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Conservation and Innovation: The Zodiac in Egyptian Art

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Conservation and Innovation: The Zodiac in Egyptian Art

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An abstract of
A thesis submitted to the Faculty of the Graduate School of Emory University
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Abstract

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By Devon Stewart

This thesis investigates the introduction into and function of the Greek zodiac within the repertoire of ancient Egyptian art during the Ptolemaic and Roman periods. Although there was no native tradition of astrology in Egypt, the zodiac was readily incorporated into the existing tradition of astronomical iconography. In order to explain the adoption of the zodiac, this thesis examines the role of astronomical images in Egyptian art. Throughout the Pharaonic period, images of night sky decorated coffins, tombs and temples. These images served as a conceptual and visual compliment to the solar cycle and bore strong regenerative associations. The assimilation of the zodiac into the corpus of astronomical iconography indicates that Egyptian artists and patrons recognized a conceptual similarity between the organization of the night sky in the zodiac and in Egyptian art. Although formally different, the zodiac assumed the same function as more traditional astronomical images in sacred and funerary contexts.

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In the late third century B.C.E., the official Harkhebi described himself as, "clear-eyed in observing the stars, among which there is no erring; who announces the rising and setting at their times, with the gods who foretell the future...; who observes the culmination of every star in the sky...."[1] Although Harkhebi lived in a time when Egypt was ruled by the foreign Ptolemaic dynasty, his involvement in the study of the movements of the stars illustrates the continuation of a rich and vibrant tradition dating back to Egypt's Proto-Dynastic Period. Like many native cultural, religious and artistic practices, however, "astronomical" observation and the visual language used to represent astronomical phenomena were rehabilitated and enriched during the Ptolemaic and Roman Periods. One of the most significant additions was the introduction of figures from the Greek zodiac into the pre-existing astronomical iconography. In temples and funerary contexts, the signs of the Greek zodiac appear side-by-side with older, more traditional Egyptian representations of stars, planets and constellations. The syncretic merging of the iconographies of two distinct and very different traditions – Egyptian "astronomy" and Greek "astrology" –and warrants further investigation.[2]

The astrological system brought into Egypt by the Ptolemies in the fourth century B.C.E. was based in part upon the Babylonian practice of celestial divination, by which the futures of kings, prices and nations were discerned.[3] In the fifth century B.C.E., Platonist and Aristotelian philosophers in Greece further enriched the Babylonian tradition by developing a mathematical astrological system based on the concept of a

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[1] Otto Neugebauer and Richard Parker, *Egyptian Astronomical Texts Vol. III* (Providence: Brown University Press, 1969).
[2] It is important to note that neither "astronomy" nor "astrology", in their contemporary Western definitions, are fully adequate or appropriate to describe the respective Egyptian and Greek traditions. Both terms are introduced here only for lack of more precise terminology and will be further explained.
[3] P.I.H. Naylor, *Astrology: An Historical Examination* (London: Robert Maxwell, 1967).

geocentric universe. The relationship between the movements of the celestial bodies and events on earth was conceived as one of physical causality, in which pre-ordained events were revealed rather than predicted.[4] Greek astrology was divided into two types: horoscopy, which explored the influence of the stars and planets on the individual person; and general or universal astrology, which focused on the effects on communities, nations and the world at large. The Greek astrological tradition, later imported to Egypt, was therefore based on the interpretation of a series of events or actions considered to be fixed (rather than mutable according to the will of the gods.)

To our knowledge, no equivalent system of divination was practiced in Egypt prior to the Greek conquest. Although oracular prophecies played a major role in both Egyptian law and religion, these messages came down directly from the gods through the mediating force of their priests.[5] Perhaps more closely related to the system of Greek astrology was the Egyptian calendar of lucky and unlucky days, which characterized the auspice of each day of the year as favorable or adverse according to the occurrences in the lives of the gods which traditionally took place on that day. Along with the nature of the day, the calendars also advised what activities should or should not be then undertaken. The Cairo Calendar, a hieratic text enumerating the lucky and unlucky days of the year, categorized for example the fifteenth day of the first month of the Inundation as, "Mostly adverse. It is the day of the rage of Seth battling Horus. Do not go in a boat on this day."[6] In Egypt the fates of individuals and of the world at large were therefore dictated by the will and actions of the gods, rather than by a pre-set cosmic order.

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[4] Francesca Rochberg-Halton, "New Evidence for the History of Astrology," *Journal of Near Eastern Studies* 43 (1984).
[5] Bob Brier, *Egyptian Magic* (New York: Quill Publishing, 1981).
[6] Brier, 228-29.

Averting disaster was dependent upon individuals performing or avoiding certain actions on a given day or in a certain situation.

Why, with no pre-existing tradition of celestial divination, the Egyptians so readily incorporated the iconography of the Greek zodiac into their corpus of astronomical imagery is therefore a question of great interest. Although there is limited archaeological evidence for horoscopy practiced in Egypt during the Ptolemaic and Roman Periods, this practice should be viewed as a phenomenon distinct from that of the blending of the iconographic traditions.[7] Unlike a horoscopic chart, which records the alignments of the stars and planets at a specific moment in time in relation to an individual, the zodiac is a visual representation of the sky which depicts the signs in their ideal alignment. I propose that the adoption of the signs of the zodiac into funerary and sacred decorative programs demonstrates that the Egyptians recognized the universal quality of that aspect of the Greek astrological system, and furthermore perceived a similarity between the organization of the zodiac and their own system of classifying the celestial bodies of the night sky. The seamless integration of the two visual traditions does not reflect a similarity between the respective *practices* of Egyptian astronomical observation and Greek astrological divination, but rather an understanding on the part of the Egyptians of an underlying formal and conceptual commonality between their visual manifestations.

In order to more fully understand the circumstances under which the iconography of the Greek zodiac was incorporated into Egyptian repertoire of astronomical imagery, it is necessary to first outline the history, use and meaning of representations of planetary and stellar objects in Egypt. From the Old Kingdom onward, more or less sophisticated

[7] Neugebauer and Parker 1969, 204.

representations of celestial bodies are included in the decoration of temples, tombs and coffins. The ritually-charged contexts in which astronomical images appear suggest that they function as more than mere representations of the natural world. Yet scholars have largely left the significance of astronomical imagery in Egyptian art unexplored. The pre-eminence of the solar cycle in the Egyptian construction of the universe has undoubtedly influenced the trajectory of scholarly inquiry, and perhaps rightfully so, for the evidence clearly illustrates the significance invested in the sun by the ancient Egyptians. However, the stellar and planetary cycles observable in the night sky were often thought of as complimentary to the solar cycle, and therefore should not be neglected as a powerful force in the functioning of the cosmos.

