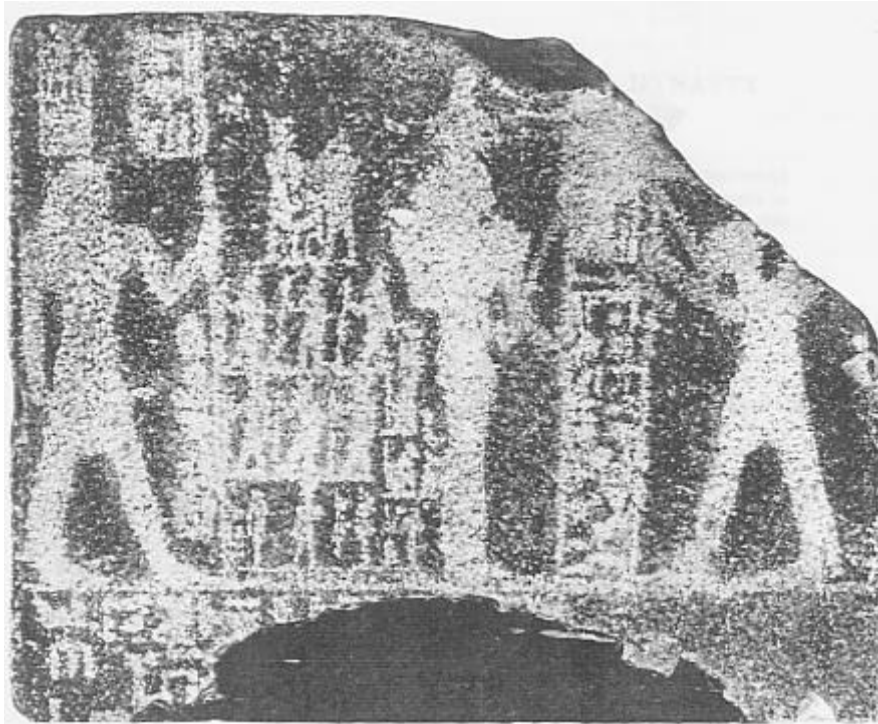


Figure 7.5. Granite doorjamb discovered at Hierakonpolis (now in the Egyptian Museum) where King Khasekhemwy presumably appears next to Seshat performing the *stretching of the cord* ceremony. This is the oldest iconographical example of the ritual. Unfortunately, the relief and the inscriptions were severely damaged in antiquity. Photograph by J.A. Belmonte; courtesy of the Egyptian Museum of Cairo.

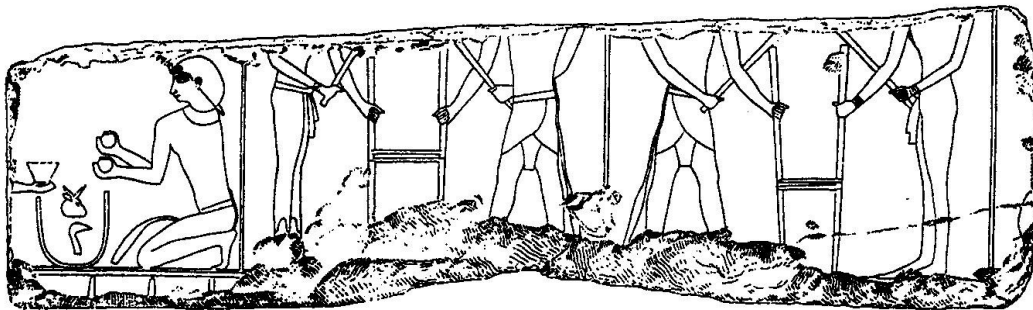


Figure 7.6. Two stretching of the cord ceremonies symmetrically represented in a relief in Niuserre's sun temple in Abu Ghurob. Due to the lack of related texts and the loss of the upper part of the figures, it is impossible to understand why the ceremony is represented twice. In the left scene, Seshat is represented dressed in her feline-skin. From Borchardt and Schäfer (1900).

7.2. Discussion

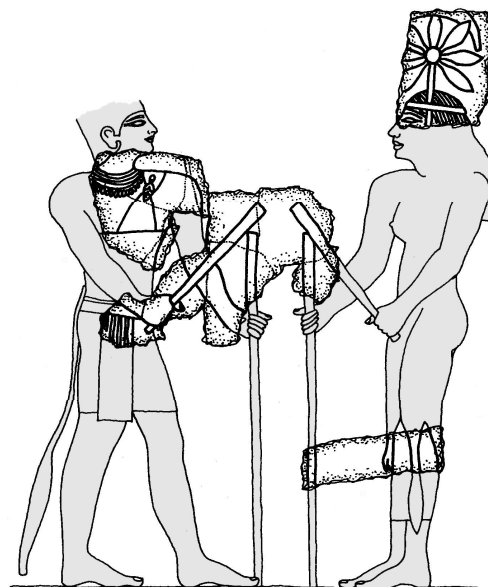
We now turn to the significant celestial references contained in the foundation ceremonies and especially in the stretching of the cord. The representation of this rite would last for at least 3000 years, from the very early proto-Dynastic quotations to the most recent representations, such as the one of the Roman Emperor Hadrian at the temple of Esna, thus covering practically the totality of ancient Egyptian history. We shall discuss two aspects of the problem: the related astronomical texts and the controversial hieroglyphic sign of the goddess Seshat.

