

THE ICONOGRAPHY OF ANCIENT ASTRONOMY ON FIVE ANCIENT NEAR EASTERN ARTEFACTS

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So gut wir nun aber auch über die Benennung und Ausdehnung vieler Sternbilder im Alten Orient unterrichtet sind, so wenig wissen wir noch über die Art der bildlichen Vorstellungen, welche die Babylonier mit den einzelnen Sterngruppen verknüpften.

[Ernst Weidner: 'Eine Beschreibung des Sternhimmels aus Assur' AfO IV]

Ernst Weidner was unusual in realising that the visual arts embody information as much as texts do, even if requiring interpretation. As art historian and archaeologist¹ I look at the arts of the Ancient Near East from that viewpoint, and as a first step I present here five artefacts that use astronomical iconography.

From the 5M BC only by knowing how to measure the year and monitor the pattern of the months and seasons was it possible for temples of the agro-urban civilisations in the Fertile Crescent to permanently manage the rising complexity of trade with other cities and lands. To be able to plan ahead and sustain a regular economy, Egyptian and Mesopotamian astronomer-priests started to bring the calendar under control: a liturgical year of festivals evolved to provide procedures and reminders that were signposted by the behaviour of stars and planets (the Gods and Goddesses), codified in text, image and ritual.

Having studied other cycles of religious iconography it struck me one approach no scholar had yet taken on Mesopotamian art was to interpret it as the embodiment of that civilisation's core astronomical concerns². The invention by unknown people of a perennial cycle of imagery at the heart of the arts of the Ancient Near East is remarkable, and would have started in the Neolithic period (Baity 1973)³. Although scholars such as Henri Frankfort, Anton Moortgat and Thorkild Jacobsen (archaeologists also with art history training) were highly successful in interpreting many of its aspects, it appears the use of a canonical set of images *marked calendrical turning points fundamental to the conduct of State affairs*. Confirmation of the existence of such a Canon of Ancient Near Eastern Art (hereafter referred to as the **CANEA**) is provided by rare instances of the depiction of the entire Cycle in one ensemble: its invention and development is as important as that of writing and accounting during the same period (late 5-3M BC).

In analysing five artefacts, made in the time-range 2500BC-2C AD, in this paper I aim to establish initial stepping stones of certainty on which to build a detailed delineation and interpretation of the **CANEA**⁴ in future work (see fn.59). Evenly spaced through the paper and tagged for ease of reference as Icons A-E, they start at the most recent and go back in time jumps to Icon D from Ur in the 3M BC, with a coda in the form of the Etruscan Icon E from the 6C BC. They are all astronomical, rather than astrological, in nature.

THE STARS AND SKY ZONE HERALDING THE NEW YEAR

Although for the practice of astronomy *all* the sky is important, one particular region (called the Duat by the ancient Egyptians - a useful shorthand term we will also use) had glamour quality in ancient man's mind due to the group of very bright stars lying near each other that in the earliest years of calendar regulation as they began to rise in the night sky were associated with the onset of the New Year. The sky

¹ Degrees from the Courtauld Institute and School of Oriental and African Studies - both specialist Colleges of London University.

² Neugebauer (1945) writes 'In spite of attempts to make Egypt responsible for many forms, the predominant influence of Babylonian concepts on the grouping of stars into pictures must be maintained'.

³ 'In general the evidence appears to indicate that astronomical lore, astra and deity symbolism, and seasonal rituals set by astra events and considered essential to successful agriculture and stockbreeding were part of the Neolithic mixed-farming tool-kit travelling along with seeds and stocks, with an origin perhaps as early as the 9th millennium' (NB Baity's eccentric use of *astra* for *astronomical*) (for full ref. see fn. 106).

⁴ A fuller version of this paper, referred to as Haleem 2009, is available on-line - see fn. 108. Finding sympathetic and competent supervision for my cross-disciplinary approach delays commutation of my M.Phil to PhD - hence I publish my results free-lance.

map for the Northern Hemisphere⁵ below demonstrates the prominence of the stream of brightest stars dotted along the Milky Way, with the constellations encircling Orion forming the main Duat zone:



Ill.1 The Winter sky with the crescent sweep of the Milky Way cutting the sky in two: along it lie the brightest stars of Sirius, Gemini, Auriga, and Taurus encircling Orion, marking the Duat. Leo (the Two Bears in the folds of Draco directly above him) strides in from the West towards Canis Minor and Orion. Note also Cassiopeia and Perseus in the Milky Way above Taurus.

These constellations (originally single bright stars) were associated with the intercalary period between the Old and New Year - that discrepancy between the Lunar and Solar Year of 11 days and 12 nights that lies behind the rolling Semitic Lunar calendar are the 11 days and 12 nights Christians celebrate as the Twelve Days of Christmas. In Mesopotamia it is this transition zone of the calendar heralded by the rising of the Duat stars in the New Year season (Winter Solstice to Spring Equinox) that commands most of our attention in this paper since we will show how they have their own distinctive iconography anchoring ancient star myths featuring the Sky Hero and his Dog; Lion and Bull conflict; and stars aligning to the stability of the immovable Polar Axis, the constellations concerned being Leo, Sirius, Gemini, Auriga, Perseus, Taurus, Orion and the Two Bears. Try to pick these out now in the map above⁶, since they will show up in different groupings in the five icons discussed in this paper - to critically assess my conclusions close attention is needed to follow the arguments we offer for matching these stars precisely to images!

The preoccupations of the Mesopotamian world view can be read in the primary documentary sources, so whatever can be gleaned from Mesopotamian planet and star lists - and ancient calendars - will be woven into the steps we take during this exposition to show how they are expressed in images⁷, many *predating* surviving texts! As regards texts, much new work done from the end of the 20C onwards points to the need

⁵ All maps shown are for the Northern Hemisphere (Britain or USA) at 2200hrs (the Babylonians preferred midnight - see later).

⁶ I will refer to this and the map at the end throughout - I recommend enhancing legibility by making an enlarged photocopy.

⁷ Filling in the full range of the calendrical content of the CANEA requires presentation of specific visual information to prove the case. Work is in progress on-line ([link given in fn 108](#)) but due to the large amount of pictorial evidence, some time yet is needed to digitise it, so that long process is best preceded by considering the overtly stellar icons discussed in this paper, to set the scene before moving on to images more strongly astrological in nature (in the ancient world there was no split between the two).

for a total overhaul of the translations and history of Mesopotamian Astronomy currently available - which I hope someone will undertake this century⁸ to make an art historian's life referring to them easier! However, dependable authorities I have used are summarised in this footnote⁹.

ICON A: THE MITHRAIC ICONOSTASIS 1-2C AD



Ill.2 Engraving of a typical Mithraic iconostasis - from Layard's *Culte de Mithra*

In countries under the Roman Empire the central feature of stone reliefs or painted walls in countless Mithraea was the iconostasis¹⁰ of Mithra killing what Dupuis¹¹ calls 'the Equinoctial Bull', an image describing Man's mastery over Time and the Calendar¹². Mithra plunges his knife vertically into the shoulder of the Bull of the Year, marking a meridional line (for the first urban calendars c. 4500-2000 BC the Spring Equinox was marked by the Sun's entry into Taurus). The Taurochthony is comparatively easy to 'read', providing a benchmark from which to work backwards to earlier works of a similar nature that served as its prototype. We should not underestimate the literal way in which star arrangements in the actual sky were transposed into such images: comparison with star maps aids our attempts to read them, and it is beyond coincidence that the Mithraic scene resonates with actual star alignments.

VISUAL ANALYSIS

Looking at the background to the killing scene, symbols for the Spring Equinox in the form of a leafy tree and the flaming torch of daylight on one side contrast with the one on the other side laden with the fruits of autumn against the corresponding upturned torch of night, now extinguished, indicating the Autumn Equinox which already heralds the death of the Year as it nears Winter. The $\alpha\mu\lambda\ \rho\ \alpha\gamma$ (Antares-Aldebaran) opposition of the original Equinoctial constellations is underlined by the symbols for Scorpio and Taurus against each tree. Another scorpion features in the central group nipping at the Bull's genitals, suggesting a new, precise alignment - to be understood I think as pointing out a replacement fiducial line at the Bull's penis - look at the position of two-star Aries beneath Taurus (Ill.4). Ruled by Mars, Aries is

⁸ As Neugebauer in 'The History of ancient Astronomy Problems and Methods' JNES IV 1945 1-38 states, such texts are 'subject to all the misunderstandings of this early period of Assyriology, and very little has been done to repair these original errors'.

