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The Astral Myth of Osiris: the Decans of Taurus and Libra

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IN MY RECENT ANALYSIS of the round zodiac of Dendera I suggested that the first two decans of Taurus – shown as a kneeling woman and a pig [fig. 1] – somehow related to the first appearance of the waxing lunar crescent after the spring equinox, which event marked the astral birth of the child Horus.[1] My tentative proposals were based on the assumptions that the human figure of the first decan represented a woman in labour, while the pig possibly evoked the stories about the childhood of Horus, according to which this animal was sacred to the young god (Coffin Texts spell 157),[2] or Horus in his infancy was protected by a sow (Metternich stela).[3] Now, after I have examined the available evidence for the decans of Taurus more thoroughly, I am convinced that my initial suggestions were mistaken, and the decans of Taurus refer to another mythological episode, namely, the capture of Osiris by his archenemy, Seth, at the time of the full moon. I set out to prove the veracity of this claim – hopefully, beyond any doubt – in this paper by looking at the various forms in which the decans of Taurus appear, and linking them with relevant written sources both from Egypt and classical authors.

The following reasoning will once more underline that the depictions of the decans in the Graeco-Roman zodiacs most of the time made almost no effort to make a visual representation of actual stars or star clusters, but alluded to either cult or celestial events that were associated with those particular asterisms, whatever they might have really or originally been in the sky. In my argumentation I will also make a comparison with the astronomical diagrams of the New Kingdom, especially the one in the Ramesseum (the memorial temple of Ramesses II on the west bank of Thebes), and this will lead to the conclusion that the earlier astronomical representations may have been built – at least partly – around the same principles. The discussion will also involve the decan called *ḥr.j-jb-wjȝ,* which in the zodiacs of the Graeco-Roman era belongs to the sign of Libra, and which reveals additional information for the interpretation of the Taurus decans in particular, and for the comprehension of ancient Egyptian astronomical beliefs in general. All this, in turn, will result in a better understanding of an issue of great perplexity, thoroughly masked by a veil of subtle allusions in the majority of Egyptian astronomical representations – the identification and nature of the Egyptian decans as real stars in the sky.

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[1] G. PRISKIN, "The Dendera Zodiacs as Narratives of the Myth of Osiris, Isis, and the Child Horus", *ENiM* 8, 2015, p. 169-170.

[2] *CT* II, 344b-345b (B4L^{b}).

[3] C.E. SANDER-HANSEN, *Die Texte der Metternichstele*, *AnAeg* 7, 1956, p. 44; J.F. BORGHOUTS, *Ancient Egyptian Magical Texts*, *NISABA* 9, 1978, p. 70.

Fig. 1. Inner frame of the circular zodiac in the second eastern Osirian chapel (adapted form É. Aubourg, *BIFAO* 95, p. 4 fig. 2, © Ifao).

The Different Representations of the Decans in Taurus

The starting point of our investigation is the matching of three decans with each sign of the zodiac. Lists compiled in the 4th century CE and later, which used the Hellenized name forms of the decans, did in fact make such groupings according to the signs.[4] The precept of this tripartite classification must have been the development that when the twelve divisions of the zodiacal belt (the ecliptic) were adopted in Egypt, three decans became assigned for each sign

[4] O. NEUGEBAUER, R.A. PARKER, *Egyptian Astronomical Texts* III. *Decans, Planets, Constellations and Zodiacs*, Providence, 1969, p. 168-174 (= *EAT* III).

of the zodiac because the rise, meridional transit, or any other action of a decan marked, say, the first hour of the night for ten days (at least, ideally), whereas the sun dwells in a particular sign for about thirty days. Thus the decans began to represent ten-degree sections of the zodiacal belt. [5] In my paper about the Dendera zodiacs I already unravelled which decans belonged to the individual signs in the round zodiac of the Osirian chapel and the rectangular zodiac of the pronaos of the Dendera temple.[6] To understand the role of the decans in Taurus we will also have to take into consideration two more decanal lists, one from Esna and one from a nearby location, Kom ed-Deir, that display a significant difference compared to the Dendera zodiacs. In the visual comparison, however, I will mostly refer to the round zodiac, because the rectangular zodiac, with its overwhelmingly anthropomorphic decanal depictions, provides only a limited amount of useful information in this respect. At this point it must also be mentioned that the decanal procession of the round zodiac reappears on the ceiling of a rock-cut tomb in Nag Hammadi (possibly Roman Period).[7] The decans there are listed in four registers under the body of Nut, and – with minor differences and omissions[8] – they closely follow the style of the round zodiac. As regards the first two decans of Taurus, both the kneeling woman and the pig are placed on a rectangular pedestal there [fig. 4].

The first decanal list of immediate interest is found on the ceiling of the pronaos of the Esna temple (1st century CE),[9] which is in fact the only part of this edifice that is still standing today. This procession of the decans recorded on the second strip from the north is not adjoined by a zodiac, but the corresponding strip – the second one from the south – does display the zodiacal signs interspersed with a different set of decans and other figures.[10] The list is arranged into two registers; at the eastern end of the upper one Osiris-Sah (Orion) and Isis-Sopdet (Sirius) sail in one barque, while at the same end of the lower register are depicted the northern constellations, the bull's leg (*msḫ.tjw*) and the hippopotamus (*wr.t*) [fig. 2]. The procession of the decans, starting – as usual – with *knm.t* just before Osiris-Sah, runs in an anticlockwise direction. When we collate the list of decans from Esna with those of Dendera, we will find that two decans – one in Pisces, and one in Aries – have been for some reason left out [Table 1]. As concerns the pictorial design of the decans, some groups – for example, Libra and Capricorn – are quite similar, but others show great differences [figs. 1-2]. This latter group includes the deficient sets of Pisces and Aries, and most notably perhaps, the subject of the present study, the first two decans of Taurus. They are depicted at Esna as two barques on one another, the top one carrying what seems to be a mummy, while the lower one sailing with two wedjat-eyes on board.

[5] *EAT* III, p. 168; S. SYMONS, "Contexts and Elements of Decanal Star Lists in Ancient Egypt", in D. Bawanypeck, A. Imhausen (eds.), *Traditions of Written Knowledge in Ancient Egypt and Mesopotamia: Proceedings of Two Workshops Held at Goethe-University, Frankfurt/Main, in December 2011 and May 2012*, *AOAT* 403, 2014, p. 105.
[6] G. PRISKIN, *ENiM* 8, p. 166-168.
[7] *EAT* III, p. 76-77, pl. 39.
[8] The description in *EAT* III, p. 76-77, is not entirely correct. The visual comparison with the decans of the round zodiac reveals that in all three decans have been omitted from the procession (one in Capricorn, one in Aquarius, and one in Aries).
[9] *Esna* IV, 409-410, fig. 1 (strip B).
[10] *Esna* IV, 443-445, fig. 1 (strip E); *EAT* III, p. 82-84.

Sign	**Osirian chapel**	**Pronaos**	**Esna**
Cancer	*knm(.t)* *ḫr.j-knm* *ḏ3.t*	*[…]* *[…]* *ḥ3.t-ḏ3.t*	*knm(.t)* *ḫr.j-knm* *ḥ3.t-ḏ3(.t)*
Leo	*ḏ3.t* *pḥ.wj-ḏ3.t* *tm*	*ḏ3.t* *pḥ.wj-ḏ3.t* *tm*	*ḏ3.t* *pḥ.wj-ḏ3.t* *tm*
Virgo	*wš3.tj* *b3k* *jps.t*	*wš3.tj* *b3-qḏ* *jps.t*	unreadable *b3k.t* *jpn.t* (sic)
Libra	*sbḫs* (without name) *ḫr.j-jb-wj3*	*sbḫs* *tp.j-ʿ-ḫn.t* *ḫr.j-jb-wj3*	*sbn.t* (sic) *tp.j-ʿ-ḫn.t* *ḫr.j-jb-wj3*
Scorpio	*sp.t[…]* *sšm* *s3-sšm*	*sp.t-ḫnw* *sšm* *s3-sšm*	*sp.t-ḫn.wj* *[sš]m* *s3-[sš]m*
Sagittarius	*knm* *tp.j-ʿ-[…]* *p3-sb3-wʿ*	*knm* *tp.j-ʿ-smd* *<p3-sb3-wʿ.tj>*	*knm-sšm* *tp.j-ʿ-smd* *p3-sb3-wʿ.w*
Capricorn	*smd* *sr.t* *s3-sr.t*	*p3-sb3-wʿ.tj* *smd* *s3-sr.t*	*smd* *sr(y).t* *s3-sr(y).t*
Aquarius	(without name) *tp.j-ʿ-3ḫ.w* *3ḫ.w*	*tp.j-ʿ-3ḫ.w* *3ḫ.w* *tp.j-ʿ-b3.w*	*tp.j-ʿ-3ḫ* *3ḫ* *tp.j-ʿ-b3.w*
Pisces	*tp.j-ʿ-b3.w* *b3.w* *ḫn.t-ḫr.j*	*b3.w* *tp.j-ʿ-b3.w* *ḫn.t-ḫr.j*	missing *b3.w* *ḫn.t-ḫr.j*
Aries	*ḫʿ-ḫr.j* *qd* *s3-qd*	*ḫn.t-ḫr.j* *qd-ḫ3* *s3-qd*	*ḫn.t-ḫr.j* *qd* missing
Taurus	*ḫ3* *ʿrj(.t)* *rmn-ḫr.j*	*ḫ3.w* *ʿrj.t* *rmn-ḫr.j*	*ḫ3* *ʿrj(.t)* *rmn-ḫr.j*
Gemini	*ṯs-ʿrq* *rmn-ḫr.j* *wʿr*	*ṯs-ʿrq* *rmn-ḫr.j* *wʿr*	*ṯs-ʿrq* *rmn-ḫr.j* *wʿr*
Intercalation	*pḥ.wj-ḫr.j*	*Jhy, Ḥw.t-Ḥr.w, Ȝs.t* (in one barque)*;* *Rʿ-sm3-t3.wj* *pḥ.wj-ḫr.j* *Jhy*	*pḥ.wj-ḫr.jt*

Table 1. Decans of the individual zodiacal signs in the Dendera zodiacs and the Esna procession.

The other list of interest comes from the zodiac that once decorated the ceiling of the pronaos in the temple at Kom ed-Deir, an edifice that was also part of the theological landscape centred around the local god Khnum in the wider Esna area.[11] The building was unfortunately destroyed in the middle of the 19th century, but its zodiac ceiling had been recorded beforehand by the members of the Napoleonic expedition.[12] Even at that time the monument was not in a pristine condition, because a significant portion of it containing the signs of Virgo, Libra, and Scorpio was already missing [fig. 3]. There seems to be some misunderstanding about the date of this zodiac in Egyptological literature, because it is often stated that it was created at the beginning of the 2nd century BCE.[13] However, the walls of the temple displayed cartouches of rulers ranging from Ptolemy III Eurgetes to the Roman emperor Marcus Aurelius,[14] so in fact an exact date for the zodiac cannot be established.[15] I will return to the dating of the monument in another section of this paper below. Whenever it was devised, the zodiac at Kom ed-Deir provides important information for the purposes of the present study, because the sign of Taurus and its corresponding decans have survived.

The images in the zodiac are arranged in three registers. The top one shows the decans of the series known as Seti I B (mostly snakes and anthropomorphic figures), the middle one lists the signs of the zodiac interspersed with some other depictions, while the lower register displays the Tanis family of decans that are also included in the Dendera zodiacs and the other Esna procession examined above.[16] Only five names are written next to the figures, so a tabular comparison with the three other lists is impossible, but based on the position of the figures, and their pictorial similarities with the Esna depictions, the groups corresponding to the particular zodiacal signs can be distinguished with a fair degree of certainty [fig. 3].[17] Although the sign of Scorpio was represented in the broken-off part of the monument, its decans are shown after the northern constellation of the hippopotamus with a crocodile on the back, which is holding onto the remnants of the other common marker of the northern sky, the bull's foreleg. The decans of Aquarius are divided between the two strips, just as presumably those of Leo were at the other extremities. Similarly to the Esna procession, one decan of Pisces is missing, whereas the decans of Taurus are interrupted by the depiction of Isis-Sopdet, a reclining cow and a goddess sailing in a barque, signifying the southern constellations of the sky, together with the figure of Osiris-Sah above.

[11] M. ABDEL-RAHMAN ALI, "The Lost Temples of Esna", *BIFAO* 109, 2009, p. 2-5.
[12] *Description*, *Antiquités*, *Planches* I, pl. 87. Reproduced as *EAT* III, pl. 29.
[13] M. CLAGETT, *Ancient Egyptian Science* II. *Calendars, Clocks, and Astronomy*, Philadelphia, 1995, p. 126; E. HORNUNG, *The Secret Lore of Egypt: Its Impact on the West* (transl. D. Lorton), Ithaca, 1999, p. 30-31; J. EVANS, "The Astrologer's Apparatus: A Picture of Professional Practice in Greco-Roman Egypt", *JHA* 35, 2004, p. 26; J. LULL, J.A. BELMONTE, "The Constellations of Ancient Egypt", in J.A. Belmonte, M. Shaltout (eds.), *In Search of Cosmic Order: Selected Essays on Egyptian Archaeoastronomy*, Cairo, 2009, p. 180.
[14] M. ABDEL-RAHMAN ALI, *BIFAO* 109, p. 4-5.
[15] *EAT* III, p. 62.
[16] *EAT* III, *loc. cit*.
[17] It should be noted that my division of the decans is markedly different from the one based on hypothetically reconstructed names and proposed by O. NEUGEBAUER, R.A. PARKER, *EAT* III, p. 168-169, who – for one thing – were unaware of the presence of an intercalated decan within the list.