To date, the definitive and most exhaustive work on Egyptian astronomy is Otto Neugebauer and Richard Parker's volumes *Egyptian Astronomical Texts*.[8] The authors explore the evidence for Egyptian observation of the night sky throughout Egyptian history, seeking to correlate the surviving material with scientifically verifiable astronomical phenomena. However, their methodology is at its core based on modern astronomical practice, focusing on the empirical basis of the texts and images without providing any meaningful interpretation of the material within its Egyptian context. Subsequently, scholars such as John H. Taylor and Harco Willems have used Neugebauer and Parker's work selectively.[9] Individual occurrences of astronomical imagery are read according to their particular context and "scientific" implications, but no attempt has yet

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[8] Otto Neugebauer and Richard Parker, *Egyptian Astronomical Texts Vol. I* (Providence: Brown University Press, 1960); Otto Neugebauer and Richard Parker, *Egyptian Astronomical Texts Vol. II* (Providence: Brown University Press, 1964).

[9] John H. Taylor, *Egyptian Coffins* (Princes Risborough, Aylesbury, Bucks: Shire Publications, LTD, 1989); Harco Willems, *Chests of Life: A Study of the Typology and Conceptual Development of Middle Kingdom Standard Class Coffins* (Leiden: Ex Oriente Lux, 1988); Harco Willems, *The Coffin of Heqata: A Case Study of Egyptian Funerary Culture of the Early Middle Kingdom* (Leuven: Peeters Publishers, 1996).

been made to create a unified and broad-based interpretive framework for astronomical iconography in Egyptian art. In addition to investigating specifically the reason for the adoption of the Greek zodiac into Egyptian decorative programs, this paper will generally address the cosmological and ritual significance of astronomical iconography prior to the Ptolemaic Dynasty

The first meaningful Egyptian stellar observations occurred in the Proto-Dynastic Period.[10] At the time, the Egyptian calendar was based on the cycles of the moon. The lunar calendar divided the year into three seasons of four months each, corresponding roughly to the periods of inundation, planting and harvest. As lunar calendars generally fall short of the natural year by about eleven days, an intercalary month was added every two to three years to compensate for the discrepancy. The heliacal rising of the star Sirius, personified by the Egyptians as the goddess Sothis, when it occurred in the last eleven days of the twelfth lunar month, signaled the need for the addition of the intercalary month. This lunar calendar continued to be used to schedule religious festivals in Egypt until the rise of Christianity. For secular purposes, however, the lunar calendar was eventually replaced by a 365-day civic calendar, which was also likely formed around the annual heliacal rising of Sothis.[11] Furthermore, this particular astronomical event occurred just before the beginning of the inundation of the Nile, thereby linking the rising of the star with the regenerative potential of the creation process embodied by the annual flooding of the river. It is also important to note that the star was invisible for a period of seventy days before rising again on the eastern horizon, where the sun also appeared on its daily cycle. The connection between the cyclical

[10] Richard A. Parker, "Ancient Egyptian Astronomy," in *The Place of Astrology in the Ancient World*, ed. F.R. Hudson (London: Oxford University Press, 1974).
[11] Parker, 53.

movements of the sun and the star Sothis surely would not have been lost on the Egyptian mind.

The oldest literary evidence for Egyptian astronomical thought and, in fact, the oldest surviving example of Egyptian funerary texts, are the Pyramid Texts. A group of magical spells and ritual utterances inscribed on the walls of the burial chambers of kings' pyramids from the late Fifth Dynasty onward, and later in the tombs of the non-royal elite, the Pyramid Texts likely represent the codification of an earlier, oral funerary tradition.[12] The spells are concerned largely with empowering the deceased to overcome physical death and to be reborn daily in the company of the gods. At death, an individual's *ka*-spirit, or animating life-force, would separate from the physical body, along with the *ba*-spirit, the abstract form of the individual's personality. The ultimate goal of the afterlife was to successfully reunite the two spirits in order to create an *akh*, or "effective being."[13] In order to achieve the status of an *akh*, the deceased had to join the sun god for a daily journey in his bark, which sailed across the sky on the surface of the cosmic ocean which pressed against the boundaries of the created world.

At the end of each daily circuit, the solar bark and its occupants would be swallowed by the sky goddess, Nut, in whose womb they would gestate through the night before being reborn again the following morning. The nighttime journey was simultaneously conceived of as a journey through the sky and a trip into the *Duat*, or underworld, a plane of existence which was physically separate from the world of the living. The *Duat* was conceived as existing at once both underneath the physical world and above it in the body of Nut. Osiris, god of the dead, reigned in the *Duat*, and it was

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[12] James P. Allen, trans., *The Ancient Egyptian Pyramid Texts* (Atlanta: Society of Biblical Literature, 2005).
[13] Allen, 7.

through his regenerative powers that one could be reborn. James P. Allen succinctly describes this complex and often seemingly contradictory process, writing, "...while the Sun merged with the mummy of Osiris in the netherworld, the *ba* merged with its own Osiris, its mummified body lying in the tomb, and through that union received the power to become an *akh*, a being capable of renewed life."[14]

The night sky, fundamentally linked to the body of the sky goddess Nut and the regenerative potential of the god Osiris therefore possessed in the Old Kingdom enormous creative potential. It is no surprise, then, that a number of spells in the Pyramid Texts make explicit reference to the deceased's journey to the night sky. Although the exact content of the spells varies from tomb to tomb, a general theme involved the deceased individual assuming a place in the heavens among the stars, often in the company of the god Atum. For example, from the west and east walls of the burial chamber of Pepi I, Recitation 512 says, "Atum takes Pepi to the sky with his ba," and from the corridor, "...his arm may be received to the Marsh of Rest, and he may sit down among the stars in the sky."[15] This concept is repeated on the south wall of the sarcophagus chamber in the pyramid of Wenis:

> "Your messengers go, your heralds hurry to your father, to Atum. 'Atum, let him rise to you, fold him in your arms!' 'There is no god, who has become a star, without a companion.' 'Shall I be your companion?' 'Look at me! You have seen the forms of the children of their fathers, who know their spell, who are now Imperishable Stars.'"[16]

Although there is a clear conceptual relationship between the blessed dead and the stars implicit in the funerary texts of the Old Kingdom, in this period there is little attempt to reconcile that relationship with empirical astronomical observation. For example, in the sarcophagus chamber of the pyramid of Wenis, the ceiling is decorated

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[14] Ibid, 8.
[15] Ibid, 180.
[16] Ibid, 31-32.

with regular rows of yellow stars against a blue background. It is generally accepted that tomb architecture was intended to roughly correspond to the structure of the universe. Therefore, the stars are clearly meant to demarcate the ceiling as the conceptual equivalent of the night sky. However, there is no attempt to accurately represent individual stars or constellations according to empirical observations of the night sky or stellar cycle.