7.2.1. *Stretching cords and aligning temples*

The *stretching of the cord* appears to have been the name of that particular rite within the foundation ceremony as early as the 1st Dynasty, as evidenced by the Palermo stone (see Figure 7.4). In the Royal Annals, as noted by Wilkinson, the ceremony is mentioned twice within a new sacred building construction context. However, the earliest example where the stretching of the cord ceremony is actually represented can be observed on a door-jamb of King Khasekhemwy, rediscovered in the Egyptian Museum of Cairo. Unfortunately, the images and the inscriptions had already been erased in antiquity and the block presumably reused in other buildings, precluding any further detailed iconographical or textual study of this extremely interesting monument (see Figure 7.5).

The other Old Kingdom representations of this ceremony are a fragmentary frieze from the Valley Temple of the Bent Pyramid temple of Sneferu at Dahshur and an incomplete relief from the sun temple of Niuserre. As shown in Figure 7.6, the latter shows the king kneeling in front of a foundation deposit and then a double representation of the stretching of the cord together with a goddess, one of whom must certainly be Seshat, because of her leopard-skin garment, although the upper part of the representation, and thus her hieroglyphic sign, is now lost. Hence, the ceremony is depicted twice in the same frieze in symmetrical images but again, due to the absence of texts or heads of the figures –and specially the crowns of the king, which might offer additional relevant information–, we have no explanation for this atypical representation of this particular ceremony, which is unique. However, Sneferu's fragments (see Figure 7.7) clearly show the preserved hieroglyph name of the goddess above her head for the first time in Egyptian history. This iconographic model would later be repeated for 3000 years.

Figure 7.7. Although quite fragmentary, this scene from the Valley temple of King Sneferu in Dahshur includes the earliest well preserved graphical image of the sign of Seshat. Adapted from Rossi (2004).



The small temple of Medinet Habu, from the reign of Thutmose III, includes the earliest complete representations of the stretching in the New Kingdom (together with the Red Chapel of Hatshepsut, see Fig. 7.1). However, the damaged associated inscriptions studied by Barguet, the longest before the Ptolemaic Period, do not contain any explicit reference of an astronomical target as in the texts of later periods.



Figure 7.8. The *stretching of the cord* in the southwest wall of the pronaos of the Ptolemaic temple of the falcon god Horus at Edfu. These scenes include long hieroglyph inscriptions with detailed information on the ceremony, including astronomical quotations. Photograph by M. Sanz de Lara.

Figure 7.9. (left) An inscription in the western outer wall of the temple of Edfu. Left and right columns read: ... *following the movements of the stars, my eye being fixed upon Meskhet(yu)*, and ... *(in front of the) merkhet. I have established the four corners (angles) of your temple, respectively. Meskhetyu*, represented as the Bull's Foreleg (with an attached bull's head), is mentioned as the reference celestial object for the orientation of the temple. The *merkhet* (an astronomical instrument) is named within the same context. Photograph by J.A. Belmonte.

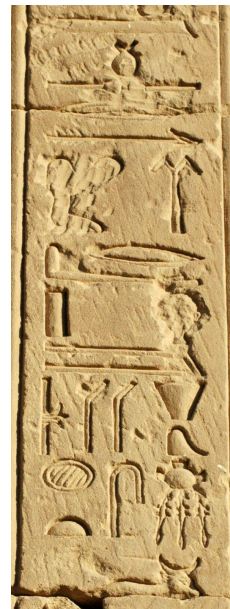


Figure 7.10. (right) A text associated with the stretching of the cord where the signs for *Meskhetyu* include a composite hieroglyph, something very typical in the Ptolemaic and Roman Periods. The text should be read "*akh of Meskhet(yu)*", the "*rising of the Plough*", accordingly. Photograph by J.A. Belmonte.

We have to wait for the hieroglyphic texts accompanying the ceremony during the Ptolemaic and Roman periods to obtain information of primary importance to help our understanding of certain aspects of ancient Egyptian astronomy. Of particular relevance are those texts which relate to the alignment of the temple where certain stars, asterisms or instruments are apparently mentioned (see Figure 7.8).

We are currently updating the translation and reanalyzing those texts which were first worked on by H. Brugsch and identified as a related corpus for the first time by the Czech scholar Z. Zaba. However, in this chapter we shall only concentrate on two of the most interesting royal monologues, as studied by Zaba, included in the hieroglyphic inscriptions of two imposing temples of the Ptolemaic and Roman periods. Let us allow the king to speak:

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 your temple.