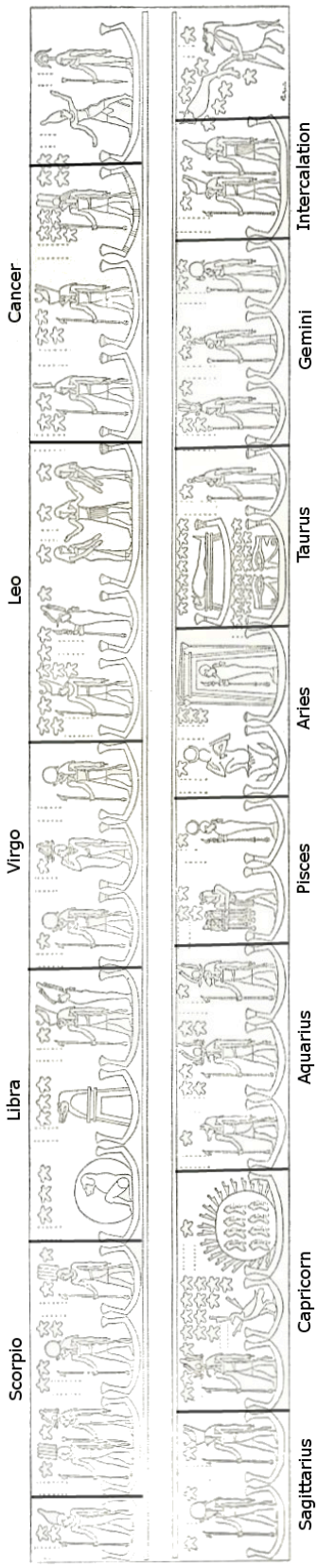

Fig. 2. The decanal procession of strip B on the astronomical ceiling of Esna (adapted from *Esna* IV, fig. 1, © Ifao).

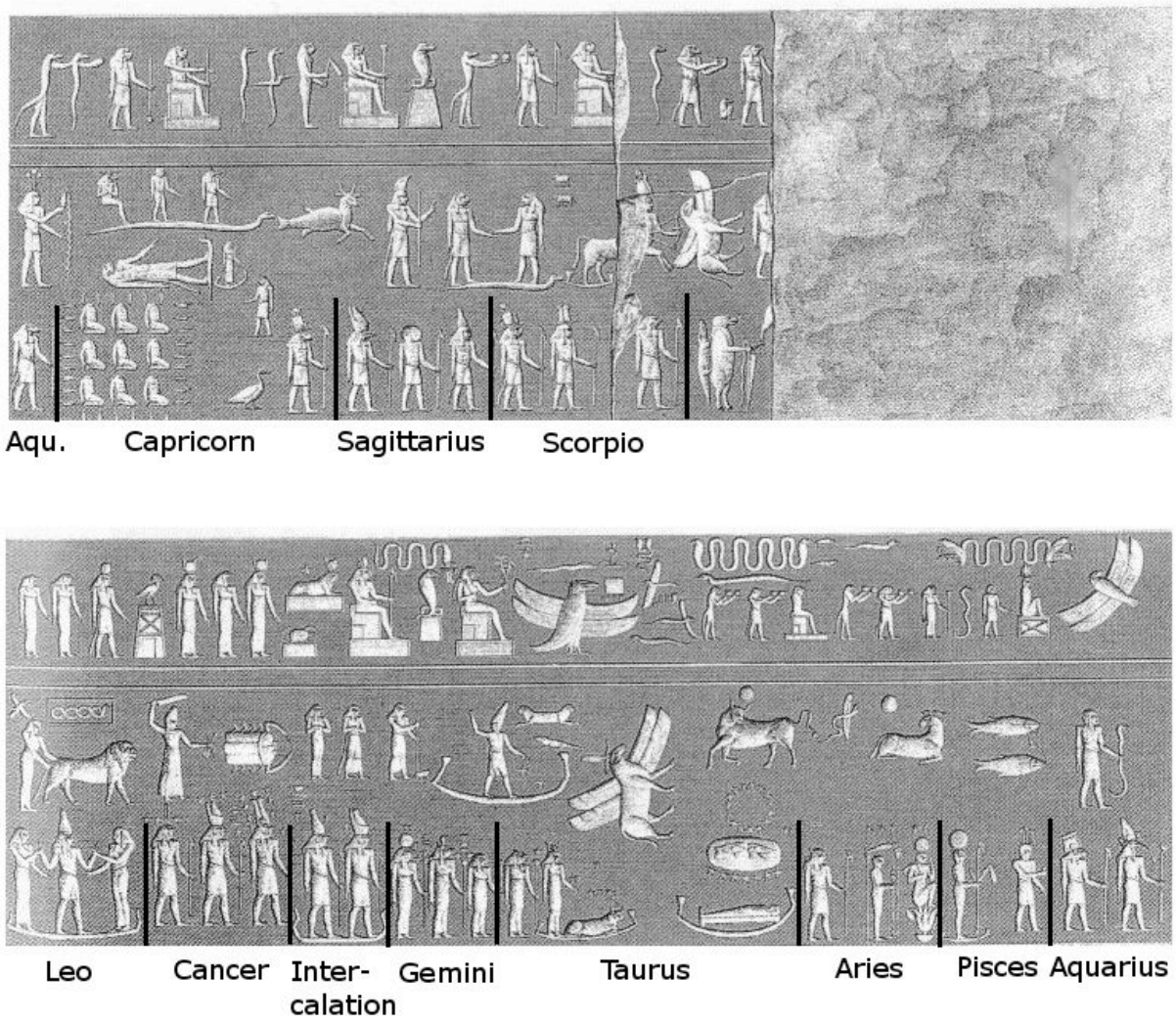

Fig. 3. The zodiac at Kom ed-Deir (adapted from *Description*, *Antiquités*, *Planches* I, pl. 87).

At Kom ed-Deir the first two decans of Taurus are shown quite similarly to the images in the Esna list, so from the four lists presented above it becomes obvious that there were at least two distinct traditions about depicting this particular group of decans. The round Dendera zodiac and the Nut scene in the Nag Hammadi tomb show them as a kneeling woman and a pig, whereas in the Esna and Kom ed-Deir lists they appear as a recumbent mummy travelling in a barque, and a pair of wedjat-eyes (only sailing in a boat at Esna) [fig. 4]. The identity of the disparate images cannot be doubted, because they are labelled with the same names in the round zodiac and at Esna (*ḫȝ* and *ʿrj.t*). Furthermore, these two decans – irrespective of the form they assume in the different monuments – are accompanied by seven and fourteen/fifteen stars in the two Dendera zodiacs and the lists from Esna and Kom ed-Deir.[18] It may seem to be a real enigma how these two decans can be depicted so differently, unless of course we accept the premise that instead of making an attempt to visually represent asterisms in the sky, they rather relate to different aspects of the same cultic or celestial event.

[18] The same numbers are found even in the rectangular zodiac, with human figures (though *ḫȝ* has eight stars), see S. CAUVILLE, *Dendara* XV. *Traduction. Le pronaos du temple d'Hathor: Plafond et parois extérieures*, *OLA* 213, 2012, pl. 8.

Fortunately enough, a great deal of information can be gathered from ancient sources to unravel the nature of the common event that the various forms of the decans of Taurus represent in their peculiar ways.

The Great Festival of the Moon in the Month I Shemu (Pachons)

Just as in the narrative analysis of the Dendera zodiacs, perhaps the most important clue for understanding the meaning of the Taurus decans comes from Plutarch, the Greek author who lived at the turn of the 1st and 2nd centuries CE, and who wrote an extensive treaty about Isis and Osiris. After having discussed some dietetic taboos of the Egyptians, he asserts:

> In the same way they also consider the pig to be an unclean animal; for it seems to prefer to copulate when the moon is on the wane, and the bodies of those who drink its milk come out with rash and scabrous sores. When they sacrifice a pig once every year in full moon and devour it, they narrate a story that Typhon [Seth], as he was pursuing a pig in full moon, found the wooden coffin in which the body of Osiris lay and tore it up; but they do not all accept this tale, believing rather that it is a misunderstanding like many other notions (*De Iside et Osiride* ch. 8).[19]

Plutarch is not the only foreigner who discusses the pig sacrificed during a great annual lunar festival. After also mentioning the detestable character of the pig and the ill effects of the sow's milk, Aelian (2nd-3rd century CE) writes:

> And the Egyptians are convinced that the Sow is an abomination to the sun and the moon. Accordingly when they hold the festival of the moon they sacrifice Pigs to her once a year, but at no other seasons are they willing to sacrifice them either to her or to any other god (*On the Characteristics of Animals* X. 16).[20]

What is perhaps even more interesting is that Herodotus (6th century BCE) also describes the same event, testifying to the fact that the sacrifice of the pig at the lunar festival was in vogue well before the time when the Egyptian zodiacs were created:

> Nor do the Egyptians think it right to sacrifice swine to any god except the Moon and Dionysus [Osiris]; to these, they sacrifice their swine at the same time, in the same season of full moon; then they eat the meat. The Egyptians have an explanation of why they sacrifice swine at this festival, yet abominate them at others; I know it, but it is not fitting that I relate it (*The Histories* II. 47).[21]

[19] J.G. GRIFFITHS, *Plutarch's De Iside et Osiride*, Swansea, 1970, p. 129. The second part of the story is further elaborated in chapter 18 (p. 145): "Having journeyed to her son Horus who was being brought up in Buto, Isis put the box aside, and Typhon, when he was hunting by night in the moonlight, came upon it. He recognized the body, and having cut it into fourteen pieces, he scattered them".
[20] A.F. SCHOLFIELD (transl.), *Aelian: On the Characteristics of Animals* II, London, 1959, p. 307.
[21] A.D. GODLEY (transl.), *Herodotus* I, London, 1920, p. 335.

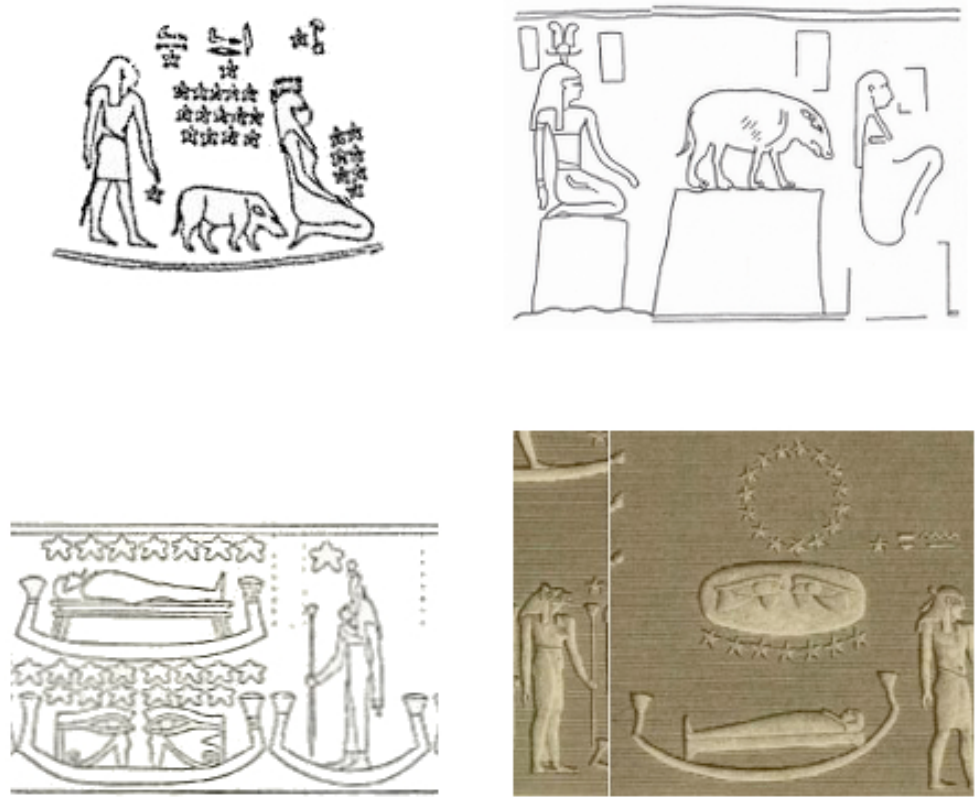

Fig. 4. The different representations of the Taurus decans: round zodiac of Dendera (top left), Nut scene in a tomb at Nag Hammadi (top right),[22] astronomical ceiling of Esna (bottom left), Kom ed-Deir zodiac (bottom right).

Surely, we have to take into consideration that these testimonies belong to the *interpretatio graeca*, but their contents seem to be borne out to a large extent by Egyptian sources as well. The great annual festival of the moon they mention was held in the first month of the Shemu season, which was of course commonly known as Pachons, that is *pꜣ-n-Ḫns.w*, the month of the lunar god Khonsu.[23] Greek papyri found in Egypt call the festival "liloition" (λιλοίτιον),[24] which word is a derivative of ancient Egyptian *rrj*, Demotic *ll* "pig",[25] underlying its connection with the sacrifice of this animal. The principal hieroglyphic attestations of the festivities at the full moon in I Shemu are two calendar entries from the temples of Edfu and Dendera (1st century BCE). They offer a native perspective to the accounts of the Greek and Roman authors, and – quite in keeping with them – they also emphasize that the lunar festival of I Shemu was celebrated all throughout Egypt.

> *Smd.t n ꜣbd pn hrw mḥ wḏꜣ.t ḥꜣb ꜥꜣ m tꜣ ḏrⱸf jr.t ꜥꜣb.t ꜥꜣ.t m tꜣ ḥnq.t kꜣ.w ꜣpd.w smꜣ pꜣ mꜣ-ḫḏ jrp […] m šd.t snq.tw jpḥ dj ḥr ḥꜣw.t n wḏb jr.t ḥꜣw.t nšꜥj ḥrⱸs r-mn(-m) hrw pn ḥꜣb msw.t-nṯr n Ḥw.t-Ḥr.w (nb.t) Jwn.t ḥrp bꜣj dqr sfḫ mnḫ.t n nṯr tn jr.t ntj-ꜥ nb n msw.t-nṯr sḫꜥ.t Ḥr.w-smꜣ-tꜣ.wj pꜣ ḫrd ṯs.t m qnj.w r ḏꜣḏꜣ-nswt jj.t m-bꜣḥ Ḥw.t-Ḥr.w ḥtp […] wdn nⱸf tꜣ ḥnq.t kꜣ.w ꜣpd.w ḫ.t nfr nb.*

[22] Drawing by author, based on *EAT* III, pl. 39. The three figures are originally depicted in two registers.
[23] L. DEPUYDT, *Civil Calendar and Lunar Calendar in Ancient Egypt*, *OLA* 77, 1997, p. 126-130.
[24] D. BONNEAU, "Le sacrifice du porc et Liloïtion en Pachôn", *CdE* 66, 1991, p. 330-340.
[25] D. BONNEAU, *loc. cit.*; Y. VOLOKHINE, *Le porc en Égypte ancienne*, *Religions Comparatisme–Histoire–Anthropologie* 3, 2014, p. 70, 198.