Allen's recent interpretation of the burial chamber of Wenis, on the other hand, allows us to read an additional level of meaning onto the ceiling decoration.[17] Allen identified the sarcophagus chamber as the *Duat*, from which the *ka* of the deceased would process out through the antechamber and ascending corridor towards the sky, as if on his nightly journey. The stellar decoration doubles as both a reference to the stellar cycle and an allusion to the cosmic space in which the dead would reside with Atum during the hours of the night. The formulaic conception of the night sky represented on the ceiling of the burial chamber illustrates that in the Old Kingdom emphasis was placed not on the actual topography of the night sky but on the conceptual link between the stellar realm and the afterlife. As time progressed, the conception of the night sky became more sophisticated and its visual representation enriched.

The next major astronomical development in Egypt likely originated in the Old Kingdom, although it did not appear fully developed until the First Intermediate Period. The diagonal calendar or star clock, as it is better known today, tracked the rising of a group of decanal stars through the night sky over the course of thirty-six decades, or ten-day intervals, and the five epagomenal days added at the end of the year. Star clocks are common on the lids of non-royal coffins dating from the Ninth through the Twelfth

[17] Allen, 10-11.

Dynasties, and their development represents not only one of the greatest Egyptian achievements in the field of astronomy, but also the reconciliation of the ritual meaning invested in the solar and stellar cycles. In order to fully appreciate the significance of the star clock, one must first look to funerary culture in the Middle Kingdom to establish its context.

Many of the ritual practices attested in the Middle Kingdom originated in the cults of the Old Kingdom rulers. The Coffin Texts, a collection of spells and sacred utterances ubiquitous in the decoration of the Middle Kingdom coffins, provide the most detailed picture of Egyptian beliefs about the afterlife in this period. Many of the spells found in the Coffin Texts can be traced directly to the Pyramid Texts discussed above, and the general conception of the afterlife as well as the significance of the night sky in the deceased's journey remained the same. The dissemination of this material from the realm of the kings to that of the non-royal elite has frequently, and inappropriately, been referred to as a "democratization" of the afterlife. This term is unsuitable because it implies universal access to this material across the Egyptian population, while the archaeological record indicates that access was limited to an exclusive, if stratified, group of royal and non-royal elites. What has been characterized as a "democratization", therefore, should instead be considered a loosening of the decorum surrounding the prerogatives of the king in relation to the elite, a process which would influence in many respects the form and content of Middle Kingdom funerary decoration.

At the core of the Coffin Texts, as in the Pyramid Texts, is the notion that the deceased would ascend to the sky after death. Having braved the perils of the underworld and successfully reached the celestial realm, the deceased would take his or her place

among the gods, and join the entourage of the sun god Re on his daily journey across the sky. This voyage was thought to take place in Re's bark, which is described in Spell 1030 of the Coffin Texts:

> I will go with them aboard the lotus bark at the dockyard of the gods. I will take possession of the bark which has lotus leaves at both ends. I will ascend in her to the sky. I will sail in her in the company of Re. I will sail in her with Megef-ib. I will act as pilot in her to the polar region of the sky, to the stairway of the bark of Mercury.[18]

In this passage it is also apparent that, at least in some respects, the deceased also assumed the role of Re during his or her journey. The deceased takes possession of the solar bark, and pilots it through the sky. The assimilation of the deceased with divinities is another aspect of Middle Kingdom funerary belief which has its origins in the royal sphere. The king is no longer the only individual who may take on the guise of a god or gods. Rather, in the transition from life to afterlife, the elite too may assume these roles.

In his or her adopted role as the sun god, the deceased also had to venture through the night sky in a voyage complimentary to that of the sun's passage during the day. Katja Goebs has convincingly argued that during this voyage, the deceased would take on the role of a cycle of cosmic deities/rulers: Atum as the evening sun, Osiris as the night sun, Khepri as the rising sun, and ultimately Horus as the brilliant sun of the day.[19] In the guise of the setting sun, the deceased would pass from day to night by entering the mouth of the goddess Nut, in whom he or she would gestate throughout the night. At dawn, the deceased would be reborn, and restart his or her journey aboard the solar bark.

The understanding of Nut as a nocturnal mother, who gave the deceased new life and provided protection in her womb during the night, finds its physical manifestation in

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[18] Marshall Clagett, *Ancient Egyptian Science: A Source Book* (Philadelphia: American Philosophical Society, 1989).
[19] Katja Goebs, "*Niswt nhh* – Kingship, Cosmos and Time," in *The Oxford Encyclopedia of Ancient Egypt*, ed. Donald B. Redford (Oxford: Oxford University Press, 2001).

the coffin. The coffin was assimilated with the body of the goddess, and provides for the mummy both protection and a site for regeneration.[20] The most explicit textual associations of the sky goddess with the coffin occur much later in a Late Period coffin inscription where Nut says:

> "I place you within me, I bear you a second time,
> That you may go out and in among the Imperishable Stars
> And be elevated, alive, and rejuvenated like the sun god, daily.
> ...I surround you in my name "Coffin"..."[21]

However, the leading role which Nut plays in the Pyramid and Coffin Texts as one who embraces and protects the deceased echoes the function of the coffin itself, which encases the body and physically protects it for eternity. Nut also regularly appears in coffin decoration during this period, both in and outside of the star clock itself.