⁹ E Weidner *Handbuch der babylonische Astronomie I: Der Babylonische Fixsternhimmel (HBA)* Leipzig 1915 (Part II never completed); B L van der Waerden 'Babylonian Astronomy II: The Thirty-Six Stars' JNES VIII 6-26 1949; E Reiner & D Pingree *Babylonian Planetary Omens II: The Enuma Anu Enlil Tablets (BPO)* Malibu 1981; Hunger and D Pingree *Mul Apin AfO Beiheft 24* 1989; Johannes Koch *Neue Untersuchungen zur Topographie des babylonischen Fixsternhimmels* Wiesbaden 1989.

¹⁰ *Iconostasis*: the pictorial rendition of (an) eternal truth(s).

¹¹ Charles Dupuis *Origine de Tous les Cultes* Paris 1795 (OTC)

¹² Traditionally Mithra is understood simply as a Sun-God: according to Brown in *Primitive Constellations* Ktesias quotes the Persian Legend of Nannaros (the Moon) and Parsondes (the Sun), the latter explained as Mithra.

traditionally read as a sexually aggressive sign, and as *new* leader of the Zodiac since c. 2000BC is being referred to in terms of the *former* leader, Taurus, whose rear end he obliterates! The cross-quartered meridian at right-angles to it (the Solstitial opposition of Leo-Aquarius/ $\Omega \text{ } \text{♋}$)¹³ is evoked by the tiny prancing lion with serpent beneath it, whilst the human figure of Mithras could be a double for the Aquarian Man¹⁴. True to the star maps this is Leo of the Summer Solstice floating above the serpent Hydra (Ill.32 - see also the Seleucid version in Ill.17) on whose tail tip in the actual sky Corvus the Crow (paranatellon to Virgo) perches (Ill.16): in icon A the bird is fitted in at the top left-hand corner. Thus Mithra sufficiently completes the solstitial Leo-Aquarius axis to indicate the extremes of the Sun's position during the Year, emphasising the Winter Solstice as well as the promise of the New Year at the Spring Equinox when the Sun enters Aries. The leaping dog Sirius, brightest star of the Duat region, reinforces the idea of the celebration of the arrival of that climactic season for both Egypt and Mesopotamia when the New Year brings water¹⁵ by river or rain giving life and growth - indicated both by the blood pouring from the wound in the Bull's shoulder and the double, Spica-like, corn-ear sprouting on its tail.

THE ZOROASTRIAN TRADITION AND MESOPOTAMIAN IMAGERY

The Taurochthony shows the moment when Mithra pierces the body of the Bull representing Earth/Sky as the embodiment of the Year, in a faithful representation of Zoroastrian doctrine as expressed in the Bundahishn¹⁶ that the Year is a Bull which must be killed to start Time moving (not unlike the idea of *You can't make an omelette without breaking an egg!*). In Avestan mythology Orion and his dog Sirius/Tishtrya are central, and its tradition is implicit in Mithraic iconography. But for the sake of its new adherents in the Roman world, such imagery from Persia had to be spelled out explicitly, reinstating visual motifs initiated as far back as the 5M BC and over time dropped as redundant. Realising that Mithraism stands at the tail-end of a multicultural tradition rooted in the primordial Star Religion, we can trace its pedigree *pictorially* back to Sumer and Elam: and if the claims made by the Greek authors are true, that even in their day the Zoroastrian tradition was c. 6,000 years old¹⁷, it means that everything we look at from the 5M BC onwards in terms of what is labelled *Mesopotamian* knowledge of astronomy, will be likely to form part of, and be reflected in, the artefacts and documents left behind not just by peoples known to be Magians or followers of Zoroaster, but also by most of later mainline powerholders known in the history of the kingdoms of Sumer, Akkad, Assyria and Babylon - since all needed calendars to govern.

MITHRA: ORION - OR PERSEUS?

Though most scholars are content that the hero represents the birthday on 21 December of the Sun-God Mithra at the Winter Solstice, they omit to consider the star background during that same season at night when Orion/*URU-ANNA* lines up to Taurus in the role of Chronocrator. Being an icon about the Duat inherited from the eastern territories of the Roman Empire then known as Parthia, some say Mithra at the stellar level must represent Orion¹⁸ - though others argue for Perseus¹⁹. It has to be said, however, that

¹³ The division of the sky into four quarters is one of the most ancient, and used by emperors to proclaim the reach of their empires.

¹⁴ See Rachel Hachlili 'The Zodiac in Ancient Jewish Art' **BASOR 228**, 61-77, figs 13/14 where Aquarius wears Mithra's Phrygian Cap.

¹⁵ As Dupuis in **OTC** points out, in Egypt the serpent constellation Hydra runs under the 3 signs under which the Nile flooded and in Egyptian iconography the use of the lion head in fountains refers to the original first month of the flooding of the Nile under Leo.

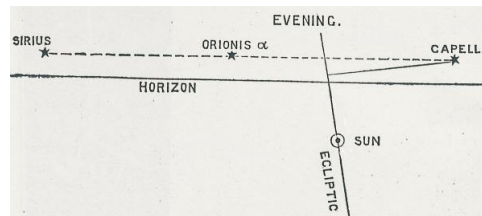
¹⁶ See W B Henning 'An Astronomical Chapter of the Bundahishn' **JRAS 1941** 229-248

¹⁷ De Jong's compendium of Classical Greek knowledge on Zoroastrianism, **Traditions of the Magi** Leiden (1997) repeats Plutarch's citation of Pliny's assertion that Eudoxus calculated Zoroaster's lifetime as 6000 years before Plato's death in the 5C BC. Plutarch himself calculated the tradition began '5000 years before the Trojan War' - again giving us a period during the 7th Millennium.

¹⁸ Michael Speidel **Mithras-Orion** Leiden 1980

¹⁹ David Ulansey **The Origins of the Mithraic Mysteries** Oxford 1989

few scholars home in in depth on the stellar nature of Mithraic images, concentrating more on its Zoroastrian roots and their use in what we could call proto-Masonic rituals²⁰. Looking at the Winter sky at midnight (Ill.42) it is easy to pick out a distinct alignment made between three of the-brightest stars along the Milky Way: Sirius, α Orionis (Betelgeuze) and α Aurigae (Capella) that then runs up to Ursa Minor's tail to reach the Polar Centre - an exact parallel to the vertical line implied in our Mithraic icon by the upright knife in the Bull's shoulder. At the time of the Equinoxes, whether at dawn or twilight, this line-up runs *along the horizon* at sunrise or sunset, and in Assyrian times when this chain was observed at the imperial



Ill.3 The Equinoctial line-up (at dawn for Spring, at twilight for Autumn) - from Sayce and Bosanquet²¹

observatory at Nineveh rising together at *sunset*, it was distinctive enough to be taken as heralding the New Year. But as well as this strong New Year benchmark, just as striking is the Sirius/Orion's Belt/Aldebaran/Pleiades line²² (Ill.40-R) whose significance we discuss further on.

In updating to the *new* 0° meridian (or Vernal Point) in Aries, the Mithraic icon suggests the dagger point still alludes to Taurus as the Primary Starting Point of the Calendar (as astrologers do today) while the scorpion at the penis indicates the two stars of Aries as the *actual* Year's beginning in *astronomical* terms, meaning alignments to Orion have become secondary. A more fundamental drawback to the interpretation of Mithra as Orion - whether using the Sirius/Betelgeuse/Capella line *or* the alignment along his belt to Aldebaran - is that in the sky Orion stands *below* Taurus, whereas Ulansey points out star alignments, whether via Capella *or* the Pleiades, run *down* from the forked constellation of Perseus hovering *above* Taurus, to provide the composition of the Mithraic drama. So even though Orion does take on a credible fighting stance in relation to Taurus, Ulansey favours Perseus as the more likely identification. Aratos calls Perseus *Ceconismenos* - the 'Powdery Athlete'²³ because lying in the Milky Way, and by extending one leg down to include the Pleiades (also of a powdery texture) Perseus, as Orion is, can in some seasons be considered an unofficial Ecliptic constellation standing in for Aries, as well as a useful mid-way pointer alongside Auriga for the Axis of the Dragon of the Eclipse (of which more in Icons C & D). When we look at the positioning of the actual stars in the rendition below, Perseus' extended leg is so close to the Pleiades that his dangling foot touches Taurus' neck where just underneath the Pleiades are marked with a black blob on the Bull's foreshoulder²⁴ - the very point where Mithra's sword plunges in.