> Day of the full moon in this month, the day of filling the wedjat-eye. A great festival in the entire land. Making a great offering of bread, beer, oxen, and fowl. Slaying the oryx. Wine […] from dough. Pig is slaughtered and placed on the altar at the riverbank. Making the altar from sand for this day. The festival of the divine delivery by Hathor, Lady of Dendera. Bringing fruit and laying the garment of this goddess. Making all the rituals of the divine delivery. The appearance of Harsomtous, the child. Carrying (him) by hand to the barque station. Coming to Hathor. Resting […] offerings for him; bread, beer, oxen, and fowl.[26]

> *Smd.t n ȝbd pn hrw mḥ wḏȝ.t ḥȝb ˁȝ m tȝ ḏrⱸf ḫˁ.t jn Ḥw.t-Ḥr.w ḫnm jtn ḥtp pr-ms.*
>
> Day of the full moon in this month, the day of filling the wedjat-eye. A great festival in the entire land. Appearance of Hathor. Union with the disc. Resting in the birth house.[27]

The first step of linking these descriptions of the major lunar festival in Egypt to the depictions of the decans of Taurus is to acknowledge that around the time of the creation of the Graeco-Roman zodiacs, in the 1st century BCE and CE, the month I Shemu (Pachons) was in fact simultaneous with the period when the sun was dwelling in Taurus (the last third of the month of April and the first two-thirds of May in the Julian calendar, putatively from 21 April to 21 May). The first day of the month, I Shemu 1, fell on the initial day of Taurus (24 April at the time, according to modern ephemerides)[28] in the years 17–14 BCE, but that does not mean that the full moon occuring in this civil Egyptian month could not coincide with the sun's stay in Taurus earlier (for further discussion of this subject, see next section). It is universally accepted that the round Dendera zodiac was created right around the middle of the 1st century BCE.[29] In my analysis I state that the events that the zodiac represents culminated with the birth of Horus taking place at the appearance of the first waxing crescent of the moon after the spring equinox in the year 51 BCE.[30] Taking this year as an example, we can see that the full moon in civil I Shemu set in on the eighteenth day of the month (I Shemu 18), that is on 20 May 51 BCE, which date is just within the annual time frame of Taurus (from 24 April to 25 May in 51 BCE).

Therefore it is quite clear that the decans, as they are depicted in the round zodiac and in the tomb at Nag Hammadi, refer to the cultic events that unfolded during the full moon in the month of I Shemu. The kneeling woman indeed is a goddess in labour, but – in accordance with the contents of the calendar entries at Edfu and Dendera – she is most certainly not Isis giving birth to Horus, son of Isis (Harsiese), but rather the queen of the local temple, Hathor, Lady of Dendera, in parturition with her child, Harsomtous (Horus, the uniter of the two lands). The image of the pig definitely points to the sacrifice at the great lunar festival, the

[26] *Edfou* V, 354, 2-355, 2; A. GRIMM, *Die altägyptischen Festkalender in den Tempeln der griechisch-römischen Epoche*, *ÄAT* 15, 1994, p. 105, 197.
[27] A. GRIMM, *Die altägyptischen Festkalender*, p. 109, 234.
[28] We cannot be sure of course whether the Egyptians used exactly the same dates, as the border of the constellation may have been viewed differently in ancient times. It is therefore not impossible that they reckoned with slightly different dates for the sign of Taurus, but this deviation – ±10 years, conceivably – would not fundamentally affect the soundness of my conclusions. The room for imprecision, however, must be noted.
[29] *EAT* III, p. 72; É. AUBOURG, S. CAUVILLE, "En ce matin du 28 décembre 47…", in W. Clarysse, A. Schoor, H. Willems (eds.), *Egyptian Religion. The Last Thousand Years: Studies Dedicated to the Memory of Jan Quaegebeur*, *OLA* 85, 1998, p. 767-772: J. LULL, J.A. BELMONTE, in J.A. Belmonte, M. Shaltout (eds.), *In Search of Cosmic Order*, p. 180-181.
[30] G. PRISKIN, *ENiM* 8, 149-152.

only occasion in Egypt when pork was conspicuously consumed, if we are to believe the ancient authors.[31] In the Nag Hammadi tomb – as I have already mentioned and as can be seen in [fig. 4] – the pig is in fact standing on a rectangular pedestal, which is perhaps an allusion to the temporary altar of sand specifically erected at the riverbank for the slaughter of the animal. As for the kneeling woman there, she is wearing a crown with ram's horns, not usually associated with the Hathorian crown adorned with the horns of a cow, so perhaps this image relates to Renenutet (see the astronomical ceiling in the Ramesseum for an example [fig. 5]), and results from further influence of differing theological speculations. In the festival calendar of Esna, the month I Shemu was also the time for some feast days of Renenutet,[32] and this connection may explain the reference to her.

Whereas the native sources are silent about the cosmic dimension of the great festival in I Shemu, Herodotus and Plutarch expressly connect it also with Osiris. Plutarch says that Seth found the coffin of Osiris in the light of the full moon in that month. Consequently, in the Esna and Kom ed-Deir depictions of the first decan of Taurus, what seems to be a mummy lying in the barque must in fact be the anthropomorhic coffin containing the body of Osiris. Indeed, an important clue in this respect is provided by the zodiac at Kom ed-Deir, because the boat in question has a caption that is certainly a defective writing for *nšm.t* [fig. 4],[33] directly associating the decan with the sacred barque of the god. As for the second decan, its pair of eyes surely denote the time of the full moon. When Aelian relates that the pig is an abomination for both the sun and the moon, he also implies the opposition of the two brightest celestial bodies. It is a well-known Egyptian concept that at full moon these two, equated with two eyes or two bulls, become united.[34] One of the most straightforward descriptions of this occasion is found on the propylon of the Khonsu temple at Karnak (3rd century BCE), as part of the scene showing the slaying of the oryx. The god witnessing the killing of the animal is called:

> *Ḫns.w-Jʿḥ šw m grḥ tw.t n jȝb.t n Jr-tȝ wbn m bȝḫ jw jtn m ʿnḫt.t Wsȝ.t wȝrḥ m mȝw.t=sn jȝb.t ʿpr m stw.t n jmn.t ḫnm.tw m snsn kȝ.wj.*
>
> Khonsu-Moon who shines at night, the image of the left eye of Irta, rising from the eastern mountain while the solar disc is at the western mountain. Thebes is flooded with their light, the left eye is equipped with the rays of the right eye; they are joined together at the union of the two bulls.[35]

That the two eyes indeed denote the opposition of the sun and the moon in the middle of the lunar month is further reinforced by the presence of the fourteen – or, in the case of the Kom ed-Deir zodiac, fifteen – stars that accompany the barque, either alluding to the number of days that precede the full moon, that is the waxing period of the monthly cycle, or the same number of days after the full moon, that is the waning period. This latter alternative is perhaps

[31] Archaeological and written evidence from within Egypt suggests that pork was – for well-defined religious, and possibly for non-religious and practical purposes – more generally consumed by the population in the Late/Graeco-Roman Period, see Y. VOLOKHINE, *Le porc en Égypte ancienne*, p. 202-205.
[32] *Esna* II, 77, 11-14.
[33] *EAT* III, p. 146.
[34] P. WILSON, *A Ptolemaic Lexikon: A Lexicographical Study of the Texts in the Temple of Edfu*, *OLA* 78, 1997, p. 870; A. VON LIEVEN, *Der Himmel über Esna. Eine Fallstudie zur Religiösen Astronomie in Ägypten am Beispiel der kosmogolischen Decken- und Architravinschriften im Tempel von Esna*, *ÄA* 64, 2000, p. 86.
[35] *Urk*. VIII, 61b; J.J. CLÈRE, *La porte d'Évergète à Karnak*, *MIFAO* 84, pl. 12. For a similar text, see *Esna* IV, 417; A. VON LIEVEN, *Der Himmel über Esna*, p. 85-88.

more in harmony with Plutarch's claim that at the full-moon festival in I Shemu the Egyptians remembered how Seth cut Osiris' body into pieces. At Kom ed-Deir the stars are arranged in a circle, possibly imitating the shape of the full lunar disc. In the same vein, the seven stars next to the boat carrying the coffin of Osiris may denote seven days, or perhaps even more likely – if the stars here are taken to represent decans – 70 days. For the role of seven days alluding to this period, the length of the mummification process, we may recall the Osirian mysteries at Dendera, where one day is expressly said to represent ten days during mummification.[36] The ideal duration of 70 days for the preparation of the corpse was of course modelled on the length of the period during which the star Sopdet (Sirius) was invisible before its heliacal rise.[37] Also, if the stars refer to decans, they may directly relate to those seven that are staying in the netherworld at any one time (i.e. are invisible behind the sun).[38] Either way, they seem to connote the idea of death, and more particularly the dead state of Osiris.

In sum, both of the different iconographic traditions of the Taurus decans relate to the same event, the full moon and its surrounding myths and cult activities in I Shemu. The depictions that are found in the round Dendera zodiac were coloured by local beliefs, because the birth of the divine child of Dendera, Harsomtous, also coincided with the onset of the full moon in the same month. Accordingly, the first decan shows Hathor in labour, while the second decan refers to the widespread cult practice of slaying the pig at the same time. In contrast, the Esna and Kom ed-Deir variants highlight the celestial side of the festivities in I Shemu, that is their relatedness to the full moon by showing the two brightest celestial bodies in opposition (the pair of symmetrically juxtaposed wedjat-eyes),[39] and also they make an allusion to the Osirian aspect of the great lunar festival, by placing Osiris' coffin in the barque of the first decan of Taurus.

Dating the Astronomical Scenes at Kom ed-Deir and Esna

When we realize that the first two decans of Taurus denote events that occur at the time of the full moon falling in the civil month I Shemu, this gives us an opportunity to make a more precise dating for the Kom ed-Deir zodiac and the Esna decanal procession. As the Egyptian civil year consists of only 365 days, its subdivisions – the days and months – constantly wander around the actual seasons, with a shift of one day every four years (since the tropical year is about one quarter of a day longer than the civil year). The Kom ed-Deir and Esna decanal lists could only have been created at the time when the civil month I Shemu coincided with the sun's stay in Taurus. The two different periods began to overlap in the second half of the 2nd century BCE, when I Shemu 1 fell on 24 May 137 BCE, and went finally out of

[36] *Dend*. X, 41, 2.
[37] A. VON LIEVEN, *The Carlsberg Papyri 8. Grundriss des Laufes der Sterne. Das sogenannte Nutbuch*, *CNIP* 31, 2007, p. 81, 87, n. 462, 166.
[38] *Ibid.*, p. 71, 85-86, 150, 165-166.
[39] It must be noted that the juxtaposed wedjat-eyes also denote the opposition of the sun and the moon at least in one instance outside the sphere of the decans. On the western half of the southern wall in the tomb of Petubastis in the Dakhla oasis (1st century CE) a scene is set in two registers (see J. OSING *et al.*, *Denkmäler der Oase Dachla aus dem Nachlass von Ahmed Fakhry*, *AV* 28, 1982, pl. 20-21, 31). The upper one shows the two wedjat-eyes with a *nfr* sign in between and two protecting daemons on the sides, whereas in the lower register Khonsu heads two other figures with accompanying wedjat-eyes that refer to the blacked-out moon and the full moon. The whole scene must undoubtedly relate to the great full-moon festival of Khonsu in I Shemu. Another reference to astral myths is made in the tomb by the simple zodiac on the ceiling (*ibid.*, pl. 36).

synchronization at the beginning of the 2nd century CE, after I Shemu 30 coinciding for the last time with 23 April in 107 CE.[40] Since, however, at the beginning of the time frame thus defined there was only a partial overlap, in actuality the full moon observed during the month I Shemu first fell in the sign of Taurus on 23 May 130 BCE (I Shemu 1). This date is the *terminus post quem* for the Kom ed-Deir zodiac. In the case of the Esna astronomical ceiling, the accompanying hieroglyphic inscriptions contain the cartouches of the Roman emperors Vespasian, Domitian, Trajan, Commodus, Septimius Severus, and Geta,[41] thus ranging from the second half of the 1st century CE to the beginning of the 3rd century CE. The full moon in I Shemu last occurred during the time of Taurus on 23 April 99 CE (I Shemu 28), and thus this is the *terminus ante quem* for the decanal procession in strip B on the ceiling.

As regards this final date it must be noted that – to make the civil calendar run its course more in keeping with the seasons – around 25 BCE a calendar reform was carried out in Egypt by the introduction of leap years (Alexandrian calendar).[42] Ample evidence shows, however, that religious festivals, such as the full moon in I Shemu, continued to be reckoned according to the civil calendar.[43] Another important field in which the civil calendar remained in use was astronomical observations.[44] All this suggests that the people who designed the astronomical ceiling of the Esna temple also observed the civil calendar, although their reliance on the Alexandrian calendar cannot be categorically ruled out either. In that case, no end date for the decanal procession on the ceiling can be put forward, since the Alexandrian calendar, which conformed to the length of the solar year in the same way as the Julian calendar did, fixed the month I Shemu between 26 April and 25 May. Consequently, most of the full moons that occurred within this period did in fact coincide with the time when the sun was staying in Taurus in the first few centuries after the beginning of the Common Era.

While the full moon in I Shemu (civil) occasionally fell in the sign of Taurus towards the end of the 2nd century BCE and in the latter part of the 1st century CE, it always occurred between 24 April and 25 May in the second decade prior to the beginning of the Common Era, when – as I mentioned it earlier – I Shemu 1 corresponded with the starting date of Taurus. The example of the round Dendera zodiac shows that the coincidence of the full moon of I Shemu with the sun's stay in Taurus was observed frequently enough already in the middle of the 1st century BCE to warrant the linkage of the decans of Taurus with the event. These factors combined suggest that the Kom ed-Deir zodiac was most probably devised either contemporaneously with the round zodiac, or a few decades later. I have already pointed it out elsewhere that there is a stylistic similarity between the round zodiac and the Kom ed-Deir zodiac, because one of the decans in Capricorn in the latter, showing a striding human figure above a goose, closely resembles its counterpart within the central depictions of the round zodiac (above the goat signifying Capricorn, see [figs. 1-2]).[45] On the other hand, precisely because of the almost identical appearance of the Taurus decans, and the similarity of other decans, the Kom ed-Deir zodiac is quite akin to the decanal procession on the Esna astronomical ceiling as well. It is therefore neither unimaginable that the two monuments were created roughly simultaneously, sometime in the second half of the 1st century CE.