The collapse of the central government – and its artistic workshops – during the First Intermediate Period resulted in the development of a number of local and regional artistic traditions. After the re-unification of the state under Nebhepetre Montuhotep II, these regional styles persisted in the art of the elite. The vestiges of these native styles can still be identified in many of the Middle Kingdom coffins which survive today.

Regional variation aside, the common themes of Middle Kingdom coffin decoration are the provisioning of objects essential to the deceased's easy transition into the afterlife. Many of the motifs from Middle Kingdom coffin decoration can be found earlier in tomb decoration. False doors, offering tables and friezes of objects including ritually and domestically necessary items ensured that the deceased would have all that he or she required in the afterlife in the event that the funerary cult would or could not be performed by the living. With the inclusion of these motifs in tomb decoration, it may

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[20] Jan Assman, *Death and Salvation in Ancient Egypt* (Ithaca and London: Cornell University Press, 2001).
[21] Assman, 170.

seem excessive to have it repeated within the coffin itself. However, it is essential to remember that lower-level elites may not have had a decorated tomb chapel in which to place these powerful images, even if they were able to afford a fine coffin. For those who could afford a decorated tomb chapel, it appears as though the more ritually significant images and objects present, the more effective their power would be.

There are several new concepts introduced in the decoration of Middle Kingdom coffins. The appearance of gods within the non-royal sphere marks an important step in the development of artistic decorum. Although the deceased is not depicted interacting with the gods, the Coffin Texts reveal that deities were much more accessible to non-royal elite individuals than in the past. Furthermore, the popularity of Osiris as a funerary deity became widespread, and his appearance in funerary inscriptions and the Coffin Texts ubiquitous.

Several innovative motifs were also added to the repertoire of Middle Kingdom funerary art. The object frieze, a horizontal band of a variety of objects, including cloth, jewelry, tools, furniture, food, vessels, utensils and even games, was introduced in this period.[22] Likewise, other decorative features not previously attested in Egyptian funerary art occur in these coffins. On the interior bottom of the coffins sometimes appeared a depiction of the Book of Two Ways, a guide to navigating the underworld by land and on water. The text of the Book of Two Ways is framed within an abstract topography of the underworld, with blue or green stripes of color filled with zig-zag lines representing water, and yellow patches which seem to show islands.[23] Spells concerning the journey of the deceased through the underworld are inscribed on these "island" spaces. The

[22] Goebs, 244.
[23] Willems 1988, 235.

position of the scene within the coffin seems significant, for the underworld is literally placed beneath the body, perhaps symbolizing both the underworld's position below the earth and the triumph of the deceased over its perils.

Although the provenances of many objects are poorly documented or unknown, it appears as though the star clock was a favored motif in Upper Egypt only.[24] What necessitated the creation of a system to track the movements of the stars through the night sky is not immediately apparent. Certainly the vast majority of the Egyptian population would not have had the need, let alone the desire, to keep track of the hours of the night. Simply put, most people would have been asleep resting for the next day of work. The only segment of the population who would have had the luxury of staying up all night in order to observe the stars was certainly the elite.

Gay Robins has suggested that the star clock may have originally developed in the temple system.[25] The waking of the god at dawn was an essential element of daily temple ritual, and in order to accurately predict the moment of sunrise some method of tracking the hours of the night must have been necessary. Furthermore, the night was regarded as quite dangerous and chaotic, and the numerous celestial bodies visible in the night sky stood in stark contrast to the singular, brilliant sun, whose movements were easy to track across the daytime sky. The star clock offered a means by which to impose order on the night by selecting a handful of highly visible decanal stars whose course across the night sky could be followed and recorded on a grid. Depending on the Earth's position relative to the sun, the length of the twelve "hours" through which the stars were passes would vary. Therefore the star clock offered almost no accurate (in contemporary

[24] Taylor, 21-22.
[25] Personal communication with author, November 16, 2007.

Western terms) means of tracking time. It is likely that even from the inception the star clock was used for ritual rather than utilitarian purposes.

The star clock is based upon the rising of certain stars over the course of twelve "hour" intervals through the night. The rising of each star marked the advancement of the hour. Because of the earth's annual revolution around the sun, there is a slight change in the rising time of each star every night. The vertical columns on the grid represent the thirty-six full decades which made up the year. An additional five epagomenal days were added at the end to complete the 365-day annual cycle. According to the star-clock system, therefore, the appearance of the star which marked the beginning of the third hour in a given decade would five weeks later indicate the beginning of the eighth hour. The schematic star clock designed by Neugebauer and Parker charts the idea form of the star clock.[26] The horizontal rows represent the twelve hours of the night. Each decanal star is listed in its hour of rising in the appropriate decade, forming a diagonal pattern advancing from the bottom right to the upper left corner of the grid.

The grid is subdivided into four quadrants by breaks in the columns and rows. Between the eighteenth and nineteenth decades and the sixth and seventh hours, deities and stars such as Nut, Orion, the Ox Foreleg and Sothis are depicted along with invocations and offering formulae. These deities are faithfully included in the star clock composition; while we may never know if they were part of the original decoration outside of the funerary realm, the consistency of the reproduction suggests the possibility.

Although the basic form of the star clock is very consistent throughout the Middle Kingdom, variation frequently occurs in its organization. The full course of the thirty-six decade and five epagomenal day calendar is rarely depicted. Rather, abbreviated forms

[26] Neugebauer and Parker 1960, 1-3.

using between sixteen and thirty decades, with or without the columns for epagomenal days, are most common. Furthermore, the decans are not always listed in their standard order. These discrepancies seem to be errors in transcription rather than fundamental misunderstandings of the system, as in the case of the Ninth or Tenth Dynasty coffin of Huensokar from Asyut. There the decades in the upper left quadrant, decades fifteen to twenty, are placed an hour later than they should be. Given the breaks in the grid which divide the composition, such an error is quite understandable.

Another important, and unexpected, feature of many of the coffin star clocks is that they are frequently dated much earlier than the coffins themselves. The coffin of Heqata is dated to the reign of Amenemhat I on the basis of stylistic and epigraphic evidence.[27] However, the star clock itself has been dated to the First Intermediate Period or the early Middle Kingdom.[28] Star clocks are relatively easy to date using modern astronomical observations, as the positions of stars in the night sky thousands of years ago can be confidently reconstructed. However, the place from which the stars were observed has an impact on determining the time at which the star clock was recorded. For example, if two individuals were simultaneously observing the night sky at Aswan, in the far south, and Asyut, in the middle of Egypt, the stars would appear to be in different places in the sky although they are in the same absolute position. Thus, two star clocks produced simultaneously at these two sites would reflect a regional discrepancy.[29] Even if scholars are able to confidently locate the place of production of a single coffin, that location is not necessarily the same place at which the original star clock was produced.