So although the common interpretation of Mithra as Orion²⁵ is for good reasons plausible, let us look further at the detail of Ulansey's alternative argument, bearing in mind the possibility of a reconciliation between both views, in that Perseus earns his worth *not* as an outstanding outline of bright stars of the order of Orion, but with high status as Circumpolar herald of Orion's imminent rise! Just as the Pleiades

²⁰ A D H Bivar has made outstanding contributions in this respect, and his papers are cited on-line in my main Bibliography.

²¹ 'Preliminary Paper on [the] Babylonian Astronomy' *Monthly Notices of the Royal Astronomical Society* XXXIX p.460

²² This alignment is known to have been significant in ancient Chinese astronomy and its use is considered by Joseph Needham in *Science and Civilisation in China III* (1959) to have been adopted from Mesopotamia.

²³ We could put forward a case for the Perseus-Taurus story as the rationale behind the Bull-leaping ritual in Crete and the Levant.

²⁴ This reminds us the Egyptians allocated the Bull's *back leg* to Ursa Major (distant paranatellon to Orion - Ill.30) and the Mesopotamians the *foreleg* of the Bull to Ursa Minor, Polar paranatellon for both Perseus and Auriga (see discussion under Icon D).

²⁵ Speidel *Ibid.*



Ill.4 Perseus holding Medusa's Head (Al-Gol) floats above the Pleiades on Taurus' neck - apud. Ulansey

herald the rise of Aldebaran in Taurus (the latter of more fiducial value for measuring the equinoctial axis due to the precision of its 180° distance in right ascension round from Antares), so Perseus has the advantage of bridging the Ecliptic and Circumpolar region up to Ursa Minor *and* remaining visible above a usually hidden Orion (for most of the year so low down below the Ecliptic that we see him in the night sky only in the three months between Winter and Spring - for that sole season a prime astronomical marker). Perseus' forked outline is considerably enhanced by the ambiguous inclusion of the Pleiades as his foot²⁶ at the end of his extended leg, in the iconostasis placed on the *back leg* of the Bull. Quoting the Cilician astronomer Aratus on Perseus as 'placing his knee [of the other leg] on the shoulder of the Bull', Ulansey says it is artistic licence enabling a more compact composition that explains the contracted position for this leg, but inspection of that constellation on any star map immediately shows it is the shortness of one side of the forked Perseus constellation, as if up to the knee, that entirely explains Mithras' stance, with the long side being the extended leg. This literal depiction of the outline of Perseus above Taurus is such a close match that it surely convinces us that Mithra must indeed personify Perseus.

Further confirmation, if any more be needed, is Ulansey's observation that in the depiction of the myth in Greek art, Perseus looks *away* from the Gorgon as he decapitates her by using his shield as a mirror to avoid being turned to stone. Looking at Greek vase paintings of the scene (below with two protagonists like its Assyrian prototype in Ill.8), we bear in mind that killing the monster of unregulated Time by the weapon of a 0° starting line *can* be read as involving both Orion *and* Perseus working together. With so much visual information in it the Mithraic scene omits the companion, leaving Perseus, head askance, to do the deed alone, still with the after-image of Orion there. Most of the Perseus stars are unremarkable apart from *Mirfaq* (α Persei) - even baneful Al-Gol, lying near the path of the Eclipse Dragon, is actually a binary, and not particularly bright, star but as its position relates it to certain portentous heavenly events, including the setting of Virgo, it is imagined in star myth as the Medusa with long locks of squirming snakes whose decapitated head becomes the frightful brooch fastening Virgo/Athena's *aegis*/goatskin cape.

²⁶ The Pleiades are often considered part of Taurus (c.f. Ill.4 & Ill.41) but a star map shows the ambiguity of the alternative, highlighting *why* Mithra's back foot stands on the Bull's back leg (despite Taurus losing his back end on Aries' entry to the zodiac).



Ill.5 Attic vase painting showing Perseus, turning his head away, killing the Medusa- apud. Ulansey

Dupuis explains well the cross-reference between the Gorgon and Athena/Virgo in astronomical terms: '*Persée... fait coucher la Vierge et la queue de l'Hydre - qui se trouve au bord occidentale avec la tête de la Vierge - moment où le sabre de Persée [Ill.4] paraît sur l'horizon*²⁷. *C'est cette tête coupée et curtortillée de replies de l'Hydre que l'on mît ensuite dans la main de Persée, sous le nom de la tête de la fameuse Méduse*²⁸.

Hopkins mentions that the Gorgon expresses the terrifying aspect of the Great Goddess of Anatolia, Kybébé (c.f. *Hum-baba*²⁹), similarly always with face shown full frontal, her petrifying stare accompanied by the shriek of her two sisters as they chase Perseus. Al-Gol thus embodied the powers of darkness and chaos overcome by the Perseus/Mithra alignments (in other terms the Dragon Tiamat brought to order by Marduk - see next section). So the Gorgon's monstrous head with squirming snakes also came to be associated with the seething stars of the Pleiades just below (more prosaically rendered as the bristly neck hump on Taurus (Ill.41), though Dupuis identified them with the Bull's tail tassel). This is not surprising when we consider that by Roman times both Al-Gol *and* the Pleiades were usable as paranatellonta for the early degrees of Aries after it became the first sign of the zodiac.



Ill.6 Tarsus coin with Perseus holding Gorgon-slaying hook

Ulansey describes how many notable Stoics (including the astronomer Aratus), brought together through birth or domicile in Cilicia, centred on the town of Tarsus, formed a group of intellectuals in the very region where Mithraism was first to flourish in Roman times in its de-Assyrianised form. Where Tarsus coins had formerly been minted with the lion-bull attack as main design, later coins (as above) show Perseus standing next to a miniature of it, holding on outstretched hand a statue of the Mistress of the Beasts with two caprids (signifying the Solstices). His Gorgon-slaying weapon with tightly curled hook resting on his other elbow alludes to the tight curl of Ursa Minor - Dupuis reminds us how in myth it was the God Vulcan (short-term husband of Athena) who gave Perseus the Harpé weapon, used in earlier times by Assyrian Gods or Kings to fight off demons and uncannily shaped like one or other of the Bears:

²⁷ Not only does Perseus save Andromeda from the monster Cetus but he also symbolically kills the Gorgon star on the same meridian as Aries. *Since Al-Gol sets as headless Virgo rises* Athena (beloved by the Mycenaean as their defender in the Trojan War), placed Al-Gol on her breastplate and put the family of Perseus in the sky as a reminder of his brave deeds. Andromeda (usually shown upside down) also sets when Virgo rises, and *her* head, α Andromedae on the top corner of the square of Pegasus, acts as another alignment to Pisces/Aries below: hence the importance, in many directions, of the Medusa head in the Perseus myth for the Aries era.

²⁸ OTC I pp. 164-5

²⁹ Humbaba is described in the *Epic of Gilgamesh* as having a sanctuary of Ishtar under his protection within his domain of the cedar forest - and Hopkins (p.347) reminds us also of Lucian's account of the founding of the shrine of the Great Goddess at Hieropolis by the hero Combabos.



Ill.7 Bronze Harpé weapon for fighting off chaos found at Sechem - original in The Hague Museum

For Ulansey the clinching factor for Mithra-Perseus' identity is his Phrygian cap, referring precisely to Anatolian origins and Mithra's association with Perses, son of Perseus - a genealogy associated both with post-Trojan War Midea (where he was considered one of the greatest Mycenaean heroes) and the spread of the line to Cilicia thereafter through Mopsos. Whether this means his origin is ultimately Mycenaean, Persian, or Persian-occupied Anatolia - or the other way round - is not clear, but the Phrygian hat certainly seals the distinction between Perseus and Orion. We should look briefly at *textual* pedigrees.

MITHRA AS A LATTER-DAY MARDUK OR GILGAMESH

It is not difficult to understand Mithra as a latter-day Bel/Marduk, who in *The Epic of Creation*³⁰ not only cuts Tiamat in two, making her lower half Earth and upper half Sky³¹, but also then places the heavenly bodies against it to bring order to the Seasons. The battle of Bel with Tiamat, Serpent of Chaos, is described as taking place at the beginning of the world when the Sun is passing through Leo above Hydra (Ill.17). The figure of Mithra over bull, lion and serpent in the main iconostasis reiterates the classic epics which, when read in an astronomical context as suggested by Jensen³², gives several openings for interpreting the icon as rooted both in that primordial Creation Myth as well as the Gilgamesh story.