[40] For the possible imprecisions of these dates, see note 28 above.
[41] *Esna* IV, p. xviii-xix.
[42] D. HAGEDORN, "Zum ägyptischen Kalender unter Augustus", *ZPE* 100, 1994, p. 211.
[43] D. HAGEDORN, K.A. WORP, "Das Wandeljahr im römischen Ägypten", *ZPE* 104, 1994, p. 254.
[44] O. NEUGEBAUER, "Demotic Horoscopes", *JAOS* 63, 1943, p. 119.
[45] G. PRISKIN, *ENiM* 8, p. 176.

The Decans of Taurus and Libra, and the Ancient Egyptian Constellation of the Boat

Coming to terms with the true meaning of the decans of Taurus in the Esna and Kom ed-Deir zodiacs has some other – perhaps unexpected, but most welcome – benefits: it helps us to understand one of the standard images of the New Kingdom astronomical diagrams, a large boat depicted under the series of decans. Not only can we now grasp the significance of this boat, but through recognizing its real nature we can also match its picture with actual stars. The New Kingdom astronomical diagram first appeared in the famous tomb of Senenmut (first half of the 15th century BCE),[46] and then was displayed in a series of royal tombs and memorial temples, and in one case also on the external surface of a water clock.[47] It continued to be part of the decoration of private tombs, funerary equipment, and water clocks after the demise of the New Kingdom.[48] The diagrams list the names of the decans, among them the southern constellations of Sah and Sopdet (Orion and the star Sirius), show the northern constellations with a series of attending deities, and occasionally include the listing of the civil months, the representations of lunar months, and a table connected with time keeping.[49] Within the diagram, the boat is consistently shown under a decan whose designation also has a nautical reference, since it is called *ḥr.j-jb-wjȝ*, usually translated as "(what is in) the middle of the boat".[50] The most elaborate depiction of the boat belonging to this decan is found in the Ramesseum (first half of 13th century BCE) [fig. 5],[51] so our enquiries will be focussed on this monument.

Three details strongly suggest that the later depictions of the Taurus decans and the picture of the boat in the astronomical diagram of the Ramesseum are closely related [fig. 6]. Above the boat a series of seven small discs are depicted, and they for certain correspond to the seven stars over the coffin of Osiris in the Graeco-Roman images, because small circles and five-pointed stars were used interchangeably in the astronomical diagrams to represent the lights of the night sky.[52] What is more, below the row of seven discs there is another group of similar small circles, consisting of fourteen elements, again matching the number of stars depicted next to the decan in the Esna processional strip. Thirdly, in a narrow strip above the

[46] Fragments of the astronomical diagram, showing only traces of the northern constellations, have been preserved on the remnants of a coffin, now perished, found in Asyut and probably dating from the end of the 3rd millenium BCE, see *EAT* III, p. 8-10; S. SYMONS, in D. Bawanypeck, A. Imhausen (eds.), *Traditions of Written Knowledge*, p. 99-100.

[47] *EAT* III, p. 8-38; S. SYMONS, *Ancient Egyptian Astronomy: Timekeeping and Cosmography in the New Kingdom*, Unpublished PhD dissertation, University of Leicester, 1999, p. 190-191; *ead*., in D. Bawanypeck, A. Imhausen (eds.), *Traditions of Written Knowledge*, p. 99.

[48] *EAT* III, p. 38-84; S. SYMONS, in D. Bawanypeck, A. Imhausen (eds.), *Traditions of Written Knowledge*, p. 99.

[49] S. SYMONS, *loc. cit.*

[50] O. NEUGEBAUER, R.A. PARKER, *Egyptian Astronomical Texts* I. *The Early Decans*, Providence, 1960, p. 24 (= *EAT* I); K. LOCHER, "A Conjecture Concerning the Early Egyptian Constellation of the Sheep", *JHA* 12, 1981, 74; *LGG* V, 322; S. SYMONS, "A Star's Year: The Annual Cycle in the Ancient Egyptian Sky", in J.M. Steele (ed.) *Calendars and Years: Astronomy and Time in the Ancient World*, Oxford, 2007, p. 3.; K. GADRÉ, *Conception d'un modèle de visibilité d'étoile à l'oeil nu. Application à l'identification des décans égyptiens*. Unpublished Phd dissertation, Université Paul Sabatier – Toulouse III, 2008, p. 17; B. ARQUIER, *Le double sarcophage de Mésehti S1C (CG 28118)-S2C (CG 28119): recherches sur l'organisation du décor iconographique et textuel*, Unpublished PhD dissertation, Université Paul Valéry – Montpellier III, 2013, p. 96.

[51] THE EPIGRAPHIC SURVEY, *Medinet Habu* VI. *The Temple Proper*, *OIP* 84, pl. 478.

[52] R.H. WILKINSON, *Reading Egyptian Art. A Hieroglyphic Guide to Ancient Egyptian Painting and Sculpture*, London, 1992, p. 131. In a late astronomical diagram the boat carries seven stars, see M.A. MOLINERO POLO, "A Bright Night Sky over Karakhamun: The Astronomical Ceiling of the Main Burial Chamber in TT 223", in E. Pischikova (ed.), *Tombs of the South Assasif Necropolis: Thebes, Karakhamun (TT 223), and Karabasken (TT 391) in the Twenty-fifth Dynasty*, Cairo, 2014, p. 211, fig. 11.7.

register containing the decans and other images, including the boat, and just next to the line of inscription running at the outside border, the months of the civil year are listed in such a way that the first month (I Akhet) and the last one (IV Shemu) meet in the middle. The boat appears below the compartment that is designated I Shemu, possibly indicating that the event it evokes takes place in that civil month. From the arrangement of images in the astronomical diagram of the Ramesseum it is also clear that this civil month was already tied to the great lunar festival of Khonsu, because in the lowermost register he is the fourth god from the middle to whom the king is making an offering, just as I Shemu is written in the fourth compartment from the middle in the list of the civil months.[53]

The depictions of the *ʿrj.t* decan in the Graeco-Roman zodiacs convey the idea of lunisolar opposition, and thus feature both the sun and the moon, that is both the right and left celestial eyes. In the Ramesseum diagram the same situation is expressed by putting two discs on board the boat. A smaller disc on the left, at the stern of the boat, is the symbol of the moon. This identification is supported by the fact that this disc "heads" the row of the thirteen, slightly smaller discs that arch gently over the large disc in the middle of the boat. The fourteen discs must here also allude to half a month, and the slightly enlarged one in front represents either the ending or the beginning of this period, the full moon. The large disc in the middle of the boat is then obviously the sun. The difference in the size of the discs that characterizes this representation of the opposition of the sun and the moon perhaps wants to accentuate the differing brightness of these two celestial bodies. It must be mentioned that the large disc is surrounded on the left and right by two curving strings of further smaller discs that altogether number 35 (seventeen on the left, eighteen on the right).[54] With the large disc included, their sum reaches 36, a number that evidently resonates with the concept of the decans; the message of this detail of the image seems to be that the sun "substitutes for" one decan, that is it occupies the same place in the sky that is otherwise the home of a decan.

Once we realize that the image of the boat in the Ramesseum astronomical diagram is essentially identical with the depiction of the later *ʿrj.t* decan, we can also logically conclude that it shows the appearance of the full moon in the ancient Egyptian constellation of the boat. Although it is of course theoretically not impossible that the image wants to refer to the sun's stay in the heavenly boat (and really, as has just been expounded, that is what the 35 small discs implicate), we should not forget that at that time the constellation is invisible, because the sun drowns the light of its constituent stars by its glare.[55] Nevertheless, we will see later that the image of the boat in the Ramesseum does in fact illustrate this latter situation. First, however, we should consider the case of the full moon.

[53] The importance of the full moon in I Shemu in New Kingdom times is probably also indicated by a papyrus (pCairo CG 58071), which mentions the assignment of a specified amount of pork for this civil month, see Y. VOLOKHINE, *Le porc en Égypte ancienne*, p. 183.

[54] Although there is some damage to the surface below the right string of the small discs, it is unlikely that it contained more than eighteen elements, because the lowermost disc is almost level with its counterpart on the left.

[55] A rare glimpse into the position of the sun in the day sky, at least in relation to the brighter stars, was offered by total solar eclipses.

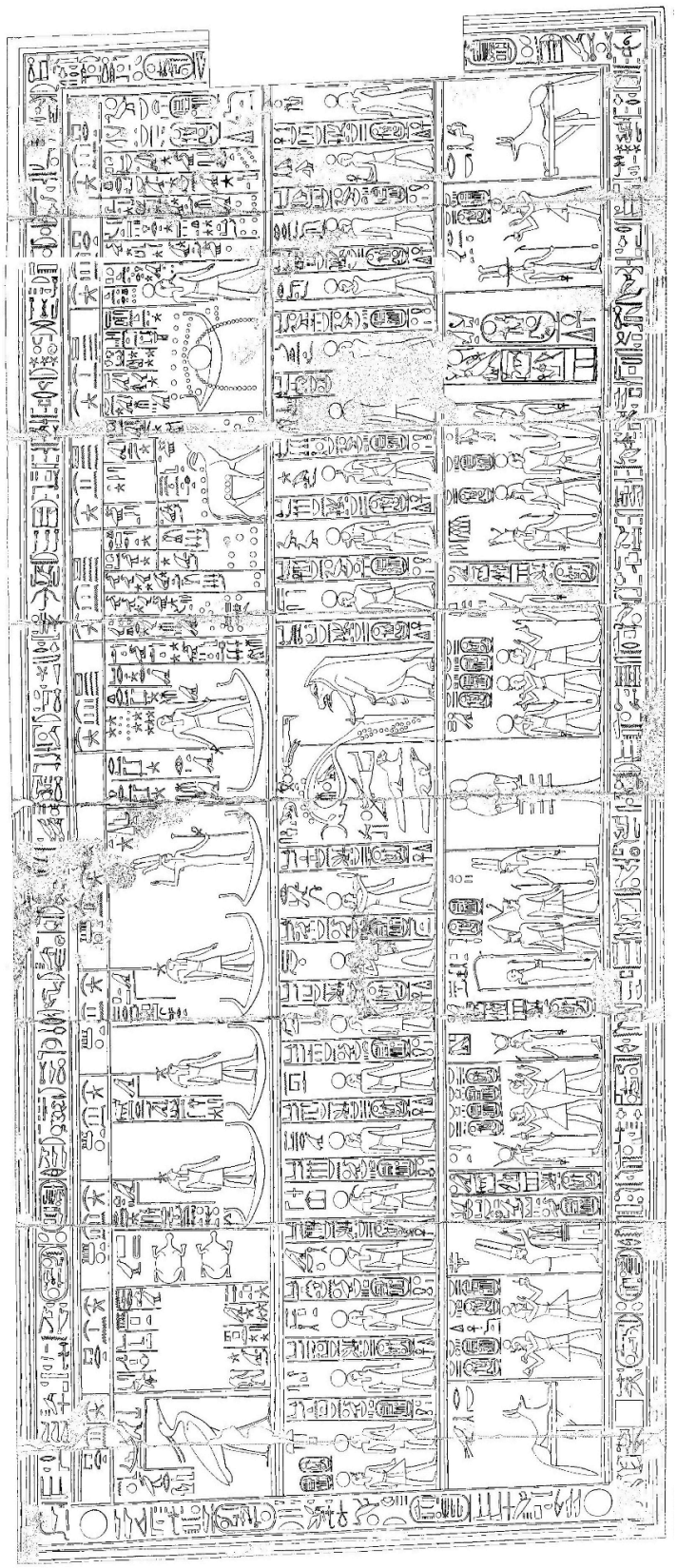

Fig. 5. The astronomical diagram of the Ramesseum (The Epigraphic Survey, *Medinet Habu* VI, pl. 478. Courtesy of the Oriental Institute of the University of Chicago).

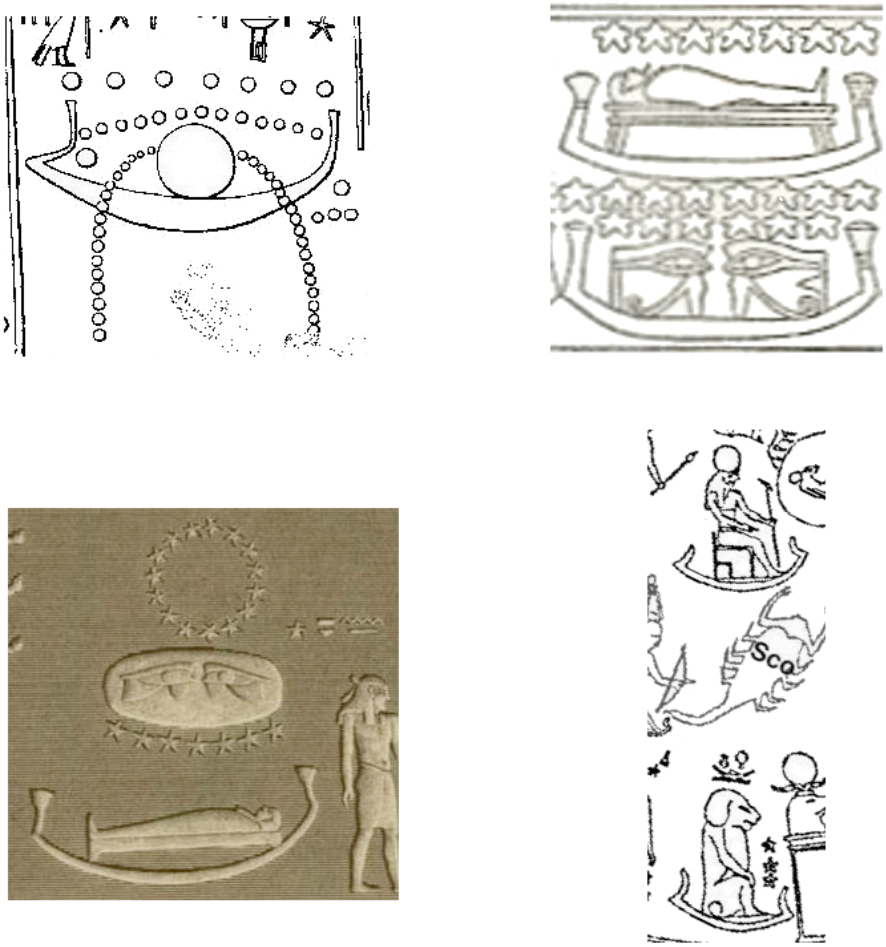

Fig. 6. The constellation of the boat in the astronomical diagram of the Ramesseum (top left), and its descendants: the first two decans of Taurus at Esna (top right) and Kom ed-Deir (bottom left), and the depictions of the *ḥr.j-jb-wjȝ* decan in the round zodiac of Dendera (bottom right).