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[27] Willems 1996, 21-22.
[28] For a concise summary of the various arguments for this date, see Willems 1996, 330-331.
[29] Ibid, 332.

Ultimately, the difference in the dates of the coffin and the star clock reflects two important aspects of the latter. First, it was not the intent of the artist or patron to accurately represent the movements of the celestial bodies. Rather the star clock seems to be emblematic of the stellar cycle as a whole. For even if the star clock was accurate to the particular year in which the deceased was buried, the cyclical nature of the information recorded on it alluded to both the past and the future cycles of the stars which had been observed. Given that the stellar cycle, like that of the sun, was thought to be continuously renewed, the precise position of any given star was not as important as the underlying concept of continuity.

Secondly, the use of outdated star clocks reaffirms that this system was not being used for a utilitarian purpose by the majority of the population. Certainly if it was, more accurate and up-to-date star clocks would have been available to either the artists or the patrons. How the artists were gaining access to even the obsolete star clocks is unknown, especially if we concede that they originated in a temple context. The close association of the artistic workshops responsible for creating private non-royal funerary equipment and major Egyptian institutions – such as the royal house and the temple system – in the New Kingdom suggests that a similar system may have been in place in the Middle Kingdom.[30] Temple workshops therefore would have already been familiar with the star clock from temple decoration. Robins further proposed that star clocks most likely circulated on papyrus, and that each respective workshop used its own prototype until it

[30] Melinda Hartwig, "Style and Visual Rhetoric in Theban Tomb Painting," in *Egyptology at the Dawn of the Twenty-First Century Vol. 2*, ed. Zahi Hawass (Cairo and New York: The American University in Cairo Press, 2003), 298-307.

wore out.[31] This may provide another explanation for the time discrepancies already identified.[32]

As mentioned previously there is no way to know if the figures included on the star clock, Nut, the Ox Foreleg, Orion and Sothis, were an addition to the star clock for use in the funerary realm, or if they were also included in other contexts. Their significance in the coffins, however, is worthy of exploration. Nut, as the sky goddess, was a reasonable choice for inclusion on the lid of the coffin. The discussion of Middle Kingdom funerary beliefs demonstrated that she was not only an important figure in the transition from life to death, but also as the embodiment of the sky/*Duat*. Indeed, in most representations, including all of those reproduced here, she is shown holding up the hieroglyph for sky. Likewise, her association with the coffin as mother and protector of the body make her inclusion in coffin decoration only logical.

The Ox Foreleg is a familiar object from tomb reliefs and funerary stele from the Old Kingdom onward. The foreleg of the ox was the most prestigious food offering that could be made to the deceased. It appears frequently both in depictions of funerary processions and in offering scenes. Furthermore, both the ox foreleg as offering and as constellation may already in this period make reference to the Opening of the Mouth Ritual, which in the New Kingdom included the foreleg of an ox as one of the ritual implements used to activate the mummy. In a stellar context, the Ox Foreleg corresponds to the constellation we know as the Big Dipper, and is located near the celestial north pole, a sacred area of the sky where the dead were thought to reside with the gods.

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[31] Personal communication with author, December 5, 2007.

[32] This theory also suggests the intriguing possibility that the products of individual workshops could be identified by analyzing the form, content and style of extant star clocks. Such an undertaking is beyond the scope of this paper, but would make an excellent project in the future.

Therefore, the inclusion of the Ox Foreleg on the star clock bore connotations of sustenance, status and rebirth.

The constellation Orion was associated with the god Osiris as early as the Pyramid Texts.[33] As mentioned previously, Osiris was thought to rule the underworld in a role complementary to the sun god's during the day. On the star clocks, Orion is shown wearing a wig and pleated kilt, and holding an *ankh* sign in his right hand with a *was*-scepter in his left. He may or may not also wear a crown and a false beard. Orion's attributes emphasize his royal status, and therefore his association with Osiris in the god's role as ruler of the dead. Orion's body turns towards Sothis while his head turns back in the direction of Nut and the Ox Foreleg. Usually Orion is depicted with black skin. This may also be drawn from the iconography of Osiris, and refer to the fertility and regenerative potential of the rich black silt deposited by the Nile during the inundation, with which Osiris was associated.

Finally, the star Sothis is shown personified as a goddess. She also carries a *was*-scepter and an *ankh*, and faces towards the center of the coffin lid. The star Sothis is located in the Canis Major constellation in close proximity to Orion. The star and its personification are also often associated with the goddess Isis, the consort of Osiris.[34] Perhaps these factors account for the figures' close proximity on the star clock. As previously mentioned, Sothis was one of the most important stars recognized by the Egyptians, and represented both the cycle of rebirth and the creative potential of the inundation.

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[33] Goebs, 239.
[34] Ibid, 240.

Star clocks clearly held meaning significant to the funerary realm. However, they also helped to delineate the lid of the coffin as the night sky. Like the tomb itself, the coffin could be conceived of as a microcosmic representation of the universe. The orientation of the coffin to the cardinal directions, with the eye panel facing the east to allow the deceased to witness the rising of the sun and the length of the coffin placed on a north-south axis to mimic the course of the Nile, support this idea.[35] Furthermore, the invocation of the first two generations of creation, that is, the gods Shu, Tefnut, Geb and Nut on the exterior of the coffin also seem to delineate the exterior of the coffin as the boundaries of the created world. Similarly, the representation of stellar deities and the stars themselves make explicit that the coffin's lid was the uppermost boundary of the contained universe.