We get several matches of text and image from the Gilgamesh epic³³: the hero's story begins at the time of the Summer Solstice with the Sun in ☉ reaching the ♃♁☉ axis, as if the Sun's path had ascended to the top of the mountain of the Solstitial colure (more of this axis when we deal with Icon C). Two of the most outstanding events in the Gilgamesh saga are, first, the latter's slaying of the Bull of Heaven in the presence of Ishtar/Sirius-Venus³⁴ at the Winter Solstice (tablet 6), exactly the period when the Duat stars are most prominent and, second, his visit to the Scorpion Gates of the sky (tablet 9, Scorpio marking one of the Four Cardinal Points). These are striking concordances with the Mithra icon that bear out Jensen's theory that the Gilgamesh Epic itself is an account of the movements of the Sun (Gilgamesh) through the annual cycle month by month³⁵ through the then 10 signs of the zodiac³⁶. The honorary eleventh sign for the 11th tablet is likely originally to have then referred to Orion - or Gilgamesh as the Sun in Orion³⁷ returning to the intercalary zone as herald of Taurus - looking ahead to the coming Spring Equinox. Thus, given one of his recorded titles is *Sol Invictus*, we now understand Mithra's solar meaning more specifically as *the personification of the Sun against Perseus/Orion*, rather than either of those constellation(s) alone.

Gilgamesh' Pan-like friend, the wild-goat-man Enkidu whom the city-dweller Gilgamesh tries to convert to urban habits, embodies the more rural life of the hunter-gatherers of the Neolithic era, and in seeing Mithra as a latter-day Gilgamesh we can understand how Capella (or Amalthea the Goat Star on the ♃♁☉

³⁰ E Wallis Budge *The Babylonian Legends of Creation and the Fight between Bel and the Dragon* British Museum London 1921

³¹ Alexander Heidel *The Babylonian Genesis: The Story of the Creation* Chicago and Cambridge 1942/Reiner-Pingree *ibid*.

³² P Jensen *Der Gilgameshepos in der Weltliteratur* Leizig 1906

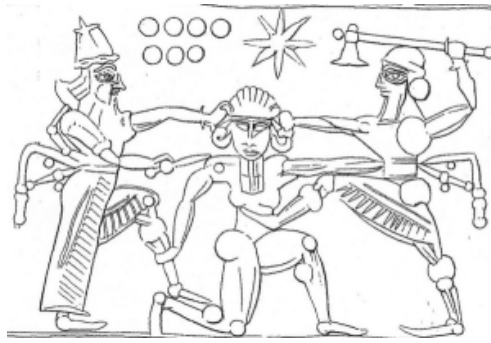
³³ See the translation by Andrew George, *The Epic of Gilgamesh* Penguin Books 1999

³⁴ Enkidu says to Gilgamesh, 'I will set [my foot on the *back of*] its [leg].. ..Then ... between the yoke of the horns and the slaughter-spot [you] thrust in your knife...; Then Gilgamesh like a butcher brave and skilful between the yoke of the horns and the slaughter-spot [thrust in] his knife (VI 137-44) -from the translation of Andrew George (*ibid*).

³⁵ In the ancient Greek adaptation the hero is now called Hercules, still travelling through the zodiac performing his *twelve* Labours.

³⁶ As there are 11 tablets, we presume not only that Scorpio still has his claws before they were taken off to make Libra, but that as the Vernal Point slipped back from Taurus, the myth originates from a time before the insertion of Libra to counterbalance Aries.

³⁷ Edith Porada said to me in conversation, 'Of course, Gilgamesh is Orion' [before-Perseus becomes the new hero of the VP in ♃?].



Ill.8 Assyrian seal interpreted as Gilgamesh and Enkidu fighting Humbaba, monster of Chaos, with a seven-star group and eight-pointed Venus above - from Dalley Legacy of Mesopotamia

solstitial axis - which in our analysis of Icon C/the Faroughi Bowl we call the Goat-Line - may in fact refer to Enkidu the Goat-Man in the Gilgamesh myth who has to couple with Venus at the start of the Year, in astronomical terms her conjunction with that meridian at the start of a new synodic cycle (the full implications of the Venus periods are considered under Icon B). Their wrestling match when they first meet well fits the twifold sign of Gemini³⁸, but in the end Enkidu the goat-man dies as his neolithic Cancer-Capricorn era is superseded at the Autumn Equinox by the new ♋♏ axis where Ishtar/♀ ruler of Taurus now reigns supreme through her harmonising influence. Her rulership of Taurus has, we see in our study of Icon B, huge implications for our understanding of this particular part of the sky and helps resolve the confusing statement of Herodotos that for the Zoroastrians, Mithra was another name for Venus³⁹.

The similarity in character and composition between the 7C archaic Greek vase painting in Ill.5 and the seal above showing the rare iconography of Gilgamesh and Enkidu killing Humbaba⁴⁰ (a form of the chaos serpent, Tiamat) is remarkable, giving food for thought about Humbaba's stellar identity as possible precursor to the Gorgon. It takes place at the very moment the Seven-Star group (to be identified later) and the 8-fold star of Venus are present together in the sky above them, and given how prominently Venus/Ishtar features in the myth of Gilgamesh, this should not be surprising - our next icon will show how these heavenly bodies were used as New Year bench-marks. Apart from killing Humbaba in the cedar forests of the east and the all-important background of the cycles of Venus/Ishtar alongside that of Gilgamesh the Sun, other zodiac signs are alluded to as the Epic comes to an end, notably Gilgamesh' quest for the herb of eternal life in the West as he traverses the water signs Capricorn/ Aquarius/Pisces with Utnapishtim/Noah before the whole cycle begins all over again.

Despite the shifted meridional focus from the original Orion/Sirius/Auriga line to the Perseus/Andromeda chain, still the Orion stars stand out so much more strongly than those of Perseus, leading us to think this is why in the Age of Aries a star role was retained in Mithraic altarpieces by Orion's implicit presence, with Perseus superimposed as the new indicator of the Vernal Point in Aries as *forerunner* to Orion's rise in Winter - both locked in to Taurus by quite different alignments to the Pleiades.

As we move to the next icon we start to see how differing information on all five will contribute further to our understanding of them all.

³⁸ The torchbearers Cautes and Cautopates in most Mithraic icons can be read as the Heavenly Twins (Gemini), as personified in the Roman Dioscurii.

³⁹ Herodotos I, 131

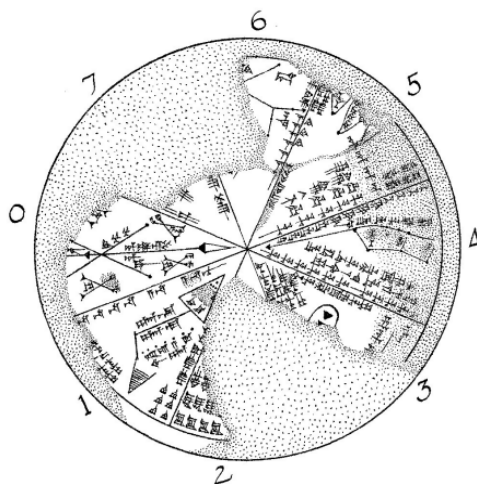
⁴⁰ See Clark Hopkins 'Assyrian elements in the Perseus-Gorgon Story' *AJA XXXVIII* 341-58 where he reminds us (p.347) that Gilgamesh and Enkidu not only slay Humbaba but also the Celestial Bull, arousing Ishtar's great wrath by tearing off its *foreleg* - of which more under Icon D.

ICON B: AN ASSYRIAN CLAY PLANISPHERE 7C BC



Ill.9 Clay planisphere - British Museum K8538, c.650 BC (photo author, approx. life-size)

One of the earliest clay documents ever found at Nineveh by Henry Layard was a damaged planisphere, described by L W King, Assistant Keeper at the British Museum in the time of Wallis Budge, as ‘Astrolabe K’⁴¹. Since the name of the Assyrian capital, Aššur, is written near the outline of Virgo in Section 6, it could have originally been made for use there⁴² and archived in Ashurbanipal’s library later. Although strictly speaking an instrument rather than an image, we include it in our group of five icons on the subject of *Sibzianna*/Orion and surrounding Duat stars since different titles for Orion are given on it in three places, and because information on it helps us understand our other icons.