The boat in the astronomical diagram of the Ramesseum must refer to the full moon that occurs in the month I Shemu, just as the later Taurus decans did. This connection is not only vouched for by the notional identity of the two different images, but also by the clue that the boat appears below the designation I Shemu. It follows from this that we can get one step closer to identifying the constellation of the boat when we take a look at the part of the sky where the full moons appeared in I Shemu around the time when the Ramesseum was constructed. It is highly likely that the astronomical diagram, recorded in the central area of the ceiling in the vestibule behind the large hypostyle hall, was designed contemporaneously with the building and decoration of the temple, because no other celestial diagrams show the boat in the same way, except for the very fragmentary artefact of Ramses III from Medinet Habu (first half of 12th century BCE), which, however, is in all likelihood an erroneous copy of the Ramesseum diagram.[56]

According to commonly accepted chronologies Ramesses II ruled between c. 1279-

[56] THE EPIGRAPHIC SURVEY, *Medinet Habu* VI, p. x-xi, pl. 476.

1213 BCE,[57] and the Ramesseum was built and decorated between the 2nd/3rd and the 21st/22nd years of his reign,[58] which means the period between c. 1277 and 1258 BCE. It seems to be a safe assumption that – even if we allow for some imprecision of the dates cited – the astronomical diagram of the Ramesseum was designed sometime in the first half of the 13th century BCE. Therefore I plotted the spots in the sky that mark the rise of the full moon in I Shemu at the eastern horizon, as they appear against the background of the stars, for the years between 1300 and 1251 BCE [fig. 7].[59]

When we look at the diagram thus produced, we can clearly see that in the first half of the 13th century BCE the majority of the full moons falling within the civil month I Shemu appeared in an area of the sky that is found between the modern constellations of Virgo and Libra. This means that we should look for the ancient constellation of the boat in this celestial region. I can only think of one suitable candidate for this asterism: the three brightest stars of Libra (α, β, and σ Librae).[60] These three stars form a flat triangle that could be interpreted to give the outline of a ship, and within the 50 years examined, the full moon in I Shemu several times occurred in the area enclosed by them, which circumstance can conceivably be regarded as amounting to the lunar disc being on board the boat.

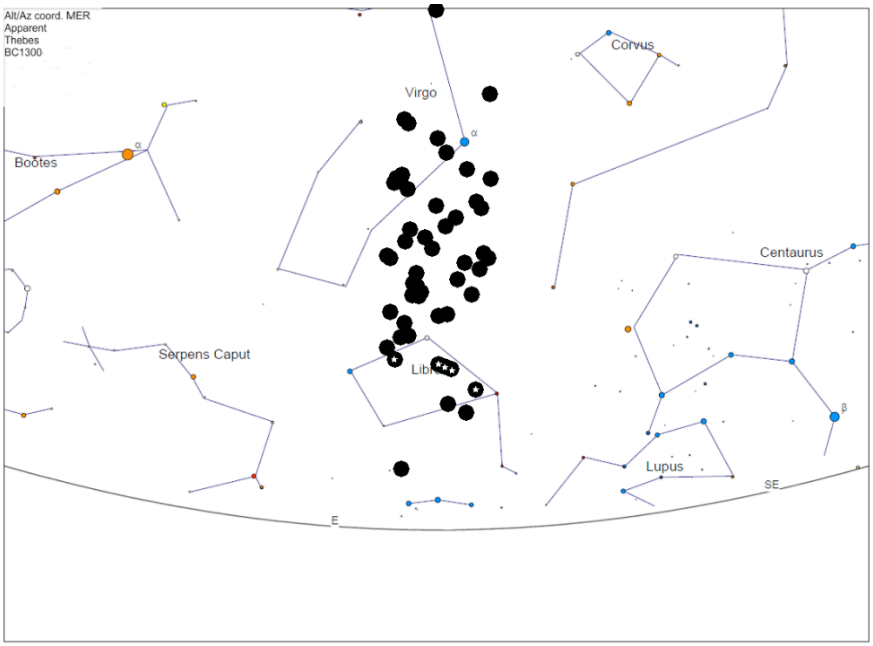

Fig. 7. Positions of the full moons falling in civil month I Shemu, observed on the eastern horizon between the years 1300–1251 BCE.

The identification of the constellation of the boat with the three stars of Libra rests on the presupposition that the Egyptians distinguished shapes in the sky similarly to the way the

[57] J. BAINES, J. MALEK, *Atlas of Ancient Egypt*, (Revised Edition), Cairo, 2002, p. 36; E. Hornung, R. Krauss, D.A. Warburton (eds.), *Ancient Egyptian Chronology*, *HdO* 83, 2006, p. 493.
[58] R. STADELMANN, *LÄ* V, 1984, col. 91-98, *s. v.* "Ramesseum"; Chr. LEBLANC, "Le temple de millions d'années de Ramsès II à Thèbes. Histoire et sauvegarde du Ramesseum", *BCLE* 7, 1993, p. 64.
[59] For a list of dates corresponding to the full moons in I Shemu during this period, see Appendix.
[60] Since the middle of the three is actually a double star, in up-to-date celestial maps it is often marked as α^2 or α2 Librae.

Babylonians and Greeks did, and we still do, taking the outlines of star groups for people, objects, or animals.[61] Though this approach to the sky is not self-evident, we actually have evidence for the practice from Egypt in the case of the bull's foreleg (ancient Egyptian *msḫ.tjw*, modern Ursa Maior, or Plough) on the sarcophagus of Idy (Middle Kingdom), where the seven stars of the constellation are meant to form the bovine limb.[62] The aspiration to capture the constellation of the boat in the same way may explain the presence of a star both on the prow and the stern of the celestial vessel in the astronomical diagram of Ramesses VI (second half of 12th century BCE).[63] At the middle of the boat, however, not one but three stars are depicted; perhaps here the artist not only recorded the star in the middle, but also repeated the two stars at the extremities.[64]

Within the 50 years examined, the full moon in I Shemu rose in such a position that could be conceived – in a strict sense – in the interior of the heavenly boat (the area enclosed by the three brightest stars of Libra) only five times, on 30 March 1300 BCE, 4 April 1295 BCE, 2 April 1284 BCE, 30 March 1281 BCE, and 31 March 1262 BCE (see full moons marked with a white asterisk in figure 7). These dates set up a well-discernable pattern: they all lie very close to the day of the vernal equinox (1 or 2 April in the particular epoch). This coincidence is hardly fortuitous. We should not forget that the same situation is alluded to in the much later round zodiac by an image of a disc enclosing a female figure holding an animal, placed next to Pisces and signalling the solar eclipse on 7 March 51 BCE.[65] The conjunction of the sun and the moon on this day may have been seen to presage the full moon fifteen days later, on 22 March, which day was also almost simultaneous with the vernal equinox (23 March in 51 BCE).[66]

Therefore it is quite possible that the intention behind the image of the boat in the Ramesseum diagram was to record the onset of the full moon around the vernal equinox. Indeed, the two events were perfectly matched on one of the five days listed above, 2 April 1284 BCE. Another look at the representation of the rise of the full moon at the beginning of the evening on this day [fig. 8] reveals that the full lunar disc at this moment appeared at the "stern" of the boat (close to σ Librae), at just about the same place where the first of the fourteen smaller discs, i.e. the symbol of the full moon, slightly bigger than the others and put a bit lower, is shown in the image of the boat in the Ramesseum diagram. The positioning of the moon in the boat thus could directly reflect this particular event.[67]

[61] S. SYMONS, in D. Bawanypeck, A. Imhausen (eds.), *Traditions of Written Knowledge*, p. 103.
[62] S. SYMONS, *loc. cit.*; For the image, see A.-S. VON BOMHARD, "Ciels d'Égypte. Le "ciel du sud" et le "ciel du nord'", *ENiM* 5, 2012, p. 75, fig. 1.
[63] *EAT* III, pl. 13.
[64] The round zodiac definitely identifies the middle of the boat with a single star, α Librae (see below), so this seems to be the most plausible explanation. Or perhaps there was no intention at all to visually represent the actual structure of the constellation.
[65] É. AUBOURG, "La date de conception du zodiaque du temple d'Hathor à Dendera", *BIFAO* 95, 1995, p. 10.
[66] G. PRISKIN, *ENiM* 8, p. 149.
[67] Certainly, the date 2 April 1284 BCE precedes the construction of the Ramesseum by some ten years. On the other hand, the person responsible for the design of the astronomical diagram may still have had a clear recollection of it. Incidentally, 2 April 1284 BCE was the last day for many centuries when the full moon in I Shemu coincided with the spring equinox.

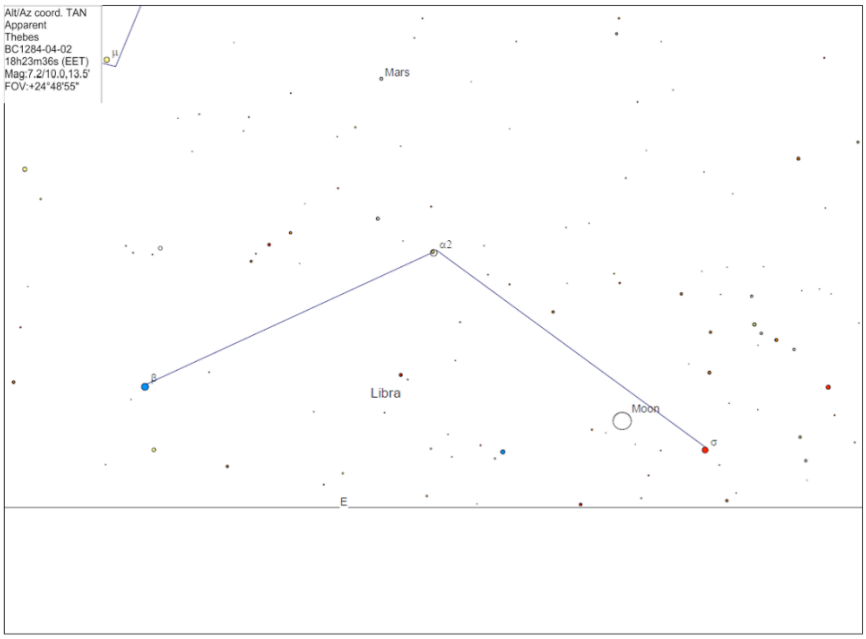

Fig. 8. Full moon rising in the constellation of the boat on the day of the vernal equinox on 2 April 1284 BCE.

The identity of the boat in the Ramesseum diagram with the later *ʿrj.t* decan, both showing the opposition of the sun and the moon, can hardly be doubted. Yet the image of the boat in the astronomical diagrams is not connected with the *ʿrj.t* decan at all; as mentioned earlier, it is instead regularly shown under the decan that is called *ḥr.j-jb-wjȝ* ("the middle of the boat"). It is quite obvious then that the heavenly boat, as shown in the Ramesseum celestial diagram, has two descendants: the decans of Taurus with their seven and fourteen stars, and pair of eyes, and the decan that is straightforwardly named *ḥr.j-jb-wjȝ*. The careful examination of how this decan is represented in the Graeco-Roman zodiacs, and especially in the round zodiac, will strengthen the case for the identification of the constellation of the boat with the three most luminous stars of Libra, and will at the same time shed light on the further layers of signification of the Ramesseum diagram.

The *ḥr.j-jb-wjȝ* decan in the zodiacs, conspicuously belonging to the sign of Libra, takes the form of a squatting baboon, sometimes inscribed into a circle [figs. 1-2].[68] As regards the round zodiac of Dendera, I have already conjectured that there this image evoked the conjunction of the sun and the moon after the autumnal equinox in 52 BCE, the moment when in the astral rebirth saga Horus was conceived.[69] This lunisolar encounter is marked in the zodiac by the image of the rising sun, a young child encircled in the solar disc, attached to the sign of Libra.[70] In support of the correctness of my initial proposal about the meaning of the sitting baboon of the *ḥr.j-jb-wjȝ* decan, now I can point out its correspondence with one part of the image of the boat in the Ramesseum that I have so far ignored. The smaller disc in the rear of the boat (on the left), as has been established above, signifies the full moon. At the

[68] *EAT* III, pl. 39; S. CAUVILLE, *Dendara* XV. *Traduction*, pl. 8.
[69] G. PRISKIN, *ENiM* 8, p. 169. For the sitting baboon on board a boat signifying the moon in conjunction with the rising sun, see *Id*., "The Encounter of the Sun and the Moon on Hypocephali", *Birmingham Egyptology Journal* 3, 2015, p. 28-33.
[70] G. PRISKIN, *ENiM* 8, p. 142.

opposite end, outside the boat and just next to the prow, we find another small disc that is placed above three further, slightly smaller discs. Since this disc is positioned at the other end of the fourteen small circles marking the half of the lunar cycle inside the boat, it no doubt represents the blacked-out moon, that is the invisible moon on the day of conjunction. Simply put, at the prow of the boat we can see the representation of the invisible moon next to three discs, and this setting is exactly mirrored in the depictions of the *ḥr.j-jb-wjȝ* decan in the zodiacs: the blacked-out moon (the sitting baboon) is always accompanied by three stars [figs. 1-2].[71]

Consequently, the image of the boat in the Ramesseum diagram, with its particular details, alludes to both the opposition and the conjunction of the sun and the moon. This latter side of the depiction is underlined by one part of the inscriptions surrounding the whole heavenly tableau, which – directly in connection with the southern half of the sky where the boat also appears – reads:

> *Ḏd mdw jn nṯr.w jm.jw p.t rs.jt n nsw.t bjtj Wsr-Mȝʿ.t-Rʿ-stp.n-Rʿ sȝ Rʿ Rʿ-msj-sw-mrj-Jmn jr.y n≠k Rʿ ḫpr.w≠k mj jʿḥ ḫrd≠k ms.w tp-tȝ ḥʿ≠k ḥr […] ḥnmm.t mj Rʿ-Ḥr.w-ȝḫ.tj dj≠f s wbn≠k mj Ȝs.t-Spd.t m ḥrj.t sbȝ.yt wp-rnp.t sr n≠k rnp.wt ḥȝb.w ḥʿpj nn ḏw≠sn prj n≠k sbȝ.w tp sw-mḏ nb swȝḥ tr.w-rnp.wt nb mnḫ n≠k psḏn.tjw ḥr mtr nn ḫb.wt sqdj≠k mj sȝḥ m ḥrj.t ʿḥʿ.w≠k mj ʿḥʿ.w≠f.*
>
> The gods of the southern sky are saying to Usermaatre Setepenre, son of Re, Ramesses, Beloved of Amon: "May Re create for you your forms as the moon, may you rejuvenate those who live on the earth, may you appear (among) the sunfolk as Re-Harakhty, may he grant that you rise like Isis-Sopdet in the starry sky on the day of the new year, may you be foretold many festive years, inundations without any deficiencies, may the stars rise for you every ten days to establish all periods, may the blacked-out moon be effective for you, precisely and without any reduction, may you traverse like Osiris-Orion in the sky, may your lifetime be like his lifetime".[72]

Since the first thing that the gods of the southern sky wish for the king is that Re should make him exist like the moon, the text undoubtedly lays great emphasis on this celestial body. Now we can acknowledge that the pictorial programme of the diagram also prominently features the moon. Later in the text – immediately after a reference to the decans – a specific point in the lunar cycle is mentioned; however, perhaps contrary to our expectations, it is not the full moon, but the blacked-out moon. The day of lunar invisibility, when the sun and the moon are in conjunction, was of course as important for the Egyptians as the splendid full moon, because it signified the beginning of a new lunar month.[73] I have already mentioned that in the astral myth of Osiris, as represented in the Dendera zodiacs, it was the day of conjunction after the autumnal equinox that signalled the conception of Horus. The practical and mythological significance attached to the event may explain why a reference to it was also included in the image of the boat in the Ramesseum diagram.