However, it is also clear that importance was placed on the journey that the stars took through the night sky. If the desire was only to indicate that the coffin's lid represented the night sky, stars and stellar deities could have been depicted in any number of different compositions and combinations, such as on the ceiling of the burial chamber in the pyramid of Wenis. The effect is the same; that is, the ceiling of the tomb chamber is clearly meant to represent the night sky. Indeed, by confining the stars to an orderly pattern, both the star clock and the decoration on the ceiling of the tomb chamber impose order on the chaotic night sky. The concept of universal order and harmony, *ma'at*, was an essential element of the Egyptian construction of the universe. The perpetuation of *ma'at* guaranteed that the forces of chaos which constantly threatened the created world would be kept in check. By creating a system to organize the chaotic

[35] It is important to note that depending on the actual site of burial, the orientation of the coffin and tomb may reflect local or ritual directionality rather than the true cardinal directions.

nature of the night sky, *ma'at* could be reinforced and the balance of the universe maintained. However, the specificity of the star clock indicates that its form carried particular importance.

Star clocks were likely selected because they provide a relatively accurate depiction of the movements of the stars. This may seem contradictory, given that the star clocks were frequently obsolete by the time that they made it onto the coffin lids, and the fact that the orderly grid pattern in no way resembles the actual night sky. However, the "accuracy" of the star clock was conceptual rather than literal. Although the star clock may not have reflected the actual state of the night sky at the time of the burial, the Egyptians' cyclical understanding of the solar and stellar cycles allow for the continued relevance of the image. To this end, it is also important to remember that *any* star clock, accurate at the time of the burial or not, would have been obsolete in concrete terms after only one year. For the Egyptians, this evidently did not hinder the efficacy of the image.

One may also perhaps think of the star clock as a sort of map providing the deceased with knowledge of the night sky so that he or she could easily navigate to the appropriate place in the celestial realm. The notion of the star clock as a map complements the scene from the Book of Two Ways, which is sometimes depicted on the bottom of the coffin, and acts as a guide for individuals moving through the underworld. It would be interesting to know if some of the star clock coffins also included such underworld maps, but as of yet I have not identified any examples. Regardless, the star clock provides an orderly guide to the movements of specific stars, naming them and giving their time of ascent. This would allow the deceased to find his or her way in the night, and easily pass through the sky in order to join the bark of Re.

Finally, the star clock repeatedly refers to the cyclical renewal of time. The regular and orderly movements of the stars recorded on the star clocks implicitly refer to the regular and orderly movement of the sun throughout the day. The association of the cycles of the stars and the sun, along with the funerary significance of the night sky attested by the Coffin Texts, suggests that in this period the stellar cycle had as much creative potential for rebirth as did the solar cycle.

The legacy of the Middle Kingdom star clock continued into the New Kingdom, with little change to the system until the Nineteenth Dynasty. However, while star clocks in the Middle Kingdom are attested exclusively in coffins, in the New Kingdom they are transferred to the ceiling of the tomb. The earliest known example of an astronomical ceiling is located in the burial chamber of one of the tombs of Senenmut at Deir el-Bahri, where a modified star clock appears alongside a lunar calendar.[36] The southern half of the ceiling lists the names of decanal stars, along with representations of stellar deities, constellations, stars and planets. The position of Sothis within the decanal list indicates that the star clock from which the ceiling was derived likely dated to the Twelfth Dynasty, when the last revisions to the original system were made.[37] The northern half of the ceiling depicts the northern constellations, rendered as a hippopotamus with a crocodile on its back akin in form to the goddess Taweret, a bull tethered to a mooring post, a falcon-headed deity, a man preparing to strike a crocodile and a recumbent lion surrounded by stars; these are, in fact, the earliest known representations of these

[36] Parker, 59.
[37] Ibid.

constellations.[38] Flanking deities correspond to the days of the lunar month. Above them, twelve circles, grouped in fours, are named as the months of the lunar calendar.

The decoration of this tomb ceiling provides evidence that the ritual function of star clocks continued into the New Kingdom. The star clock represented on the ceiling of the burial chamber of Senenmut was out of date by about five hundred years at the time of the tomb's decoration and, like the Middle Kingdom coffin star clocks, would not have accurately predicted the movements of the stars. However, as a means by which to impose order on the night sky and ensure continued regeneration in the afterlife, the ceiling star clock, along with the lunar calendar, would have functioned quite effectively.

Astronomical ceilings, sometimes retaining a modified star clock form and others incorporating only some of its constituent parts, such as the decanal stars and the northern constellations, remain popular in royal tombs, such as those of Seti I, Tawosret, Ramses IV, Ramses VI, Ramses VII and Ramses IX. While there does not appear to have been a strict rule governing the placement of astronomical ceilings within a tomb complex, there does seem to be a preference for the situating of astronomical iconography on vaulted ceilings, especially in conjunction with the goddess Nut, as in the tombs of Seti I. The form of the vaulted ceiling likely referred to the vault of the sky over the earth, formed by the body of Nut arching over her consort Geb, the earth. Therefore in both form and decoration the astronomical ceiling reinforced the notion of the tomb as a microcosm of the created universe.

Furthermore, texts from the tombs of Seti I and Ramses IV specifically state that the solar and stellar cycles are similar phenomena. Like the sun, the decanal stars were thought to "die" and enter into the *Duat*, where they would spend seventy days before

[38] Neugebauer and Parker 1969, 11.

once again being reborn on the eastern horizon. It is likely that this association had been implicit in Egyptian astronomical observations well before the New Kingdom, for it was known early on that the star Sothis behaved this way. The full expression of this idea in a funerary context, however, supports the supposition that by the New Kingdom, empirical astronomical observation was fully reconciled with Egyptian notions of the afterlife and the structure of the cosmos as a whole.

This reconciliation may best be illustrated by the ceiling of the burial chamber of Ramses VI, where the goddess Nut is depicted stretched out over the earth. Beneath her, numerous stellar deities are depicted in barks and lined up in rows, along with vertical columns of texts and stars arranged in a manner reminiscent of the star clock. On the north half of the ceiling, the sun disk is shown entering Nut's mouth and moving through her body before eventually emerging from between her legs. On the south side, however, the sun disk is eliminated altogether, and stars are shown moving through Nut's body. Although it may be argued that this is simply an artistic convention, meant to illustrate the link between Nut and the night sky, and additional layer of meaning may be read from this image. The sun was thought to move through the *Duat* at night in the northern half of the sky, as during the day it appeared to move through the southern half, because of the position of Egypt north of the equator. Logically, it would follow that the stars would move through the *Duat* in the southern half of the sky as the counterpart to the sun. The stars shown moving through Nut's body on the southern half of the ceiling might therefore be seen as an expression of the parallelism of the solar and stellar cycles.