This text is often written, in different versions (see, for example, Figure 7.9), on the walls of the Horus' temple in Edfu, whose foundations were laid in 237 B.C. The astronomical target observed in order to lay down the temple axis is the constellation of the Bull's Foreleg, *Meskhetyu*, now known as the Plough or Big Dipper. In this context, some additional information can be obtained from the other text associated with the stretching of the cord, on this occasion, at the temple of Dendara, 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 Dendara, as took place there before.

Here, interestingly, the texts include a cryptic hieroglyph sign (the use of atypical script was very frequent during the Ptolemaic period), which has often been translated as the *Akh* of *Meskhetyu* (see Figure 7.10). This term, plural *akhu*, could be translated as "spirit", "brilliant" or "blessed". Hence, we might understand the inscription as "his glance towards 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 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 to some of our proposals. However, it is worth mentioning that, according to Dorner and a few other specialists, the rite of the stretching of the cord became a mere ceremony after the Old Kingdom, or, in other words, that it was included in late temple inscriptions such as Edfu or Dendara but not necessarily performed.

We now know that the main axes of temples such as Edfu and Dendara might be orientated to certain relevant positions of the constellation of *Meskhetyu* (see Chapter 8), which, as we have mentioned, is none other than the Great Bear (more precisely, the asterism of the Big Dipper or Plough). Hence, for example, the main axis of the Horus temple at Edfu could be oriented to the lower meridian transit of Dubhe (α UMa) in a 6th lunar day and the main axis of the Hathor temple at Dendara to the rising of Alkaid (and

thus of the whole constellation) above the horizon. Hence, we are convinced that the astronomical procedure was certainly carried out.

Indeed, another issue, and not altogether a straightforward one, is the attempt to identify the way in which the alignment was actually performed. It is often argued that the priests possibly carried out the orientation of the temple on particular nights when the observation of the stars was much easier or more propitious, and if an actual ceremony took place, the king or his representative would only perform a mock orientation ceremony afterwards.

However, as standard in Egyptian religious images, the texts mention the presence of the king during the actual rite, together with Seshat and, on some occasions, the god of writing and time-keeping, Thoth. Indeed, an astronomical instrument, the *merkhet*, is also mentioned (see Fig. 7.9). One of the aims of our work has been to determine what the real device identified by this cryptic name might be. Finally, with the putative rites related to the *stretching of the cord*, the four corners of the temple were finally accomplished in some manner which we are far from completely understanding but that we may perhaps conceptualize.

In this context, the iconography and relationships of the goddess offer some additional explanation, although not directly related to the ceremony. An example of this would be the unexpected presence of the goddess Seshat in astronomical ceilings, such as that of the temple of Esna, where she takes the place of Sothis-*Sopdet*, the divine personification of the star Sirius. This suggests possible stellar connections. The identification of this latter goddess with Isis can be envisaged from the Pyramid Texts of the Old Kingdom and it is explicit since the New Kingdom onwards. This makes probable that Sothis was also related to Seshat in periods earlier than the Graeco-Roman.

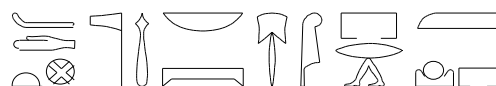
This is clearly illustrated in Figure 7.11 where the reliefs of the Saite Period chapels at Aïn el Muftela are presented. These interesting monuments were recently restored in a most bizarre style (three independent chapels have been covered by a unique plafond). Two Seshat goddesses are independently depicted in two rows on divinities.



Figure 7.11. The main hall of the best preserved cult chapel of King Amasis (570-526 B.C.) in Aïn el Muftela, in the Oasis of Bahariya. Seshat is represented twice. Firstly in the right wall, in the fourth position looking backwards. She is easily identified by her feline-skin dress although her head, including the sign upon her head, and the texts have been unfortunately lost since the discovery of the monument. The second representation is in the last position of the row of divinities on the left wall and her detailed image (right) shows that this is Seshat identified with Isis-Sopdet. Photographs by J.A. Belmonte.

In one, badly preserved today but still visible in older photographs of the same panel, Seshat is facing the opposite way to the other divinities and can be identified by the leopard-skin and, unfortunately only in the old pictures, by the sign above her head and by her still-legible, although much deteriorated, name within the text. The other is much better preserved (see Fig. 7.11) and the goddess is easily identified by the Seshat sign upon her head, but curiously she wears an atypical *uraeus* and her name can be read (partially) as *Sopdet*. Besides, the goddess apparently lacks her standard leopard-skin garment (see also Fig. 7.6). Hence, it is obvious that Seshat and *Sopdet* were somehow related in certain aspects. In our opinion, this emphasizes the stellar connections of Seshat and her potential role. In this context, a discovery of additional texts where this relationship might be reinforced would be extremely important since, unfortunately, there is no reference to Sirius within a *stretching of the cord* context. Additionally, this would support some results outlined in Chapter 8.