Ill.10 Astrolabe K8538, with Weidner’s section numbering (North is roughly at 4 and South at 0)

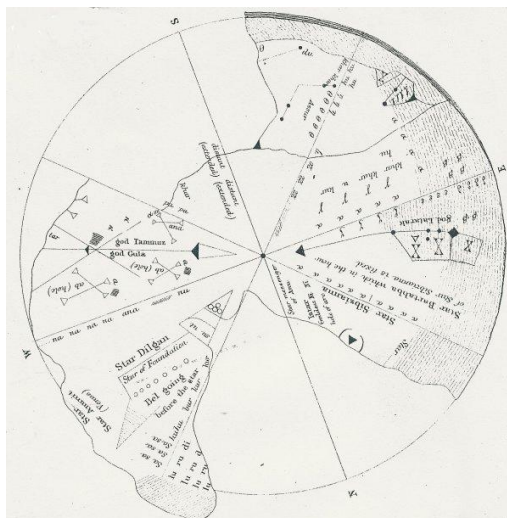
Sadly, two large chunks of the instrument are missing but, as demonstrated in Haleem 2008⁴³, enough information remains to be able to deduce the missing content. Weidner transcribed the information into a more easily readable pen and ink version whose section numbering in his drawing above we follow. Its eight zones contain dot and line diagrams of constellations, cuneiform labelling, and rows of repeated

⁴¹ First published by Theophilus Pinches In *JRAS* 1900 p. 571. B.M. K8538 was officially published by the British Museum in *Cuneiform Texts XXXIII* 1912 pl.x (description, but no translation, by L W King p.9). Sayce & Bosanquet in *MNRAS* XL were the first to take on the task of trying to decipher it, followed by Weidner in *HBA* and Koch *ibid.* (with 30-year intervals between them!).

⁴² See M J Geller ‘Astronomy and Authorship’ *BSOAS* London University LIII 1990 209-12

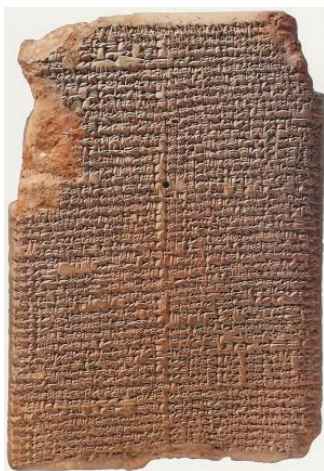
⁴³ Book 7A on www.cosmokrator.com - though my overall conclusions on Astrolabe K have developed further, as given here.

syllables - possibly incantations or mnemonics - transliterated by Sayce & Bosanquet in their own drawing of it, shown below for those added useful insights⁴⁴.



Ill.11 Transliteration of text on Astrolabe K by Sayce & Bosanquet (ibid.)

I believe it was simply a planisphere to hold up against the sky to determine the arrival of the Winter Solstice, not only by checking the night arrival of the stars of the Duat, but also in relation to the Sun's extreme positions for the Solstices as drawn out with saltire and arrow in Section 0⁴⁵. Standing outside the zodiac out of sequence, its geometry seems also to double up as the four corners of the constellation Orion/Tammuz itself (the month of Tammuz began at the start of the *Summer* Solstice when Orion rose with the Sun in the morning, and the word *Tammuz* is written along the arrow). Apart from Orion, other New Year Stars named on it to look out for are *Mul Apin*, *Dilgan/Iku* and the planet Venus - all three labels on or near on the double pointer in Section 1 - the trio comes first on the canonical **Mul Apin Star List**⁴⁶:



Ill.12 Clay tablet showing the *Mul Apin Star List* (the fullest surviving copy) British Museum (BM 86378)

The astrolabe is remarkable for being divided into eight sectors - rather than the twelve divisions we use to divide up the year and its zodiac today. This means that even as late as the 7C BC, Assyria was using the ancient Elamite tradition of an eight-fold division of the year based on the synodic period of Venus

⁴⁴ Due to tight space restrictions these small pictures will be more easily read if the reader makes an enlarged photocopy.

⁴⁵ Placed centre left (West) in all the illustrations.

⁴⁶ Cuneiform text first transcribed (but not translated) in CT XXXIII 1912 with short description by L W King. In a host of books and articles the academic world to the present day grapples with the problem not only of translating all the star names definitively, but also deconstructing from within the patchwork of cuneiform text contemporary additions (Assyrian) to core text from earlier centuries (Akkadian and Sumerian). Hunger & Pingree's 1989 translation and analysis is the best.

and even as late as the Seleucid period it was in use - Ill.41). Bork⁴⁷ surmised the original 8 + 1 x 32/33-day months of the Elamite calendar (renamed in Babylonian after conquest) must date back to c. 4500 BC and precede the Age of Taurus - thus all the month-names in the table below correspond to a sign earlier:

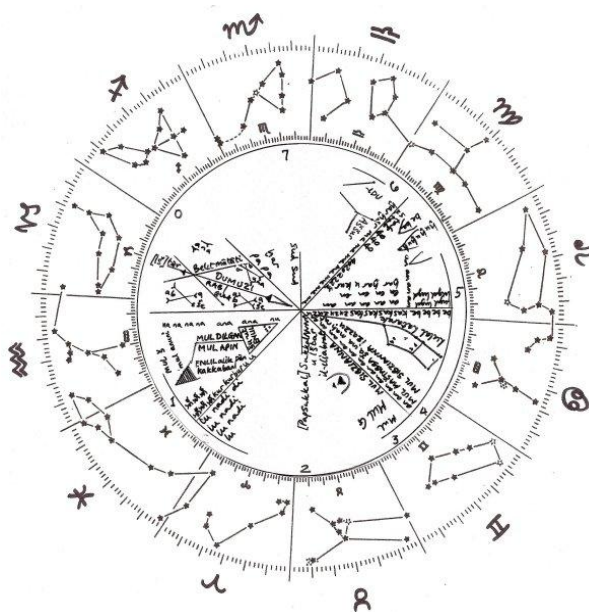
Names of the ELAMITE MONTHS								
<i>Tamtirum</i>	<i>Zililitum</i>	<i>Lahhum</i>	<i>Datium</i>	<i>Hiršubum</i>	<i>Darbitum</i>	<i>Lalubūm</i>	<i>A-Šag Dingirra Apina</i>	<i>Še-Irhūm Apina</i>
MONTH 1	MONTH 2	MONTH 3	MONTH 4	MONTH 5	MONTH 6	MONTH 7	MONTH 8	INTERCALARY MONTH 9
♌	♈	♈	♌	♍	♎	♏	♏	♐
Babylonian Equivalents for the ELAMITE MONTHS								
TEBET	SHEVAT/ ADAR	NISAN	IYYAR/ SIVAN	TAMMUZ	AB/ELUL	TISREH	ARAḤ SAMNU	KISLEV
Feb.	March/ April	May	June/ July	August	Sept/Oct	Nov.	Dec.	January

Ill.13 The Elamite months (before Sign slippage into the Taurus-Scorpio Era) and Babylonian equivalents - from Bork

Note the word APIN occurs in two month-names connected with the end of the year (a full month and an intercalary month) so that looking at Astrolabe K we might consider the mention of *Mul-Apin* in Section 1 as marking the intercalary zone at the Winter Solstice when Orion is in the sky at night. Either way, intercalation and *Mul Apin* are associated with the join between the Old and New Year.

MATCHING ASTROLABE K TO THE ZODIAC

If Astrolabe K is indeed a planisphere showing an arrangement of stars in the sky, we would expect some of key the bright stars to show up on it, so as a first step I framed it with a present-day zodiac. Some may



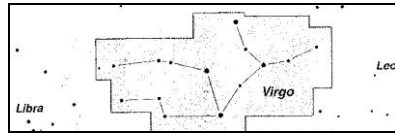
Ill.14 The Astrolabe K8538 information surrounded by the 12-fold zodiac outlines of today⁴⁸

feel this too hasty a jump to make, but the cautious section by section weighing of the evidence followed in Haleem 2008 would be too lengthy to repeat here. Here we take that process as read and simply show our final result, stopping only to explain the use of two constellations key it in. We then expand on the meaning of Sections 0 and 1 and look at why the Eight-fold Zodiac should still be useful to the Assyrians.

⁴⁷ F Bork 'Das Venusjahr' *Memnon IV* 83-105 contra F Hrozny 'Das Venusjahr und der elamische kalender' *Memnon V* 81-98 . See also W Schulz 'Das System der Acht im Lichte des mythos' *Memnon IV* 111-172

⁴⁸ This is a fine-tuned adjustment of the result given in Haleem 2008, and to be taken as the definitive one.