The New Kingdom also provides the first concrete evidence for the inclusion of astronomical imagery in a temple context. Although the importance of the lunar and

stellar cycle in ritual calendars and the probable origin of the star clock in temple contexts have already been addressed, it is not until the Nineteenth Dynasty that astronomical iconography is attested within a temple. The so-called Astronomical Room, the Second Hypostyle Hall of the Ramesseum at Luxor, contains panels depicting personified decanal stars, personifications of planets, northern constellations and a lunar calendar on the ceiling and architrave. The decanal stars are identified in an inscription as "gods and goddesses who are in the southern sky," and offer blessings to the king. On the lunar calendar, the king makes offerings to the personifications of each of the lunar months.[39] Similar ceiling decoration is also attested from the Temple of Ramses II at Abydos, and the Temple of Ramses III at Medinet Habu.[40] Although the ostensible functions of temples are different from those of tombs and coffins, it is generally accepted by scholars that in antiquity they were "fundamentally similar in terms of architecture and program, the patterned structure of texts, images and scenes flowing over their walls and ceilings."[41] Moreover, the structures share an underlying cosmological function, that is, the temple, tomb and coffin all serve as a microcosm of the universe. In this way, rituals performed within the space are rendered on a universal level.

The interaction of the king and the astronomical figures further supports the suggestion that the identification and organization of the night sky reinforced *ma'at*. One of the king's fundamental roles in Egypt was to act as intermediary between the human and divine worlds. As titular chief priest of all the cults of the gods, the Egyptian king was responsible for maintaining cosmic order by fulfilling the ritual needs of the gods. In

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[39] Neugebauer and Parker 1969, 18.
[40] Ibid, 17-21, 27-28.
[41] David O'Connor, "Egyptian Architecture," in *Searching for Ancient Egypt*, ed. David P. Silverman (Ithaca: Cornell University Press, 1997).

return, they offered him life, good health, protection and authority, thus enabling him to properly govern the people. By making the appropriate offerings to the lunar deities, the king is ensuring the continual renewal of time and its important phases – not only birth, death and rebirth, but the cycles of the inundation, planting and harvesting necessary for the support of the Egyptian population. This would ultimately serve to guarantee the continuation of *ma'at* in the cosmos.

The tradition of including astronomical ceilings in tombs and temples continue throughout the Late Period of Egyptian history. However, the system remains relatively unchanged until the introduction of the Greek zodiac. Although its articulation was changed and elaborated throughout history, the general significance of astronomical iconography remained relatively constant. As a counterpart to the solar cycle, the stellar and lunar cycle suggested the continued renewal of the cosmos. By including images of the night sky and its celestial bodies in ritually charged spaces such as tombs, coffins and temples, the Egyptians sought to harness the rejuvenating properties of the stellar cycle to help guarantee the maintenance of cosmic order.

Returning to the main question of this paper, that is, why the figures of the Greek zodiac were adopted into the repertoire of Egyptian astronomical iconography, it is important to note that astronomical images continue to appear in their usual funerary and temple contexts. There is no evidence to suggest that the fundamental function of astronomical imagery outline above changed with the introduction of the figures of the Greek zodiac. Rather, we should understand the process as an enrichment of a pre-existing tradition, presumably for the purpose of enhancing the efficacy of the images. Although most of the known zodiacs from Egypt date to the Roman Period, it is the

earlier Ptolemaic examples which best illustrate the blending of the Egyptian and Greek traditions.[42]

The earliest known example of an image with figures from the Greek zodiac in Egypt comes from the Temple of Khnum at Esna around 200 B.C.E.[43] The panels were located on the ceiling of the inner columned hall on the southern and northernmost sides. Each strip was divided into three registers, with the zodiac occurring in the middle. The zodiacal figures are depicted in order, staring on the southern panel on the west side: beginning with Pisces, the double fish; Aries, the ram; Taurus, the bull; Gemini, the twins; Cancer, the crab; and Leo, the lion. The northern panel ran in the opposite direction, reading from east to west. Unfortunately, the portion depicting Virgo, the maiden, Libra, the scale, and Scorpio, the scorpion, is missing. The frieze continues with Sagittarius, the centaur; Capricorn, the so-called "goat-fish"; and Aquarius, the water-bearer. Between Gemini and Taurus on the south panel is the south wind, and between Sagittarius and Scorpio, the north wind.

The figures of the zodiac are also accompanied by their decanal stars, three to each sign, and various other constellations. Planetary figures are also depicted in their exaltations, that is, in their traditionally ascribed astrological sign: Venus in Pisces, the Sun in Aries, the moon in Taurus, and so on.[44] In these panels, we can see that the Hellenistic zodiacal figures have been blended with more traditional Egyptian astronomical imagery. The decanal deities from both the middle and upper registers, as well as the constellations and the zoomorphic wind-figures, have remained relatively unchanged from previous astronomical iconography. Although the composition has been

[42] Neugebauer and Parker 1969, 204.
[43] Neugebauer and Parker 1964, 204.
[44] Ibid, 62.

modified by the presence of the zodiacal figures, the desire to preserve traditional stellar imagery is apparent in the merging of two very different systems of understanding the cosmos.

The zodiacal and astronomical figures depicted at Esna appear relatively unchanged almost two hundred years later at the Temple of Hathor at Dendera, dated to approximately 30 B.C.E.[45] Perhaps the most famous example of an Egyptian zodiac, the ceiling of the rooftop Osiris chapel appears not in linear but in circular form.[46] Four goddesses representing the cardinal directions, oriented to true rather than local north, support the zodiac with the help of falcon-headed deities. The northern constellations discussed in relation to the tomb of Senenmut are rendered in the center of the circle, with various constellations, zodiacal figures and planets in exaltation radiating out towards the border. The zodiacal figures are arranged in clockwise order, and therefore would be read east to west in the manner of the stars' movements through the night sky. Each sign has its corresponding three decanal stars at the outer edge of the panel. The circular zodiac at Dendera recombines Egyptian astronomical imagery with Hellenistic astrological signs, once again almost seamlessly fusing traditional and foreign elements in a single composition.