In the same line of argument, the Late Period offers another interesting representation of the stretching of the cord ritual. This is presented in Figure 7.12. It comes from the temple of Amon at Hibis, in the Oasis of Kharga, and it is noteworthy for the extremely abnormal position in the representation of Seshat's right arm, anatomically uncomfortable. However, a most important piece of evidence is one yielded by the inscription associated with the scene located above the king's shoulder. This text is certainly related to the image of the sun-disk nearby, and may be read as follows:



Behedety, great god, lord of the sky, variegated of plumage, who appears on the horizon.

If we suppose that the image of Behedety and the associated sentence might somehow relate to the ceremony, we might interpret it in the sense that the sun-disk's appearance on the horizon could be the astronomical target observed by the king when aligning the temple. With an azimuth of 83° , this temple was indeed open to sunrise and the text might refer this simple fact. Additionally, the first author and his colleague M. Shaltout conjectured that the temple was actually aligned to sunrise at an early stage at *Wepet Renpet* c. 930 B.C. during the 22nd Dynasty, although the actual building apparently dates from the Saite Period, three hundred years later.

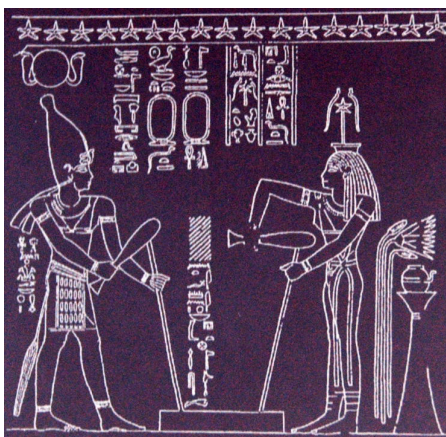


Figure 7.12. A most interesting scene of the stretching of the cord on the south eastern wall of the temple of Amon of Hibis in the Oasis of Kharga. The cartouches are nameless but the decoration is certainly of the Late Period. Notice the abnormal position of Seshat's right arm. The presence in the scene of the god Behedety and his related inscription may suggest astronomical relations. See the text for further discussion. Adapted from a photograph by J.A. Belmonte.

In any event, the relevant fact is that we may have evidence (a possible further example may come from a particular inscription of the temple of Horus in Edfu studied by Zaba where the solar disk at the horizon is again mentioned in a stretching of the cord ceremony context), although certainly circumstantial, supporting the idea that this ceremony also applied to solar alignments. These were indeed as frequent as stellar (cardinal) alignments throughout Egyptian history, as Chapter 8 will show.

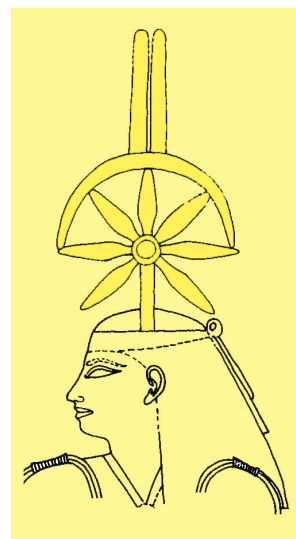
Hence, the stretching of the cord inscriptions surely reflect a very ancient tradition that can be traced from the Late Period, through the New Kingdom, to the end of the Proto-dynastic Period, the time when we first find images of the king and Seshat almost in standardized form. Significantly, later traditions (the so called “Book of the Foundations” that might have existed according to Edfu temple inscriptions, but has never been found) attributed the “invention” of the ceremony to the sage Imhotep, architect of the 3rd Dynasty King Djoser, and one of the earliest attested “Great of the Observers” of the temple of Re at Heliopolis.

However, as we have seen, the earliest indirect evidence of a stretching of the cord ceremony is to be found on the Palermo Stone (see Fig. 7.4) and it refers to the reign of an unknown king in the 1st Dynasty (c. 2800 B.C.), presumably Den. There, only the sign of Seshat is written in a way which is more similar to that of the Old and early New Kingdom depictions than to those of the Ptolemaic and Roman periods:

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

Consequently, the rites related to the stretching of the cord ceremony can be traced to the earliest stages of Egyptian history and we may guess that it was 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 mention the name of the star or asterism observed at the ceremony so we will have to make the best guess with the information provided by archaeology, the Pyramid Texts, which include the first astronomical references, and later tradition, which, as we have seen, predominantly mentions the constellation of *Meskhetyu*. Besides, apart from the rope and poles handled by the king and the goddess, there are no mentions of the instruments used during the Old Kingdom, especially in the case of the *merkhet*.