The points at which to key Astrolabe K into the zodiac were obvious, due to the two distinctive outlines on it of Gemini and Virgo (Weidner's sections 4 and 6), locking the planisphere into the only position it could take (give or take a slippage of 10-15°)! The outline of Gemini is undisputed by all who have studied the Astrolabe: that of Virgo has not been made much of before (Weidner drew in more of its outline than Sayce & Bosanquet). Enough remains of its distinctive, sprawled-out shape to give the double-check needed to establish the validity of the matching procedure:



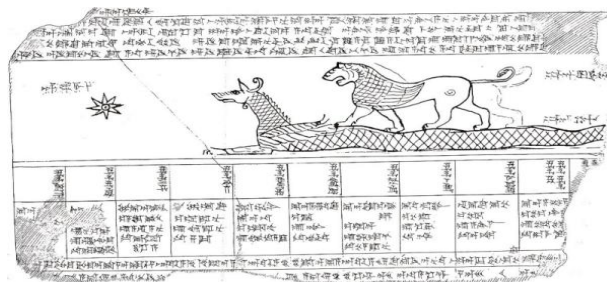
Ill.15 Outline of Virgo's key stars, the upper half distinguishable in Section 6 of Astrolabe K

On the second⁴⁹ of three surviving Seleucid zodiacal images on two clay tablets in the Berlin Museum Virgo appears with *Absin/Spica* in her hand⁵⁰ (though Akkadian *Absin* means *Furrow*). The other clay tablet showing Taurus, in some respects a predecessor of the Mithraic icon, is discussed under Icon E (Ill.41).



Ill.16 Tracing of main features at the top of the clay tablet with Virgo/Spica: note Corvus on Hydra's tail on the left

Virgo faces *Uga/Corvus* pecking at the tail of Hydra (Corvus comes into Section 5 of the planisphere, as does Leo). The star between them is labelled *Gu-ud/Mercury*, put there Weidner realised⁵¹ because exalted in Virgo (he had seen how planets in non-observational star lists were usually listed in their sign of exaltation - a useful iconographical tool). On the verso (below) Hydra⁵² continues under Leo, both moving in reverse to their actual direction in the sky, their heads facing the planet labelled *Marduk/Jupiter* which is exalted in Cancer, the sign preceding Leo (thus *two Signs* are referred to on this side).



Ill.17 Drawing of Seleucid clay tablet showing Leo on Hydra with Jupiter to the left - Berlin Vorderasiatisches Museum

We refer to Dupuis again for insight into the calendrical significance of Hydra the Serpent:

Hydra rises a few moments after the Crow, positioned beneath Isis the Celestial Virgin [Virgo]... In Athens Erechthonius (half man, half serpent), offspring of Vulcan and Athena, is the local God of Athens which refers to the rising of Hydra soon after Corvus at the Autumn Equinox when Auriga/Phaeton at the same time sets, triggering widespread weeping⁵³ and lamentation⁵⁴.

⁴⁹ The comprehensive Table of Correspondences of each Sign to plants, animals, cities, etc. on the huge broken off lower piece of the tablet, with information fitting against both the Virgo and Leo sides, is in the Louvre (discussed at length in Haleem 2008).

⁵⁰ Spica is the most important star of Virgo since one of the few bright zodiac stars lying almost on the Ecliptic.

⁵¹ E F Weidner 'Gestirndarstellungen auf babylonischen Tontafeln' *Österreichische Akademie der Wissenschaften in Wien Sitzungsberichte* 254/Bd II 1967 pp. 5-52

⁵² The depiction of Hydra's head resembles that of the Babylonian Sarrush, a blend of Hydra, Leo and Corvus.

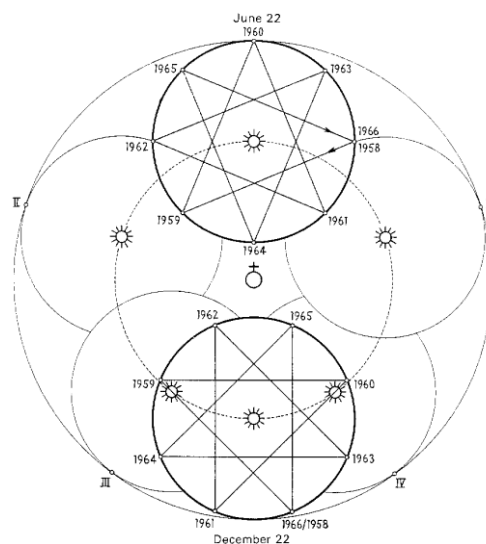
⁵³ Because the Year now moves towards Winter: the lamentations for Tammuz are recorded in many documents - including the Bible.

⁵⁴ Dupuis OTC III pp.93-97 passim.

VENUS CONJUNCTIONS WITH THE SUN AND THE EIGHT-FOLD DIVISION OF THE SKY

Icon B is tangible evidence the eight-fold zodiac was still of use as late as Neo-Assyrian times, I believe due to the crucial nature of Venus behavior informing it. Such seemingly archaic usage is fundamental to understanding the planisphere's astronomical basis, and thence its iconographic significance, *so we should look at certain octagonal aspects of Venus behaviour to explain her hidden ordering of the Eight-fold zodiac*. From the chronology of word-use in the Susan texts Röck⁵⁵ has much to say about the primacy of Elam in devising the Venusian calendar - a view thoroughly denied or totally accepted by fellow scholars of the time, and in modern scholarship forgotten. His colleague Bork (*ibid.*) drew support from G Hüsing's assertion after he had considered the evidence collected in the volumes of the *Mission de la Délégation Française en Perse* that Elam must have been the 'Urheimat des Systems der Acht'. From the textual evidence associating month-names with different place-names in the Susan empire, he also came to the conclusion that, since there is no mention of Anshan their system of months *must* date to a time previous to its existence, to as far back as the 4th or 5th millennium. Röck agreed with Bork's conclusion that astronomers of the protohistoric Susan Empire used Venus cycles as the basis of their calendar, and that the Sumerians then followed their example (as they probably also did in the adoption of writing).

The start of each new Venus synodic cycle is extremely useful for double-checking the start of the Solar New Year every 8 Earth years, when a new synodic period coincides with the start of a new solar year (the ratio of 5 Venus years to 8 Earth years is exact to just under 2 days - discussed in full in Haleem 2009). The 8-fold division of the sky is particularly convenient as the stellar matrix for measuring where Venus is in its synodic cycle, as its appearance in each successive sector at the end of each Earth year can be used to measure stages within the full synodic cycle of five Venus years of 580 days - hence the persistence of the eightfold zodiac in the Ancient Near East even within Luni-Solar zodiacs with 12 Month:12-Sign sectors.



III.18 Venus Superior and Inferior Conjunction Positions that form octagonal phase group s- from Schulz

In the figure above, taking Venus' movement over any Solar 8-year cycle we obtain only 8 different positions for the extreme points of the Venus cycle for any given group of 8 years, which always follow a repeating pattern. Thus a Venus *octagonal* pattern emerges since any pair of superior and inferior conjunctions alternate in the same part of the sky every 4 years such that, for example, the superior conjunction of 23 August 1987 was followed four years later in the same place by the inferior conjunction

⁵⁵ 'Der Palaeozodiakus: Prähistorische Urform unseres Tierkreises' Memnon VI (147-76)

of 22 August 1991. Thus a calendar based on five Venus years of 584 days in relation to the corresponding 8 Earth years of 365 days interlock reveals itself as octagonal in relation to the whole sky, due to the almost exact 5:8 ratio. Röck⁵⁶ writes, ‘*Die Bedeutung der Acht und Fünf als Ausgleichszahlen des Sonnen-Jahres mit der 584 Tage umfassenden synodischen Umlaufs-Zeit des Planeten Venus (8 x 365 = 5 x 584 = 2920 Tage oder zehn elamische Venus-Jahre) ist bekannt*’. Hence the use of Venus’ synodic period as a cross-check for the start-time of the year every eight solar years explains the importance of the ‘worship’ of Inanna/Ishtar as Venus the Harmoniser (nothing to do with fertility!). I believe this is the reason the planet is listed with the two New Year stars *Apin* and *Iku* at the beginning of the **Mul Apin Star List**, as also on Section 1 of Icon B, since with Orion they could all be used to gauge the start of the annual cycle.