Although the interior of the panel may appear uncharacteristically disorganized compared to more traditionally ordered Egypt images, Neugebauer and Parker have aptly noted that this image attempts to accurately represent the night sky.[47] Indeed, the superficially cluttered appearance of the panel may belie the underlying order of the

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[45] Ibid, 72.
[46] The zodiac also appears in linear form at Dendera in Side Room XI. It is not immediately clear if there is a conceptual difference between the circular and linear forms of the zodiac; both generally depict the same astrological figures, decanal deities and constellations.
[47] Ibid, 73.

image. Not only does the panel attempt to document the actual appearance of the night sky, it also imposes an additional layer of order on the celestial realm by situating the night sky within the zodiacal framework. By dividing the sky into discrete sections (conceptually or visually), with knowable names and attributes, the Egyptians could affect a greater level of control over the powers of the cosmos.

Initially it may seem that the zodiac was so readily adopted by the Egyptian because it fit well into the prevalent understanding of the stellar cycle. The ease with which Egyptian artists blended Hellenistic zodiacal iconography with their own astronomical forms in the examples presented above does suggest that conceptually, the zodiac was perceived by the Egyptians as another way in which to order and represent the night sky. Yet the prominent position of zodiacal imagery in Egyptian temple and funerary decoration suggests that beyond the superficial similarities there lay a fundamental connection between the astrological system introduced by the Ptolemies and the Egyptian construction of the universe.

The systems of Egyptian astronomical observation and Greek celestial divination introduced in this paper may at first seem quite disparate, and rightfully so. Before the introduction of astrology, there is no evidence for a direct correlation between astronomy and divination in Egyptian thought. However, the conceptual precedents present in both facilitated not only the adoption of the practice of celestial divination, but also the innovation of a distinctly Egyptian zodiac. This zodiac incorporated Egyptian astronomy, Hellenistic zodiacal figures, and the notion that one could access the generative power of the cosmos. The ability to interpret the effects of the celestial bodies on the mundane world allowed people a degree of control over those effects. Like the

calendars of lucky and unlucky days, the use of celestial divination could forewarn individuals of negative auspices, thereby giving them the opportunity to take measures to mitigate or avoid entirely the disadvantageous circumstance. Therefore they would be able to protect themselves from chaotic forces.

The mathematical system of astrology developed by the Greeks also imposed a level of order on the night sky somewhat greater than that of the Egyptian astronomical system. As the general trend in the development of Egyptian thought is one of addition and enrichment in order to create a more effective system, it is not surprising to think that the Greek ideas would appeal to them. Furthermore, the movements of the stars were explicitly associated with the movement of the sun in the perpetual cycle of rebirth that formed the core of the Egyptian construction of the universe. By using these movements to interpret occurrences in the everyday world, one was directly tapping into the regenerative properties of the stellar cycle.

As representations of a universal rather than horoscopic zodiac, the panels at Esna and Dendera subsequently reflect the ideally ordered alignments of the heavens. This interpretation makes their incorporation into temple decoration entirely appropriate. The Egyptian temple marked the intersection of three planes of existence: the heavens, the earth and the underworld.[48] Not only did the temple provide a palace for the resident deity, it also acted as a microcosm of the created world in which the dramas of creation and the solar cycle were ritually performed each day. With the temple as a bastion of *ma'at* in an inherently chaotic world, the incorporation of the zodiac as an ideal representation of the night sky reinforced the cosmic order. Furthermore, the images in

[48] Richard H. Wilkinson, *The Complete Temples of Ancient Egypt* (London: Thames & Hudson, 2000).

temples, as well as in tombs and coffins, made what they represented ritually active.[49] Therefore, by invoking cosmic order through the use of effective images, the zodiac helped to tap into the universal creative force, at once dispelling chaotic forces and promoting the maintenance of *ma'at* by rendering the daily temple rituals more effective on both a microcosmic and macrocosmic scale.

As previously noted, the coffin can similarly be conceptualized as a microcosmic image of the universe, and indeed zodiacal imagery in coffins from the Greco-Roman Period appears to function similarly to that in temples. There appears to be no direct reference to the use of zodiacal figures as a means of divination in this context. Instead the zodiac is more conceptually linked with the notion of the night sky and the stellar cycle via its association with Nut and the potential for rejuvenation. This function of zodiacal imagery is supported by its incorporation into coffin decoration in the Roman period. On the interior lid of the wooden coffin of Soter, dated to c. 100 C.E., the signs of the zodiac are depicted surrounding the goddess Nut in counterclockwise order. To the proper left of Nut are the signs of Aquarius, Pisces, Aries, Taurus, Gemini and Cancer. To the proper right of the goddess appear the figures of Leo, Virgo, Libra, Scorpio, Sagittarius and Capricorn. Interspersed among the signs are small stars in no particular order. Stellar deities are depicted on the long sides of the coffin, although it is unclear whether they are intended to represent the decans.[50] Otherwise the interior of the coffin relies heavily on familiar astronomical iconography. As in the temple, the basic

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[49] Ragnhild Bjerre Finnestad, "Temples of the Ptolemaic and Roman Periods: Ancient Traditions in New Contexts," in *Temples of Ancient Egypt*, ed. Byron E. Shafer (Ithaca: Cornell University Press, 1997), 185-317.

[50] Most frequently, the signs of the zodiac are accompanied by thirty-six decanal deities. However, there are only twenty-four stellar deities depicted on the coffin of Soter. This may represent a corruption of the original system, or perhaps an artistic adaptation of the system to the available space.

function of the astronomical iconography is not altered by the inclusion of the figures of the zodiac. Their symbolic function as figures organizing the night sky is made explicit by the surrounding stellar deities and the prominent figure of the goddess Nut. Although the zodiacal figures have supplanted the earlier star clock forms, they are intended to served the same purpose of reinforcing cosmic order and ensuring the effectiveness of ritual activites, and therefore should be understood as a continuation of the tradition of Egyptian astronomical iconography.

Despite the largely unrelated origins of Egyptian astronomical and Greek zodiacal iconography, the cultural milieu of Ptolemaic Egypt offered the ideal environment for the blending of such different artistic traditions. The desire of Egypt's foreign rulers to not only preserve the traditions of the past, but also to enrich them by introducing innovative forms and ideas facilitated the adoption of Greek zodiacal figures into the canon of Egyptian astronomical imagery. Furthermore, the capacity of the Egyptian artists and patrons who created and utilized astronomical images to identify in the Greek zodiac forms and concepts complementary to their own understanding of the cosmos ensured the perpetuation of an ancient native tradition.

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