Figure 7.13. Image of the goddess Seshat with her sign upon her head. This is formed by seven radial elements that form a rosette. There is a semicircular arc upon these radial elements surmounted by two parallel vertical “strokes”. Here, the sign shows the ancient form, which is known from the first dynasties onwards. Adapted from Borchardt (1913).



7.2.2. Signs, standards and transit instruments: a new working hypothesis

In early winter 2005, our colleague Ali Guerbabi, former director of the site Museum of Timgad (Algeria) called our attention to the similarities between the parietal two dimensional representations of the Roman *groma* and the sign of Seshat, especially in its ancient form (see Figure 7.13). The *groma* was the instrument used by Roman topographers (properly known as *gromaticus*) to organize space by the orientation and planning of new cities and territories either by taking into account straightforward geographical factors (dominant winds, land gradient, river beds, etc) or by using more sophisticated astronomical observations. Once settled on a precise place, the instrument was able to provide the two main axes of any layout as shown in Figure 7.14. If this was the one of a city, these axes would indeed be the *cardus* and the *decumanus* of the village.

Our hypothesis, relaying on the premise of these similarities, proposes that the sign of Seshat might actually be 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 alignment procedures. According to the texts mentioned on the previous paragraphs, this orientation was most probable astronomical, although eventual topographic references ought to be considered as well. The basis of our idea is supported by Figures 7.15, 7.16 and 7.17.

Panel (a) of Figure 7.15 shows one of the scenes carved on the walls of a temple, where the sign of Seshat is depicted as a portable object, representing a standard with the hieroglyph sign of the goddess. Our idea is that this object is in fact the “instrument” itself. Fig. 7.16 presents the way in which aspective worked in Egyptian art during the Old Kingdom, showing how the four radii of the *seba* parasol (a name actually meaning star) appeared in two dimensions (a), and would have appeared in three dimensions (b), respectively.

Applying the same principles of representation to our “instrument”, we reach the three dimensional representation of Panel (b) in Figure 7.15, which constitutes the essence of our hypothesis. There, the seven radii of the Seshat rosette have been extrapolated to an eight radii horizontal wheel, the eighth radius being presumably hidden in the flat representations by the vertical pole. This part of the instrument would become an essential element of the proposed mechanism as the one offering at any moment four possible directions (one for each diameter) for the orientation of the main axis of a certain building.

The semicircular arc upon this radial element, surmounted by a pair of parallel strokes, then becomes an independent but vital element of the instrument. According to Panel (c), it would define a sight device, or eyepiece, in the style of the classical hieroglyph depictions of the *merkhet*:



Actually, we wonder whether the *merkhet* to which reference is made in the texts associated with the scenes of the stretching of the cord ceremony of the Ptolemaic period (see above) does not in fact refer to this element of our “instrument”. Later on, once the “observation” of the stars had been made, the instrument would directly give the “four corners” of the temple, as illustrated in Panel (d) or, even in some cases, the astronomical alignment would offer the diagonal of the monument that would permit the orientation of a certain building in the (mid) quarter-cardinal directions (see Chapter 8).

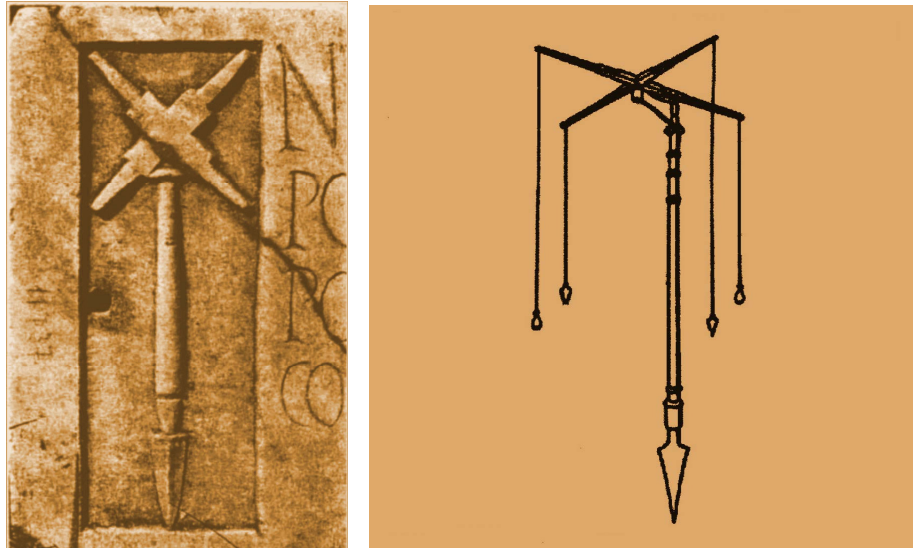


Figure 7.14. (left) Funerary stela of a *gromaticus* discovered in the excavations of Pompey, showing a schematic representation of his *groma*. (right) Idealized reconstruction of the instrument from different elements unearthed during excavations on the same site. Adapted from Adam (2002).