The sitting baboon of the *ḥr.j-jb-wjȝ* decan travelling in a boat in the Graeco-Roman zodiacs, as clearly indicated by its antecedent depiction next to the image of the boat in the

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[71] The only exception is the Nut scene at Nag Hammadi, where the stars are generally omitted, see *EAT* III, pl. 39. Three stars often accompany the image of the boat in the astronomical diagrams, as well, see *EAT* I, pl. 24-25; *EAT* III, pl. 4, 13, 42. They possibly represent the stars forming the constellation (α, β, and σ Librae).

[72] THE EPIGRAPHIC SURVEY, *Medinet Habu* VI, pl. 478.

[73] R.A. PARKER, *The Calendars of Ancient Egypt*, *SAOC* 26, 1950, p. 9; R. KRAUSS, "Lunar Days, Lunar Months, and the Question of the 'Civil-based' Lunar Calendar", in E. Hornung, R. Krauss, D.A. Warburton (eds.), *Ancient Egyptian Chronology*, *HdO* 83, 2006, p. 387-389.

Ramesseum diagram, refers to the blacked-out moon. What I initially failed to notice in my analysis of the round zodiac is that this decan is repeated within the central field of the artefact next to the image that evokes the conjunction of the sun and the moon after the autumnal equinox (i.e. the symbol of the rising sun, the child inscribed into the disc, attached to the sign of Libra and marking the conception of Horus), not unlike the way in which the three decans of Capricorn (a goose below a man, a decapitated quadruped, and a human figure holding a gazelle) reappear in the same area, in slightly altered forms to the ones that make part of the procession of the decans along the circumference of the artefact.[74] Immediately left from the Libra sign and the solar disc, we can see a sitting falcon-headed deity with a disc on his head, as he is travelling in a boat [fig. 1]. I originally surmised that this figure alluded either to the sun god in general, or to the rising sun in the form of Horus of the Netherworld.[75] Now, however, it is absolutely clear that this image is another representation of the *ḥr.j-jb-wjȝ* decan, but this time what is in the middle of the boat is not a representation of the blacked-out moon (the sitting baboon), but its co-participant in conjunction, the sun itself [fig. 6].

The *ḥr.j-jb-wjȝ* decan is repeated in the central area of the round zodiac in order to depict the same cosmic event, the conjunction of the sun and the moon following the autumnal equinox, according to the rules of two different representational systems, one of which is more or less readily recognizable for us, while the other one is deeply rooted in ancient Egyptian thinking. The picture of the pair of scales, representing Libra, is shown in the other system as the boat, whereas the child encircled within a disc (the rising sun) is equivalent to the sun god sitting in the middle of the boat. The solar god sailing in his barque is of course a ubiquitous image in Egyptian art;[76] it is the specific context of the zodiac – the nearby presence of the baboon travelling in the boat, perfectly aligned with the solar barque within the central field, and the other reference to the conjunction of the sun and the moon – which indicates that here it stands for the *ḥr.j-jb-wjȝ* decan. This variant of the decan, showing the sun on board, can be put in parallel with the image of the boat in the Ramesseum diagram, too, because there the large disc signifying the sun likewise appears in the exact centre of the vessel.

Once we realize that the *ḥr.j-jb-wjȝ* decan is included in the central field of the round zodiac, however, it becomes clear that – stemming from the parallelism of the images – the boat itself must be equivalent with the constellation of Libra, or perhaps more precisely, with an asterism that consists of or includes the stars that we now take to form Libra. A more accurate identification is almost self-evident when we reconstruct the position of the sun on the day of its conjunction with the moon after the autumnal equinox in 52 BCE. Bearing in mind that the stars around the sun cannot be seen, and their relation to it had to be worked out based on previous observations by the Egyptians, we should nevertheless remember that the child encircled by the disc in the round zodiac records this event on 10 October 52 BCE, when the sun is found immediately next to the star α Librae.[77] The round zodiac therefore provides unequivocal proof that the *ḥr.j-jb-wjȝ* decan – "the middle of the boat" – is identical with this star, reinforcing the claim that the entire constellation of the boat must consist of three stars, with α Librae in the middle.

[74] G. PRISKIN, *ENiM* 8, p. 146-147.
[75] *Ibid.*, p. 143-144.
[76] R.H. WILKINSON, *Reading Egyptian Art*, p. 153.
[77] G. PRISKIN, *ENiM* 8, p. 143, fig. 4.

Conjunctions and Oppositions at the Vernal and Autumnal Equinoxes, and the Astral Myth of Osiris

The image of the boat in the astronomical diagram of the Ramesseum has two layers of signification. The first one shows the coincidence of the full moon with the day of the vernal equinox, when the counterpart of the sun, the full lunar disc, could be observed by the naked eye on board the boat.[78] The smaller disc at the stern of the boat, symbolizing the full moon, is clearly a part of this layer. It is also this layer from which the later Taurus decans, showing likewise the opposition of the sun and the moon, originate. The sky lore of Graeco-Roman Egypt linked these decans, and the event they represented, with the moment when Seth tore Osiris' astral body, the full moon, into pieces. In the New Kingdom astronomical diagrams the connection of the boat with this mythological episode seems to be indicated by the association of the *ḥr.j-jb-wjȝ* decan with the attacker, Seth, and the two wailing women, Isis and Nephthys.[79]

The late descendants of the full-moon layer, that is the Taurus decans, however, as we could see, lost their connection with the vernal equinox and the constellation of the boat. This development was possibly the outcome of a shift by which the seasonally determined full moon at the vernal equinox – which temporarily coincided with the month I Shemu around the beginning of the 13th century BCE – became to be fixed within the framework of the civil calendar. At some point in time, perhaps precisely when the day of the spring equinox and the civil month I Shemu started to drift apart in the 13th century BCE, the full moon associated with the attack of Seth became tied with the civilly determined great festival of Khonsu, and thus began to wander around the seasonal year. As a result, the boats with the wedjat-eyes and the coffin of Osiris belong to Taurus in the zodiacs (the full moon in this case appears around Sagittarius), because in the 1st century BCE and CE I Shemu overlapped with that period of the year. Those in the know, however, must have been aware that it was originally the seasonally observed full moon on the day of the vernal equinox that referred to the intact body of Osiris, and its subsequent dissection and scattering by Seth. This may be the reason why, according to Plutarch, some Egyptians did not accept the connection between the festival in I Shemu and Osiris.

The other layer of the image of the boat refers to the conjunction of the sun and the moon, and includes the group of four small discs outside the boat on the right. The seven small discs above the boat possibly also belong to this layer, alluding to the seven decans that are hidden behind the sun at any one time (according to the Egyptian sources, bide their time in the netherworld).[80] The large solar disc in the middle, which otherwise plays the counterpart of the full moon at opposition, in this framework represents the sun dwelling in the constellation of the boat. Since the full moon occurred within the boat simultaneously with the vernal equinox at the time when the astronomical diagram of the Ramesseum was devised, it naturally follows from this that the sun is found on board the celestial boat at the antithetic

[78] The connection between the constellation of the boat and the vernal equinox may also be indicated by the astronomical diagram on the sarcophagus of a bull, dated to the reign of Nectanebo II (360-343 BCE), see *EAT* III, pl. 24. The boat there is situated below the designation of I Peret, and this month in fact overlapped with the date of the spring equinox at the time (25-26 March), lasting from 17-21 March to 15-19 April. Due to precession, the full moon around this date (for example on 24 March 347 BCE) no longer appeared in the immediate vicinity of the constellation of the boat.

[79] *EAT* III, p. 109.

[80] See note 38 above. Possibly the seven stars also already alluded to the dead Osiris.

point of the annual solar cycle, the autumnal equinox.[81] In modern astronomical parlance we would say that around the beginning of the 13th century BCE the autumnal equinoctial point, the bisection of the ecliptic and the celestial equator, fell just next to the star α Librae. Figure 9 shows the position of the sun in conjunction with the moon on the day of the autumnal equinox on 5 October 1259 BCE, and we can see how such a situation could have provided the inspiration for the image of the boat in the Ramesseum astronomical diagram. Now we can also recognize that the message of the 35 small circles is to be decoded in the way as it was described above: the sun is at the same exact location as the *ḥr.j-jb-wjȝ* decan, the star α Librae. It is not an insignificant detail that the ecliptic (the apparent path of the sun through the sky) bisects the boat almost perfectly in the middle, so that the sun – at a specific point along its annual journey (around the autumnal equinox in the 2nd millenium BCE) – could indeed be thought to reside in the middle of it.

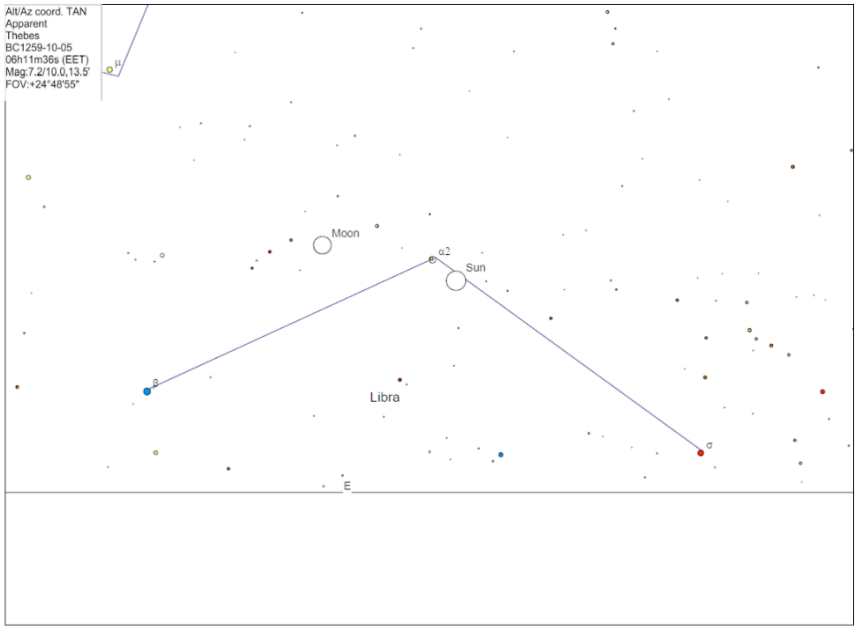

Fig. 9. Conjunction of the sun and the moon in the constellation of the boat on the day of the autumnal equinox on 5 October 1259 BCE.

The Ramesseum diagram records the conjunction of the sun and the moon – i.e. the position of the sun – on the day of the autumnal equinox, whereas the round zodiac captures the same moment and position fifteen days later, after the prior coincidence of the full moon with the autumnal equinox.[82] This delay must be due to precession. The area of the sky corresponding to the constellation of the boat undoubtedly played a pivotal role in the astral myth of Osiris. Originally, when the full moon appeared there at the vernal equinox, it signalled the attack of Seth on Osiris' body.[83] In contrast, when the blacked-out moon coincided with the sun's

[81] This implies that the the string of fourteen small discs within the boat and the four other discs outside of it represent the two crucial points of the lunar cycle, the full moon and the blacked-out moon, atemporally, that is they do not stand for these events within one cycle (conjunction followed by opposition fifteen days later).
[82] G. PRISKIN, *ENiM* 8, p. 137-142.
[83] This day, just as the coincidence of the full moon with the autumnal equinox, expressed order and equilibrium: day and night were equally long, so the full lunar disc spent as much time in the sky as its diurnal counterpart,

sojourn in the boat at the autumnal equinox, this day – as the later zodiacs suggest – must have marked the conception of Horus.[84] However, over the centuries the autumnal equinoctial point wandered more and more towards the sign of Virgo, so that the meeting of the sun and the moon at this particular moment no longer took place within the boat. In order to alleviate the effects of precession, i.e. to offset the event marking the conception of Horus with a few days, so that the sun could travel to the boat, the Egyptians started to stress the importance of the lunisolar conjunction that took place after the autumnal equinox, and not the importance of the one coinciding with it.

It could be imagined that the day of conjunction around the autumnal equinox was generally deemed important, only in the New Kingdom the simultaneity of the two events was emphasized, while later greater importance was accorded to the years when they happened separated by a few days. Especially those years were meaningful when prior to conjunction the full moon fell exactly on the day of the autumnal equinox.[85] This slight changeover might have arisen quite naturally, because the coincidence of the full moon with the autumnal equinox was perhaps as important as the coincidence involving the blacked-out moon already in the New Kingdom. The full moon on the day of the vernal equinox was deemed significant, and this implies that the full moon around the day of the autumnal equinox may have been observed with equal curiosity, because the length of time that passes from the autumnal equinox to the vernal equinox is about 179 days, roughly equal to six synodic months (just about 177 days). So in New Kingdom times the coincidence, in different years, of the autumnal equinox with both the full moon and the blacked-out moon might have been given prominence, whereas in Graeco-Roman times the successive appearance of the two events around the autumnal equinox in one particular year was stressed.