Röck (*ibid.*) stated the primitive eight-fold zodiac was originally based on the Ecliptic animals (hence our term zo(o)diac) which he calls the *Tierkreis-Bilder deren sieben*: ♈ ♉ ♊ ♋ ♌ ♍ ♎ (bearing in mind that Capricorn is a double sign of Goat-Fish). He believed the most enduring intermediary stage that led to our present zodiac goes back to that time when the divisions of the sky were marked by these animals of the Sumero-Susan zodiac, with a ninth month and its animal the Dog of Sirius along with Orion himself in the intercalary *Apin* zone (whose identity we ascertain later) marking what was left out of 292 (8 x alternate 32/33-day months - or 262 days) - in a final month of 30 days (Ill.13). This type of Elamite Year seems to have had months made up of 8-day weeks (which survived into the Etruscan and Roman calendars). The system is still in use in Java deriving, he believed, from Elamite colonialism in very ancient times. Bork (*ibid.*) points out that the Aztecs, masters of all aspects of the Venus⁵⁷ cycle and its interrelationship with other planets⁵⁸, also used a Venus calendar based on 260-day units, but left out the ragged 9th intercalary Venus month - like the alternative Elamite system which was divided into 9 x 40, or



Ill.19 *Eight-fold Aztec zodiac on the Sun Stone made for Moctezuma, 16C AD - Mexico National Museum*

9 x (5 x 8) - 360 days - to tie in with the lunar year, where only 5 epagominal days would need to be inserted to reconcile Lunar and Solar years. Röck, referring to Bork’s description of the ‘Venusjahr’, posits an Elamite *Solar* year of 10 months of varying length devised to dovetail the Venus months with the Solar Year. Ill.13 shows in tabular form how the original 9 Elamite months (8 plus 1 intercalary) later had their length shortened to 29/30 days with two Babylonian months added to bring the year up to 11 shorter months - along with a 12th intercalary month - indicating the Babylonian changeover at Elam to the Luni-Solar calendar, thus subordinating the Venus cycle to it. But we know from the Venus Tablets of Ammisaduqa (in the British Museum) how the Babylonians then proceeded to study Venus behaviour

⁵⁶ (*ibid.*)

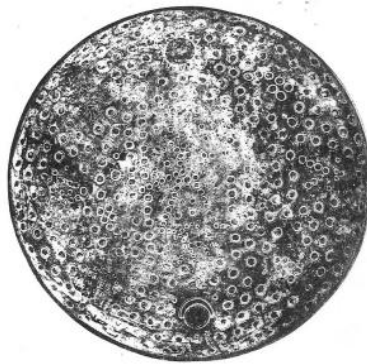
⁵⁷ Quetzalcoatl was seen as Venus the Morning Star, his twin brother Xolotl the Persephonic Evening Star of Venus at night. Quetzalcoatl is described as so ugly that he wears a wind mask often associated with serpents writhing on his face - like our Gorgon.

⁵⁸ Röck supports his argument with his analysis of Schultz’ paper describing the ‘System der Acht’ (q.v.).

minutely, integrating its cycle more scientifically into the calendar - to the extent that Sun, Moon and Venus was the key planetary triad shown on seals and boundary stones (Ill.24). Many of the names for their months in the Babylonian (Semitic) language were eventually incorporated into the Jewish Calendar during the Babylonian Exile. In Neo-Assyrian times *Ishtar*/Venus worship reached a new height: Icon B shows how the stellar background to Venus's synodic cycle, combined with observation of Sun/Moon positions needed for regulating the Liturgical Year⁵⁹, could be registered diagrammatically on a single instrument for rule-of-thumb sky-checking.

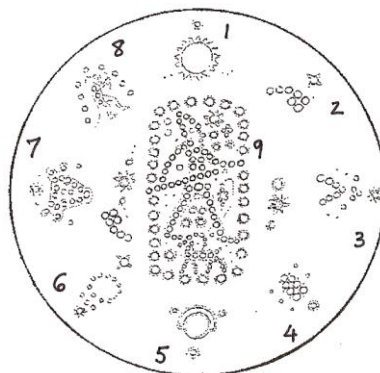
ICON C: THE FAROUGHI BRONZE BOWL C. 1200 BC

Our next artefact, a bronze bowl, depicts yet another Eight-fold zodiac, and features Orion as the centrepiece, taking us at least one thousand years further back in time from Icon A, and to around 500 years earlier than the Neo-Assyrian Astrolabe K. The iconography of this privately owned bowl reveals several features ancestral to Icon A and though found in the mountains of Luristan in western Iran, was judged by R D Barnett⁶⁰ when Keeper at the British Museum as Phoenician (8-7C BC).



Ill.20 Bowl interior, studded with stars: the stellated octagon picked out within provides compartments for individual constellations within the chaos of the common stars: Sun and Moon feature on the central vertical axis - from R D Barnett

My own calculation is that Syro-Hittite features on it point to its manufacture in Syria before 1200 BC. The Hittite word for Sky is 'Cup', and the bowl emphasises key astronomical phenomena governing a local Levantine kingdom's calendar operating under both Hittite and Egyptian influence. Since the sea of stamped stars obscures the underlying design Barnett extracted its essential features for easier reading in the drawing below, numbered by us for section-by-section analysis. The embossed signs marking out an eightfold zodiac are placed inside eight triangular petals surrounding Orion at the centre framed inside a cartouche with further stars round it (a not unsurprising Egyptianising feature for a Levantine bowl of the



Ill.21 Main elements of the Faroughi Bowl design

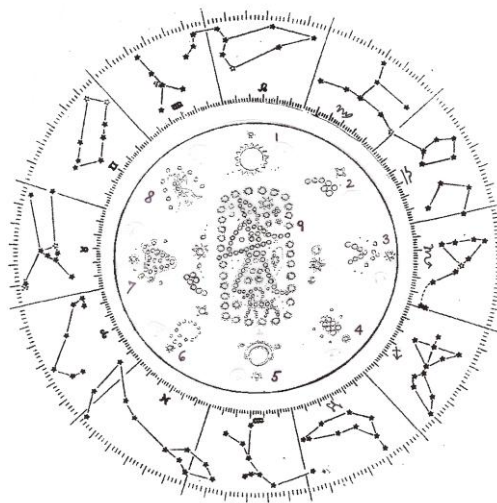
⁵⁹ At the next ARAM Conference on Astronomy in Ancient Near Eastern Art in four years' time I hope to decode the iconography of the New Year Festival for Mesopotamian religion in relation to 3M stone vases from Uruk, since looted from the Iraq Museum.

⁶⁰ R D Barnett in 'Homme Masqué ou Dieu-Ibex?' Syria XLIII 1966, 269-76

late Second Millennium). The local ruler taking the role of Orion as sky hero wears a Pharaonic Syro-Hittite crown contemporary to the period, and follows the convention for divinities in Hittite art by standing on goat to further define himself as Tammuz, his long sword continuous with his arm on the diagonal of Orion's Belt which points at either end to the Two Bears outside the cartouche.

VISUAL ANALYSIS

In deciding once more to match the bowl to the zodiac, given the strong outlines on the W-E horizontal axis of Taurus and Scorpio I followed different criteria from the use of Gemini and Virgo as keys as for Icon B. With the Sun in Leo/Cancer at the top running at right-angles to it down to Aquarius/Capricorn where the Moon is placed, the Four Cardinal Signs serve as obvious keying-in points. Even though placing an Eight-fold zodiac against a Twelve-fold one (as with Icon B), we relied on the likelihood that framing the bowl with a standard zodiac using the Grand Cross of the Cardinal Signs should position it accurately enough to gain insight into what the remaining intermediate star zones depicted on it ought to be.



III.22 The constellations aligned to the star groups round the rim of the Faroughi Bowl

We will go round the circumference interpreting the main star groups in opposing pairs, starting with the Leo-Aquarius line on the N-S vertical axis. Then we look at the central figure of Orion and the subsidiary star groups round him, giving R D Barnett's thoughts and adding our own suggestions.

1. **The representation of the Sun at the top is obvious - and since the Sun rules Leo it falls appropriately against the constellation of Leo, running into Cancer.**

The Sun-Moon opposition running down through Orion is an indicator of the first Egyptian month of the year when the Sun entered Leo (and Cancer after 2000BC) at the Summer Solstice.

5. **The Moon in full and crescent forms, flanked by two stars is placed opposite to the Sun.**

Although the Moon rules Cancer next to Leo, it has been placed in the *opposite* sign, in ♑/♒ (Capricorn/Aquarius) to emphasise the opposition between Sun and Moon and express not only the mechanism of the Eclipse cycle, so central a preoccupation in the ancient world, but also the axis of the Winter and Summer Solstices. The same flipover is used in Icon B, where the four extremes of Tammuz/Orion's shoulders and feet coincide with the Solstice saltire and arrow in Section 0.