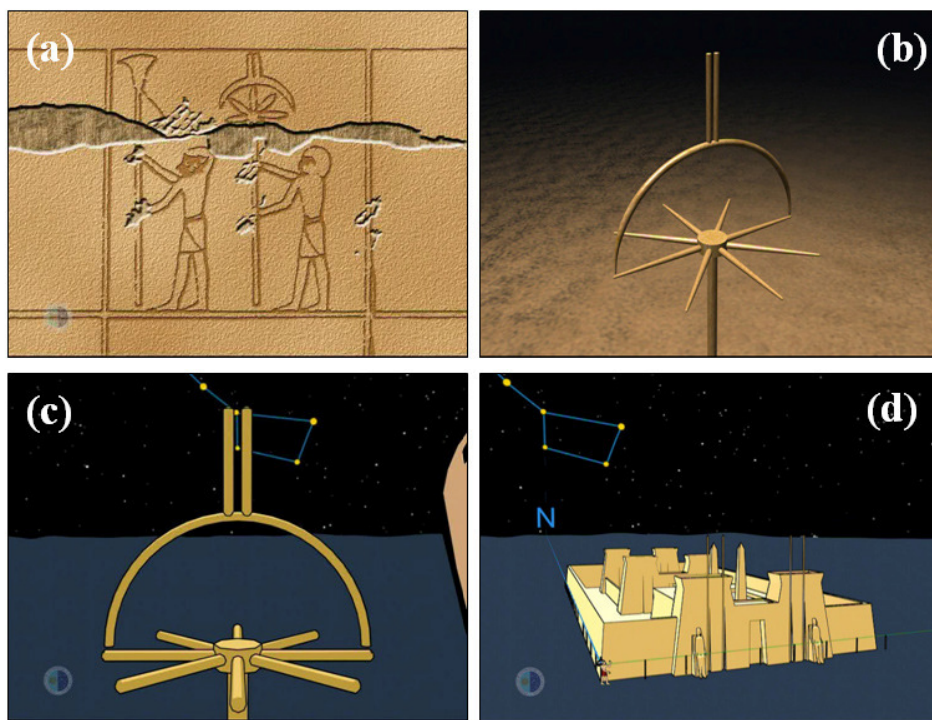


Figure 7.15. This sequence of images illustrates our hypothesis of the use of the sign of Seshat as a topographical instrument similar to the Roman *groma*. Panel (a) shows a relief from the solar temple of Niuserre at Abu Ghurob, where the sign appears like a standard or portable object. Panel (b) stands for the nucleus of our idea with the sign transformed into a real object, where the seven radial elements appearing in the iconography of the goddess, would be turned into an eight radii movable “wheel”, when changing the two dimensional version of the representation into a three-dimensional image. The uppermost elements of the sign would define a sight device, or eyepiece, in the style of the *merkhet*, as shown in Panel (c). Once the alignment had been obtained, the eight radii of the device would directly offer the four cardinal and four (mid) quarter-cardinal directions, as defined in Chapter 8, as illustrated in Panel (d). Diagrams courtesy of SMM/IAC.

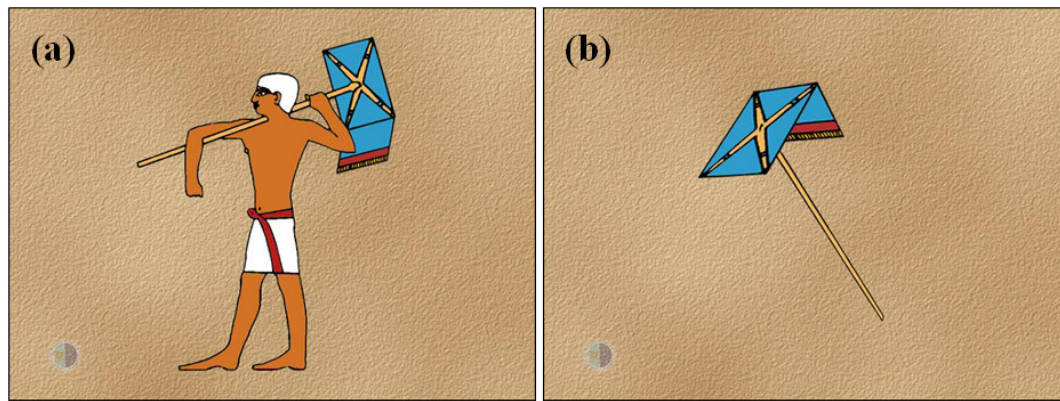


Figure 7.16. The *seba* parasol as represented in the mastaba of Tiy in Saqqara (a); adapted from Schäfer (2002), showing the way Egyptian “aspective” operated. The three dimensional reconstruction of the device (b) follows the same rules which we are proposing for the “instrument” (sign) of Seshat. However, every element, both the pole and the four radii, of the device are discernible in the images. Diagrams courtesy of SMM/IAC.