A connection between the different phases of the moon and the vernal and autumnal equinoxes is indicated by the two Dendera zodiacs, too. In the linear zodiac of the pronaos the opposition of the sun and the moon on the day of the autumnal equinox is marked by putting the symbol of the full moon in the sign of Pisces, that is the area of the sky where it actually occurs at the particular moment.[86] This symbol shows the lunar disc encircling Osiris, who is holding a pig in his hand. As mentioned earlier, in the round zodiac a very similar image, a female figure, possibly Isis, holding an animal that is variously taken to be a baboon or a pig,[87] records a solar eclipse happening fifteen days before the vernal equinox.[88] If the animal is a pig, then this image directly alludes to the situation that originally the full moon around the vernal equinox was the event that was associated with Seth's postmortem violation of

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the sun (G. PRISKIN, *ENiM* 8, p. 163). The vicious character of Seth could be enhanced by linking his attack with this perfect day.

[84] Contemporaneous cryptic references to this moment are perhaps made in the Book of Earth by the depiction of the ithypallic Osiris (named "He-who-hides-the-hours", *Jmn-wn.wt*), siring a child, and standing in what seems to be the inside of a water clock. He is also surrounded by groups of three stars and solar discs. For the scene, see J.A. ROBERSON, *The Ancient Egyptian Books of the Earth*, Atlanta, 2012, p. 181-190; for the association with the water clock, A.-S. VON BOMHARD, *The Egyptian Calendar. A Work for Eternity*, London, 1999, p. 66-67.

[85] Even this measure could no longer prevent the spot of conjunction falling outside the boat in 52 BCE, see G. PRISKIN, *ENiM* 8, p. 143, fig. 4.

[86] *Ibid.*, p. 170-171.

[87] É. AUBOURG, *BIFAO* 95, p. 10; É. AUBOURG, S. CAUVILLE, in W. Clarysse, A. Schoor, H. Willems (eds.), *Egyptian Religion. The Last Thousand Years*, p. 768; S. CAUVILLE, *Dendara. Le pronaos du temple d'Hathor: Analyse de la décoration*, *OLA* 221, 2013, p. 540-541; A. VON LIEVEN, *Der Himmel über Esna*, p. 157, n. 458; Chr. LEITZ, "Die Sternbilder auf den rechteckigen und runden Tierkreis von Dendara", *SAK* 34, 2006, p. 287, 302-304; Y. VOLOKHINE, *Le porc en Égypte ancienne*, p. 229.

[88] 7 April 51 BCE; É. AUBOURG, *BIFAO* 95, 1995, p. 10; G. PRISKIN, *ENiM* 8, p. 137-138.

Osiris and the consumption of pork. The presence of Osiris holding a pig in the lunar disc in Pisces in the rectangular zodiac perhaps indicates that the Egyptian priests tried to reinterpret the myth and associate these events with that day. In popular religion, however, as the papyrological evidence and the testimonies of Plutarch and Aelian show, the attack of Seth on Osiris' astral body, the full moon, continued to be inextricably linked with the seasonally wandering festival of Khonsu in civil I Shemu.

In any case, it is quite clear that the image of the boat in the Ramesseum represents an older stratum of the astral myth of Osiris when the connection of the lunar phases with the equinoxes was viewed slightly differently, due to the fact that the autumnal equinoctial point still fell in the interior of the heavenly boat. The full moon appearing in the boat on the day of the vernal equinox referred to Seth's aggression. When the blacked-out moon coincided with the day of the autumnal equinox, i.e. the sun's stay in the celestial boat, this event probably marked the conception of Horus. Some 178-179 days later, the first crescent of the moon signalling the birth of Horus, was due to appear on the day of the vernal equinox. This is probably how in New Kingdom times the key episodes of the drama of Osiris were re-enacted on the grand stage of the starry firmament.

The Age and Original Meaning of the *ḥr.j-jb-wjȝ* Decan

Both the image of the boat in the New Kingdom astronomical diagrams and the later representations of the *ḥr.j-jb-wjȝ* decan in the Graeco-Roman zodiacs, with their references to the sun and the moon, and the equinoxes, rely on an astronomical tradition that was already old at the time of their creation. The *ḥr.j-jb-wjȝ* decan first appears in the so-called diagonal star tables that were mostly recorded on the underside of coffin lids at around 2150-1850 BCE.[89] It cannot be ruled out, however, that these tables themselves are the – perhaps poorly understood – reflections of earlier archetypes;[90] the master copy may have been devised conceivably already in the Old Kingdom, or perhaps even in protodynastic times. It is therefore perfectly possible that the name *ḥr.j-jb-wjȝ* was concocted at a time when the equinoctial point was far removed from the constellation of the boat (modern Libra), somewhere in the region of the sky that we now identify as the sign of Scorpio. Back then, *ḥr.j-jb-wjȝ* surely meant what it literally means: the middle of the heavenly boat formed by the three stars α, β, and σ Librae, that is the star in the middle, α Librae. During the course of the 3rd millenium BCE this star, and consequently the constellation of the boat, became strongly linked with the autumnal equinox, because its heliacal rise started to coincide with that stage of the annual solar cycle. This connection then gave rise to the associations that are recorded in the astronomical diagram of the Ramesseum and the later zodiacs.

There have been several attempts at identifying the decans in general,[91] and the *ḥr.j-jb-wjȝ* decan and the boat accompanying it in particular,[92] but none of these have linked these

[89] *EAT* I, p. 1-32.
[90] S. SYMONS, in J.M. Steele (ed.) *Calendars and Years*, p. 7-9.
[91] R. BÖKER, "Über Namen und Identifizierung der ägyptischen Dekane", *Centaurus* 27, 1984, p. 189-217; Chr. LEITZ, *Altägyptische Sternuhren*, *OLA* 62, 1995, p. 85-96; J. CONMAN, "It's About Time: Ancient Egyptian Cosmology", *SAK* 31, 2003, 57-59; J. LULL, *La astronomía en el antiguo Egipto*, Valencia, 2004, p. 244-262; A.-A. MARAVELIA, *Les astres dans les textes religieux en Égypte antique et dans les hymnes orphiques*, *BAR-IS* 1527, 2006, p. 448-451; K. GADRÉ, *Conception d'un modèle de visibilité d'étoile à l'oeil nu*, p. 123-192 (for a comparative table of some of the recent identifications, see p. 25-28).
[92] K. LOCHER, *JHA* 12, p. 74; V.L. DAVIS, "Identifying Ancient Egyptian Constellations", *JHA* 16, 1985, p. 104; R. HANNIG, *Ägyptisches Wörterbuch* II. *Mittleres Reich und Zweite Zwischenheit*, *Kulturgeschichte der Antiken*

asterisms with the modern constellation of Libra. This is not at all surprising, because the true nature of the ancient Egyptian decans is an extremely complex issue with many potential pitfalls. Up to now, only two decans – (parts of) Orion and Sirius – have been positively identified.[93] These asterisms are situated a little south from the ecliptic, and this fact – coupled with the description of the decans in the ancient Egyptian composition known as the *Fundamentals of the Course of the Stars*[94] – prompted the erroneous conclusion that all decans must be comprised by a belt of stars that lies somewhat below the apparent path of the sun, that is the ecliptic.[95] The equivalence of the *ḥr.j-jb-wjȝ* decan and the boat with the three brightest stars of an ecliptical constellation (α, β, and σ Librae) that I propose here is blatantly incongruous with this contention, and adds weight to the claim that something is fundamentally wrong with the understanding of the decans that dominated the field for the most part of modern research into ancient Egyptian astronomy.[96]

The realization that the Egyptian constellation of the boat corresponds to modern Libra will hopefully help us to better comprehend all the other decans as well. Problems will nevertheless linger on, and just to call attention to one, I may point out that in the New Kingdom astronomical diagrams immediately right from the boat usually a large picture of a sheep or ram is depicted belonging to the decans of *smd*, *sr.t*, and *sȝ-sr.t* [fig. 5]; these asterisms are exactly the decans that are linked with the winter solstice in the Graeco-Roman zodiacs,[97] and in the round zodiac they are even associated with the images of two rams [fig. 1].[98] If they marked the same event a thousand years earlier, then the decans of the autumnal equinox (around *ḥr.j-jb-wjȝ*), and those of the winter solstice (*smd*, *sr.t*, and *sȝ-sr.t*) are put very near each other in the astronomical diagrams. It follows from this then that these diagrams – and also the earlier diagonal star tables, in which these decans likewise follow each other in close proximity[99] – are stylized or corrupt to such an extent that a sequential reconstruction of the decans prior to the Ptolemaic era is impossible.

The *sr.t* decan is also problematic in its own right. In the diagonal star tables and the astronomical diagrams it has a determinative of a sheep,[100] or – as mentioned – is shown in relation to the image of a sheep,[101] and it is only in the Graeco-Roman zodiacs that it first appears as a goose [figs. 1, 2 and 3]. This change must be related to the fact that the terms for "sheep" and "grey goose" are homonyms (*sr.t*). Nevertheless, thinking along the lines of visualizing the ancient Egyptian constellations, and remembering that the *ḥr.j-jb-wjȝ* decan next to Libra in the inner area of the round zodiac equates the two asterisms, we may also ponder the possibility that the goose of the *sr.t* decan next to Capricorn [fig. 1] likewise originates from a pictorial resemblance: the stars α, β, θ, ι, γ, δ, ζ, ω, and ψ Capricorni could

Welt 2, 2006, p. 1740; J. LULL, J.A. BELMONTE, in J.A. Belmonte, M. Shaltout (eds.), *In Search of Cosmic Order*, p. 170.

[93] A. VON LIEVEN, *Der Himmel über Esna*, p. 56-57; K. GADRÉ, *Conception d'un modèle de visibilité d'étoile à l'oeil nu*, p. 23.

[94] A. VON LIEVEN, *Carlsberg Papyri 8. Grundriss des Laufes der Sterne*, p. 78-94.

[95] *EAT* I, p. 97-100.

[96] K. LOCHER, "New Arguments for the Celestial Location of the Decanal Belt and for the Origin of the *Sȝḥ*-hieroglyph", in *Sesto congresso internazionale di egittologia. Atti* II, Turin, 1993, p. 279-284; J. CONMAN, *SAK* 31, p. 42-47.

[97] G. PRISKIN, *ENiM* 8, p. 146-149.

[98] *Ibid.*, p. 167-169.

[99] *EAT* I, p. 2.

[100] B. ARQUIER, *Le double sarcophage de Mésehti*, p. 97.

[101] *EAT* I, pl. 24-25; *EAT* III, pl. 3, 13, 18, 20, 25, 28.

be taken to delineate the heavenly bird.[102] We may also note that it has been proposed that the the sheep of the astronomical diagrams is largely identical with Capricorn.[103] In any case, at the moment we seem to lack the necessary background information to make sense of the – real and possible – shapes of the *sr.t* decan.

The Name of the *ḥr.j-jb-wjȝ* Decan: "the Middle of the Boat", "What is in the Middle of the Boat", and "the Middle Boat"

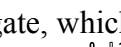
At first, the name of the *ḥr.j-jb-wjȝ* decan had a literal meaning, and simply denoted the middle part of a constellation in the sky that the Egyptians viewed as a boat (the star α Librae). As this heavenly boat became associated with the autumnal equinox, the name acquired new levels of meaning, and its *ḥr.j-jb* part started to refer to either the sun or the moon dwelling in the constellation at the time of the equinoxes, especially to the situation when the blacked-out moon coincided with the autumnal equinox. The depictions of the boat in the Ramesseum diagram and in the zodiacs are based on this interpretation of the name ("what is in the middle of the boat"). Perhaps the same situation is described in other contexts as well where the name *ḥr.j-jb-wjȝ* appears, for example in a hymn addressed to "Re-Harakhty, who is in the middle of the boat" on a rock-cut stela next to the entrance of the tomb of Setau in El-Kab (12th century BCE),[104] and in the caption "Khepri, who is in the middle of the boat", written next to the sun god travelling in his boat before the lunar barque on the eastern wall of the pronaos in the Edfu temple (2nd century BCE).[105] If these designations are not faulty writings of a regular epithet of the sun god, *ḥr.j-jb-wjȝ=f* "He-who-is-in-his-barque",[106] then it is not at all unimaginable that the hymn invokes the sun around the time of the autumnal equinox, and in the same manner, the celestial depictions at Edfu – both lunar and solar – are also connected in some way with the same yearly event.

There is also evidence to suggest that as the connection between the constellation of the boat and the autumnal equinox was established, the name became to be understood as a *nfr ḥr* construction as well, with the meaning "the middle ship" or "the ship in the middle". In other words, the constellation of the ship was recognized as the marker of the middle part of the sun's annual journey: whenever day and night became equally long after the summer solstice, the sun was due to appear in the constellation (in reality, throughout much of ancient Egyptian history, to mask the stars of the constellation with its glare). A reference to this role of the constellation may perhaps be found in Coffin Texts spell 159 (later known as chapter 109 of the Book of Going Forth by Day):[107]

> *Rḫ bȝ.w jȝb.tjw rḫ.kw sbȝ pw ḥr.j-jb prr.w Rʿ jm=f m jȝb.t rs.j=f m š.w ḫbs.w m bw sqdd Rʿ jm m ṯʿw mḥ.tj=f nw.yt sr.w m bw sqdd Rʿ jm m ḫnj* (*CT* II 363c-6a).
>
> Knowing the bas of the easterners. I know it is the gate in the middle, from which Re emerges in the east. Its south is in the lake of the *ḫbs*-geese, which is the place where Re navigates by

[102] A decan can only be a single star from a practical point of view, so in a strict sense the *sr.t* decan was possibly one of these stars.
[103] K. LOCHER, *JHA* 12, p. 73-74.
[104] K*RI* VI, 555, 5.
[105] *Edfou* III, 212, 7.
[106] *LGG* V, 323.
[107] T.G. ALLEN, *The Book of the Dead or Going Forth by Day: Ideas of the Ancient Egyptians Concerning the Hereafter as Expressed in Their Own Terms*, *SAOC* 37, p. 89 (the text also appears as the the description of the second mound of the Field of Reeds in chapter 149, see p. 142).

> sailing; its north is in the waters of the *sr*-geese, which is the place where Re navigates by rowing.[108]

This passage is an excerpt from a longer composition that I prefer to call the Book of the Moon (Coffin Texts spells 154-160),[109] and describes the arrival of the waning lunar crescent in the east, and consequently the behaviour of the rising sun as the Egyptians conceptualized it along the eastern horizon.[110] The southern and northern extremities – the points of the winter and summer solstices, presumably – are conceived of as watery regions, between which the sun god travels by the means of a boat. The reciter of the spell seems to be especially proud to know the middle point of the journey, which is defined as a gate halfway between the southern and northern ends, obviously corresponding to the point of the equinoxes. There is in all likelihood a subtle pun intended in the text, because the middle point – and later, every position[111] – from which Re emerges at the eastern horizon is equated with a gate, which word is written with a star (),[112] and is also homonymous with the word "star" ().[113] This implies that the Egyptians were aware of the fact that throughout the year the sun was moving through different groups of stars and at a specific point in time – say, the autumnal equinox – it always stayed in ("emerged from") the same particular set of stars.