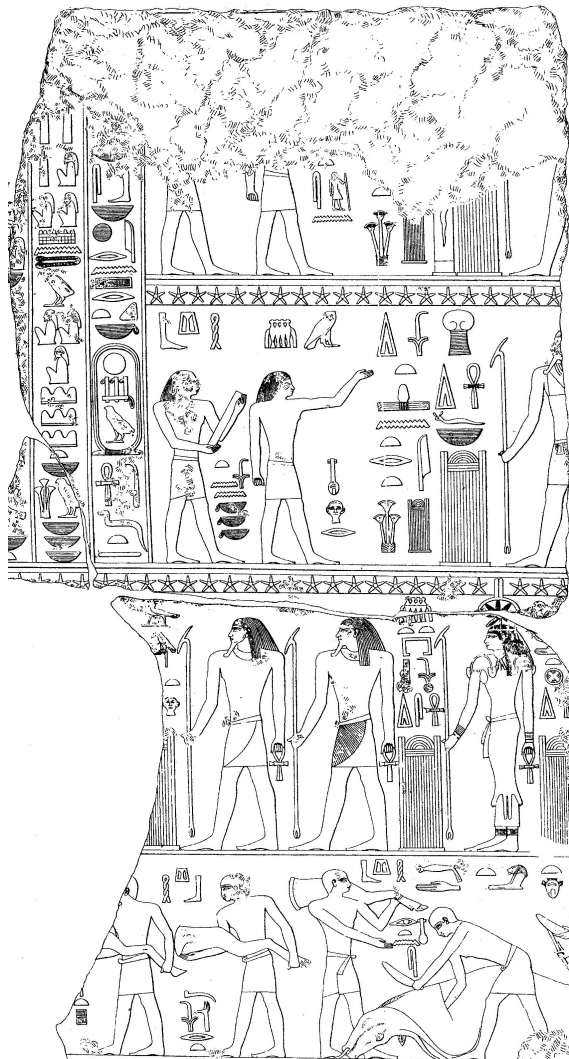


Figure 7.17. The goddess Seshat in a more general context as represented in the scanty remains of what would have been an impressive series of decorative scenes in the walls of Sahure’s funerary complex in Abusir (5th Dynasty; c. 2450 B.C.). The importance of this particular representation relies on the fact that we can envisage how the sign of the goddess is introduced within a frieze of stars. Most relevant for our discussion, however, is the fact that the part of the sign included in the starry frieze exactly corresponds to the two vertical strokes. From Borchardt (1913).

One important circumstance supporting the idea of a relationship between this special element of the Seshat sign and the starry sky comes from Fig. 7.17, where we can see that the two vertical strokes, and only this element of the sign-instrument, are introduced within a frieze of stars which crowns a procession of divinities in a relief in the funerary complex of King Sahure. Nevertheless, it is worth mentioning that in another fragment of the same relief an image of the star-god Sopdu shows a parallel but not exactly similar iconography.

Finally, in Panels (c) and (d) of Figure 7.15, we have also illustrated the astronomical orientation of a temple to the simultaneous vertical transit of two of the stars of *Meskhetyu* (Phecda and Megrez). This phenomenon corresponded exactly to a simultaneous meridian transit during the 4th Dynasty which the first author has proposed was the stellar configuration used for the precise alignments of the pyramids in that period. However, as shown in Figure 7.18, this particular configuration of *Meskhetyu* would have offered a marvellous scenario for the astronomical orientation of sacred buildings in ancient Egypt from the late pre-Dynastic period to even the New Kingdom, either in a north-south axis (cases b and c) or in the quarter-cardinal directions (cases a and d; see also Chapters 8 and 9).

We want to make it clear that this particular configuration of *Meskhetyu*, which we have used here as a suggestive example, would not have been the only astronomical target that the Egyptians could have used to orientate their monuments during the stretching of the cord ceremonies (we must even take into account a topographic feature such as the Nile or a prominent mountain). In Dendara, for example (see above), the observation used to align the temple of Hathor was most likely the rising of the complete constellation (the *Akh* of *Meskhetyu*).

Indeed, other temples were certainly orientated to the sun and to the brightest stars in the Egyptian skies, notably Sirius (see Chapter 8) and we have found certain iconographic and textual evidence to support this. However, *Meskhetyu*, as the northern asterism *par excellence*, was presumably the most important astronomical reference for temple orientation in any of the eight cardinal directions of the rose of the winds. These orientations would have instantly been offered by the most singular transit device perhaps developed by the ancient Egyptians, whose existence we have tried to justify throughout this essay, the Seshat sign-instrument. We hope that future tests will help further to support or negate this suggestive, but indeed controversial, hypothesis.

7.3. Conclusions

This chapter is the preliminary report of a long-term project, started through an open collaboration between astronomers and Egyptologists, in an attempt to understand the close relationship between religion, epigraphy, astronomy and architecture in ancient Egypt. The nucleus of this work is the study of one of the most enigmatic goddesses of the Egyptian pantheon, Seshat. She was a very ancient goddess without temples or any apparent cult. However, at the same time, she appeared in many sacred buildings either counting years or stretching cords, with particular associations with other divinities and a beautiful iconography still far from being completely understood.

In this chapter, however, we have only concentrated on two important aspects relating to sky watching. On the one hand, we have briefly analyzed some of the most relevant hieroglyph texts associated with the scenes where the *stretching of the cord* ceremony is represented, stressing their astronomical character. On the other hand, we have proposed a risky but significant hypothesis relating the ubiquitous sign of the

goddess to a possible transit instrument developed in pre or proto-Dynastic Egypt for temple alignment. These are new important suggestions for a preliminary approach to the understanding of the iconography and activities related to Seshat. However, we hope that most of the questions still remaining about this goddess will be finally unveiled in the years to come.

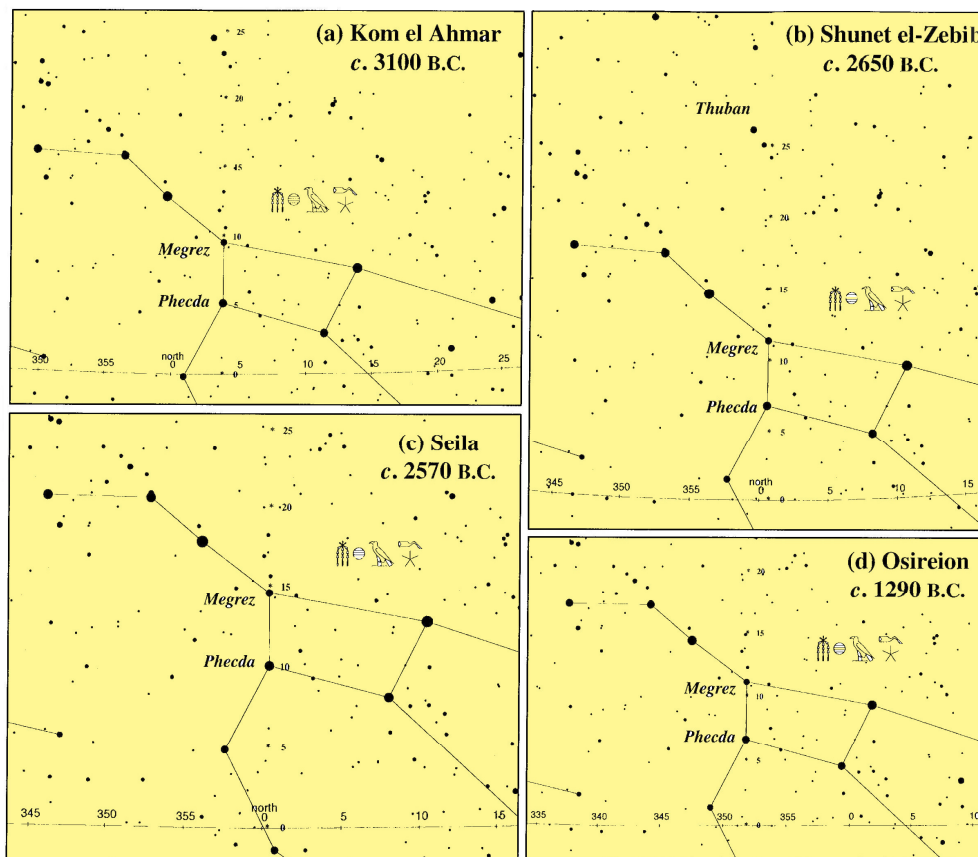


Figure 7.18. These diagrams show a certain celestial configuration of the constellation of *Meskhetyu* (the Plough), identical to that depicted as a relevant example in Panel (c) of Figure 7.15, in different historical periods of ancient Egyptian civilization, showing that this asterism could have been the target for cardinal and quarter-cardinal orientations long before the Ptolemaic Period. The lower meridian transit of Phecda and Megrez could have been used to establish due north, with an error limited only by human capacity, in the year 2562 B.C. and might have served to orientate the Old Kingdom pyramids. Other important structures such as HK29A in Hierakonpolis and Shunet el-Zebib or the Osireion in Abydos could have been orientated in the same manner with lower precision (see also Chapter 8). The stars of this constellation were distinguished members of the selected group of the Egyptian “imperishable” stars, probably due to their circumpolar character, with the celestial pole located near Thuban (α Draconis) during the Pyramid Age (see Panel b).

7.4. References

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