Coffin Texts spell 159 links the wandering of the sun along the eastern horizon with the movements of a ship, though it falls short of expressly associating the midpoint of this journey with the constellation of the boat, which in this framework could rightly be called "the ship in the middle". Besides this text, however, there is strong pictorial evidence which shows that the Egyptians sometimes intended the expression *ḥr.j-jb-wjȝ* to mean "the middle ship", rather than "the middle of the ship" or "what is in the middle of the ship". Firstly, it comes from the tomb of Seti I (beginning of 13th century BCE), where the astronomical diagram is painted on the vaulted ceiling of the burial chamber.[114] In the diagram the decans are presented not only by a list of their names, but also by a crowded procession of anthropomorphic figures. The boat, accompanied here by six stars, appears as part of this file of figures, carrying Isis, Nephthys, Seth, and Horus, preceded by Seth and two other Horus figures, and followed by the four sons of Horus [fig. 10]. Above each of these groups surrounding the boat, nine stars are depicted in a neat rectangular grid. This is a remarkable feature because we find the same arrangement of stars next to those decans in the round zodiac of Dendera that mark the solstitial points in the signs of Cancer and Capricorn [fig. 1], though we should note that the three decans of Cancer are shown in the reverse order (see below), and next to the third decan of Capricorn twelve, not nine, stars form the three rows of the rectangular grid. No other decans are accompanied by similarly aligned stars, and their grid-like structure perhaps alludes to the celestial waters that mark the northern and southern end points of the sun's annual shuttle along its path, vividly described in Coffin Texts

[108] *CT* II, 363c-366a. For a possible connection of this text with the *sr.t* decan, see G. PRISKIN, *ENiM* 8, p. 148.
[109] G. PRISKIN, *ENiM* 8, p. 182-185; *id.*, "The Ancient Egyptian Book of the Moon: Coffin Texts Spells 154-160", in Chr. Alvarez, A. Belekdanian, A.-K. Gill, S. Klein (eds.), *Current Research in Egyptology 2015. Proceedings of the Sixteenth Annual Symposium*, Oxford, 2016, p. 102-113.
[110] *Ibid.*, p. 109.
[111] *CT* II, 368a.
[112] *Wb* 83, 9-17.
[113] *Wb* 82, 7-83, 4.
[114] *EAT* III, p. 14-16.

spell 159; in Egyptian art and hieroglyphic representations the shape of a rectangle is regularly used to refer to pools of water.[115] Consequently, in the astronomical diagram of Seti I the boat is situated between two groups of decans that seem to correspond to the summer and winter solstices. In this manner, the scene conveys the idea that the celestial boat is midway between the southern and northern extremities of the annual solar journey.

As regards the round zodiac, it should also be noted that within the decanal procession depicted along the outer rim, not only the times of the solstices, but also the equinoctial points are marked in a subtle way, using nautical images. Although the decans are often represented as travelling in boats (see the Esna procession for an example [fig. 2]), in the round zodiac only two of them are shown that way, the *ḥr.j-jb-wjȝ* decan in Libra and the *sȝ-qd* decan in Aries (within the boat of this decan we can see a ram's head crowned with a disc, protruding from a pedestal) [fig. 1]. It seems that in the round zodiac even the decan referring to the vernal equinox has been modelled after the constellation of the ship, reflecting the fact that it lies directly opposite to it on the plane of the ecliptic. The two boats are separated by seventeen decans on the one side, and – because of the presence of the intercalated decan – eighteen decans on the other. These numbers, we should remember, match the two groups of small circles on the two sides of the large disc in the boat of the Ramesseum diagram, reinforcing my conjecture above that the strings of circles indeed refer to the decans.[116]

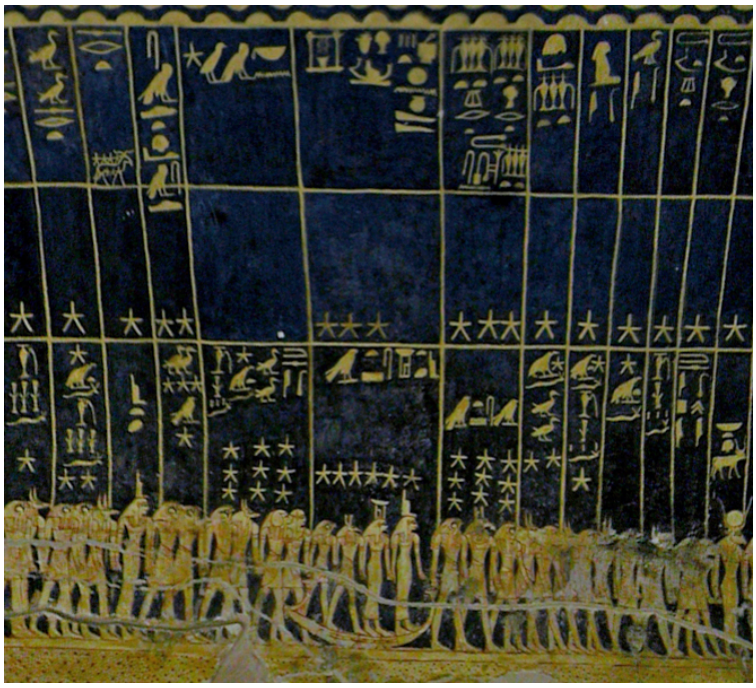


Fig. 10. The constellation of the boat in the astronomical diagram of Seti I (© Courtesy of T. Dupret, Cuicui.be).

Finally, it should also be noted that the decanal procession in the round zodiac conforms to an orderly layout which, however, is concealed in the actual appearance of the artefact by three

[115] J.H. WILKINSON, *Reading Egyptian Art*, p. 137.
[116] Their distribution, seventeen on the left, eighteen on the right, thus can be a direct allusion to the autumnal equinox.

factors: (1) the intercalation of an additional decan, in all probability denoting the epagomenal days, between Gemini and Cancer, (2) the uneven density of the decans at different sections of the circle, and (3) the flipping of the decans of Cancer, so that the solstitial marker – the grid of nine stars – accompanies the first decan of the sign, instead of the third one, as should be expected on analogy with the third decans of Libra, Capricorn, and Aries. This change suggests that the decanal list of the round zodiac is based on an ancient archetype that reflects a situation when the solstitial and equinoctial points were – due to precession – more to the left than they appeared at the time when the zodiac itself was created in the middle of the 1st century BCE. The marker of the summer solstice was moved to the front of Cancer precisely to adjust the list – at least, partly – to reality. The same change is effected for the decans of Capricorn within the central area of the zodiac, where the goose with the man above it leads the three decans of this sign. Once these obstructing factors are eliminated, we can see that the four fundamental points of the annual solar cycle are neatly separated by eight decans [fig. 1], and the boat of the *ḥr.j-jb-wjꜣ* decan is exactly halfway between the summer and the winter solstice, suggesting yet again that its name, within the context of the zodiac, may refer both to the appearance of the sun or the moon on board, and to the middle position of the boat in the yearly commute of the sun as compared to the rest of the sky.

Conclusion

The method of finding the divisions of the decanal lists of the Graeco-Roman astronomical scenes corresponding to the signs of the zodiac – that is, fitting them into a framework which we do understand – has once more proved fruitful, because it led to the correct identification of the celestial event that the various forms of the first two decans of Taurus represent. This was the occurrence of the full moon in the civil month I Shemu (Pachons), at which time pork was consumed on a grand scale in ancient Egypt, and in connection with it the attack of Seth on Osiris' astral body, the full lunar disc, was commemorated. The analysis has also shown that the Taurus decans, as they are depicted at Esna and Kom ed-Deir, and the *ḥr.j-jb-wjꜣ* decan, which in the zodiacs belongs to the sign of Libra, are closely related through a common ancestry that goes back to the representations of the constellation of the boat in the New Kingdom astronomical diagrams, and especially to its image as it is displayed with additional details in the Ramesseum.

The examination of all the evidence available for this decan, ranging from the diagonal star tables through the New Kingdom astronomical diagrams to the Graeco-Roman zodiacs, has, in turn, revealed that the constellation of the boat was identical with the three brightest stars of the modern constellation of Libra (α, β, and σ Librae). Though these three stars are not particularly luminous features of the night sky, their resemblance to a boat, and especially, their position around the point of the autumnal equinox through Egyptian history, made them – in connection also with the astral myth of Osiris – the linchpin of ancient Egyptian astronomical beliefs. This elevated status of the constellation, which is quite apparent in the New Kingdom astronomical diagrams, started to fade in the Graeco-Roman era, by which time the equinoctial point had passed well beyond the heavenly boat towards the sign of Virgo. This circumstance perhaps also contributed to the willingness of the Egyptians to adopt a new view of the celestial world in the form of the zodiac. As a result of this late development, nevertheless, the traditional Egyptian astronomical representations were put side by side with the symbols of the new system in the round zodiac of Dendera, which provided a vital clue to understanding the identity of the constellation of the boat, and to

peeling off the various layers of signification that have been attached to it throughout the ages. The discovery that the three most conspicuous stars of the modern asterism of Libra are equivalent with the Egyptian constellation of the boat will hopefully help future research to comprehend the concept of decans better than so far has been done, and will perhaps result in identifying further decans with actual stars.

Note

Conversion between Julian, Alexandrian, and Egyptian civil dates was done with the Calendar Date Module of the Almagest Ephemeris Calculator:

http://www2.arnes.si/~gljsentvid10/ almagestephemeris.htm.

Sky charts are by Cartes du Ciel 3.10:

© Patrick Chevalley, www.ap-i.net/skychart/en/start.

Simulations were also run on Stellarium:

www.stellarium.org.

Data about lunar phases are from the Six Millenium Catalog of Phases of the Moon:

© Fred Espenak, http://astropixels.com/ephemeris/phasescat/phasescat.html.

Dates of equinoxes were calculated by the LW Equinox & Solstice Calculator 1.0.1:

http://www.truebiblecode.com/ download.html.

For ephemerides, see Swiss Ephemeris for Users:

© Astrodienst AG, http://www.astro.com/swisseph/swepha_e.htm.

All sites accessed in July 2016.

Appendix

Dates of the full moon in civil month I Shemu between the years 1300-1251 BCE

Julian date			*Civil date*	*Julian date*			*Civil date*
30	March	1300	I Shemu 20	24	March	1275	I Shemu 20
20	March	1299	10	13	March	1274	9
8	April	1298	29	31	March	1273	28
27	March	1297	18	21	March	1272	18
17	March	1296	8	11	March	1271	8
4	April	1295	26	30	March	1270	27
24	March	1294	15	18	March	1269	16
13	March	1293	5	7	March	1268	5
31	March	1292	23	25	March	1267	23
21	March	1291	13	15	March	1266	13
11	March	1290	3	3	March	1265	2
28	March	1289	22	22	March	1264	21
18	March	1288	11	12	March	1263	11
6	April	1287	30	31	March	1262	30
26	March	1286	19	19	March	1261	19
14	March	1285	8	9	March	1260	9
2	April	1284	27	27	March	1259	27
22	March	1283	16	16	March	1258	16
12	March	1282	6	5	March	1257	6
30	March	1281	25	24	March	1256	25
20	March	1280	15	13	March	1255	14
9	March	1279	4	3	March	1254	4
28	March	1278	23	21	March	1253	23
16	March	1277	12	10	March	1252	12
5	March	1276	1	27	February	1251	1

Résumé :

Les différentes formes des deux premiers décans qui appartiennent au signe de Taureau dans les zodiaques gréco-romains – femme agenouillée, cochon, Osiris mort couchant dans un bateau, yeux – renvoient à la pleine lune au premier mois de Chemou ainsi qu'aux événements cultuels et mythiques qui s'y rapportent. Cette coïncidence s'explique par le fait que le premier mois de Chemou et le séjour annuel du soleil dans le signe Taureau se superposent au début de l'Ère commune. Les décans montrant Osiris et les yeux dans le bateau et appartenant au Taureau proviennent également des diagrammes astronomiques du Nouvel Empire, qui représentaient aussi un bateau sous le décan *ḥr.j-jb-wjꜣ* « le milieu du bateau ». Plus tard, ce décan sera rangé avec le signe de la Balance. L'analyse des symboles du décan dans le diagramme astronomique de Ramesséum et dans le zodiaque circulaire de Dendera démontre, en découvrant les couches de significations multiples se rapportant aux images, que la constellation égyptienne du Bateau était identique aux trois étoiles les plus brillantes du signe actuel de la Balance (α, β, et σ Librae, le décan *ḥr.j-jb-wjꜣ* étant l'étoile au milieu, α Librae). Ce bateau observé dans le ciel jouait un rôle important dans les cosmographies égyptiennes et dans le mythe astral d'Osiris, car, presque tout au long de l'histoire de l'Égypte ancienne, il se situait non loin du point d'équinoxe d'automne.

Abstract:

The different forms of the first two decans that belong to the sign of Taurus in the Graeco-Roman zodiacs – a kneeling woman, a pig, the dead Osiris lying in a boat, and a pair of eyes – are shown to refer to the full moon in the month I Shemu, and the cultic and mythological connotations of this event. The basis of this connection was the fact that I Shemu overlapped with the sun's annual stay in Taurus around the beginning of the Common Era. The Taurus decans showing Osiris and the pair of eyes in the barque derive from the New Kingdom astronomical diagrams which depicted a boat under the decan called *ḥr.j-jb-wjꜣ* "the middle of the boat". In the later zodiacs the same decan belongs to the sign of Libra. The analysis of the symbols of this decan in the astronomical diagram of the Ramesseum and in the round zodiac of Dendera, unveiling the multiple layers of signification that have been attached to them, reveals that the Egyptian constellation of the boat was identical with the three brighest stars of the modern constellation of Libra (α, β, and σ Librae, the *ḥr.j-jb-wjꜣ* decan being the star in the middle, α Librae). This boat in the sky played a crucial role in Egyptian cosmographies and the astral myth of Osiris because of its closeness to the autumnal equinoctial point throughout much of ancient Egyptian history.

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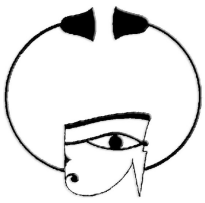

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