Dealing with the other two Cardinal Signs, we turn to the Scorpio-Taurus opposition.

3. **A V-shaped group of stars lies at the Scorpio position.**

The group of stars opposite Taurus on the other side of the sky must surely be Scorpio (though for some reason Barnett identifies it as the Chariot/*Margidda*).

7. **Positioned immediately behind Orion is an unmistakable bull head.**

Taurus serves as the second reliable anchor, along with Leo, whereby our matching of the bowl against the zodiac takes on a high degree of credibility, especially as it completes the axis to Scorpio opposite. From this strong star diameter line marking the Equinoxes, the Solstitial lines of the Age of Taurus at right-angles to it along Leo-Aquarius are in their correct positions against the zodiac.

Going back up to Leo, we then move clockwise to the next star group.

2. A dipper star group on the rim mirrors that just *outside* the Orion cartouche at bottom left, its position against the zodiac revealing it as Ursa Major in its common role of paranatellon to Virgo/Leo.

Barnett reads it as the stars of the Plough, with Ursa Minor behind Orion (it would be surprising if one or both were not represented somewhere on the bowl). Orion's actual relationship to the Bears on a star map (Ill.1) shows Ursa Major as directly above Orion following a corridor down through Gemini, whereas the line from Ursa Minor runs down, further along, through Auriga to Perseus (we refer to these two important orientational corridors several times in this paper).

We have already seen how the Mithraic iconostasis refers to three of the four cardinal points: Bull, Lion, Scorpio - if not also Aquarius embedded in the Mithra figure. A leading question must be whether the star risings and settings used for measuring the cycle of the year are to be understood as heliacal risings or evening risings or - more likely - midnight/*ziqpu* sightings⁶¹. Dupuis sums up the method of calculating the year/day from the midnight (*ziqpu*) stars in one sentence: '*Il faut donc alors mettre le signe qu'occupe le soleil au méridien inférieur pour avoir l'état du ciel à minuit auquel commence l'année et le jour*'⁶². Neugebauer notes that the Seleucids used two systems, and that the second, system B, relied on *ziqpu* sightings: '*... the astronomical cuneiform texts from the Seleucid period show in their date columns that sunset represents the civil epoch but that midnight was used for astronomical reasons in the computations of the lunar theory of the most advanced type.*'⁶³

Useful to know here, and to remember for our discussion of Icon D, is factual information quoted by Baity (*ibid.*)⁶⁴ on the importance of Ursa Major and other circumpolar stars for the Olmecs - showing in known practice how circumpolar stars were used to stand in for Cardinal signs below the horizon:

Hatch (1971) assigns an astronomical function to the site plan of La Venta... In her hypothesis the builders of La Venta had inherited a tradition appropriate to 2000BC [feasibly from Mesopotamia via China] when to observers in the northern hemisphere the summer solstice would have been marked by a stellar configuration including not only Ursa Major but also Cygnus [for Aquarius], the Pleiades [for Taurus], Leo and Scorpio. The centre of the bowl of the Big Dipper... made a lower transit of the meridian going each way less than 15 minutes before midnight, crossing the triangle of Cygnus making the transit going west, while at the same time the Pleiades rose in the east and Scorpio set in the West. In her hypothesis these four equidistant constellations, following each other by approximately 90° in right ascension, marked for the Olmecs the summer solstice, the autumn equinox, the winter solstice, and the vernal equinox respectively with their midnight transits.

6. The group opposite Ursa Major (for Virgo) is a circle of stars with a line of three stars above it.

Barnett calls it a 'necklace/earring', but if the star groups round the circumference of the bowl follow each other in the same order as in the sky, despite Barnett's fairly plausible reading of it as Corona Borealis, we gain a clue for a more convincing alternative in Chinese star maps (Ill.44) where the circle of stars next to Orion occupies the zone of *Sirius* (and if *Sirius* appears anywhere on this bowl, this is where it fits best sequentially). Matching Avestan *Tishtrya* in status as Leader of the Stars, and bearing in mind other Egyptianising features of the bowl, *Sirius* appearing not as single star *but as constellation* (Egypt named the former as *Sopdu*/Horus, the second *Sopdet*/Isis) does seem fitting.

We then move across to the only axis left to deal with in the bowl's eight-fold zodiac:

4. A 7-star group between the Moon and Scorpio, nicknamed 'the Bunch of Grapes' by Barnett.

Barnett accepts the thinking of his time that this group named *Mul Zappu*/MUL MUL must be the Pleiades - but checking the bowl against the zodiac, *the group is displaced round the bowl's circumference from the head of Taurus by 120° which raises serious doubts such an identification could be accurate* since by our zodiacal sequencing method it occupies the zone of *Sagittarius*, so could be Auriga acting as paranatellon. Indeed, *Mul Zappu* has such high status for the Mesopotamian calendar that it appears in New Year celebration scenes on seals with winged Sun, crescent Moon and Star of Venus/Ishtar, and probably also represents the *Sibitti*, the Great Seven Gods (see Icon E):



Ill.23 Assyrian blue chalcedony seal and sealing from the Nabu Temple, Nimrud - Tra il Due Fiumi exhibition, Rome 1987

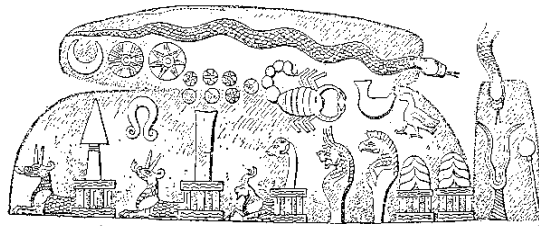
⁶¹ Star maps in this chapter give current night-time positions for 2200hrs, adequate for understanding the overall picture as Northern Hemisphere sky configurations have repeated every year for centuries with only slight slippage due to longitude and Precession.

⁶² OTC I, p.164

⁶³ O Neugebauer 'The Survival of Babylonian Methods in the Exact Sciences of Antiquity' Proc.Am.Philosph.Soc. CVII 1963 528-35

⁶⁴ p.443 (full ref given in fn.106)

It also appears on the Seleucid clay tablet for Taurus (Ill.41) and on boundary stones next in order after Sun, Moon, Venus (often in the company of the ascending Lunar Node symbol ♌):



Ill.24 Old Babylonian boundary stone showing Moon, Sun, Venus, *Mul Zappu* and Scorpio, with Dragon-Head Node beneath

We can now understand that, since the bowl already has on it representations of the Two Bears either side of Orion, *Mul Zappu* cannot be confused with either of them - and we have just shown that due to its position round the zodiac it could not be the Pleiades either! This is why *Mul Zappu* must be Auriga/the *Sibitti*⁶⁵ - in its own right and by virtue of being the junction point for the two Bear corridors via Perseus and Orion (Ill.42) since all three constellations are made up of seven stars (details of all 7-star groups are analysed in Haleem 2009). Furthermore since on the bowl *Mul Zappu* is opposite Gemini it serves not only to flag up the Gemini[♊]Sagittarius Axis (as also on the Seleucid Taurus tablet) but in consequence it proclaims the presence of Dragon of the Lunar nodes along it⁶⁶.

We move across to the other end of the Sagittarius axis, expecting to enter the Gemini zone.

8. We are surprised to see a human-legged hippo⁶⁷ in a tent of stars, its spine marked with stars, echoing the Egyptian Hippo Isis/Tawaret with Crocodile on her back, holding the Sky-Peg (Ill.30).

Barnet describes the creature inside the kiosk as a Monkey (certainly a Gemini⁶⁸ animal), often seen in Syria on 2M Levantine seals. The Gemini-Sagittarius axis skirting either side of the Milky Way is high-profile since, according to Willy Hartner's paper on the subject (*ibid.*) both the *Sibitti* and the head of the Dragon of the Lunar Nodes are exalted at 3°Gemini, with the tail in fall at 3° Sagittarius opposite. On the Faroughi Bowl the exaltation end of the Lunar Dragon Axis in Gemini shows a loop of stars similar to Draco itself arching over the Egyptian-style creature: there is certainly mention in the literature of Draco itself symbolising the Dragon of the Lunar Nodes running past it.

Finally we sum up the features in the centre of the bowl.

9. Orion stands at the Polar Centre on a goat, his sword blended with his arm along Orion's Belt, all contained within an Egypto-Hittite-style cartouche picked out in stars. Other stars surrounding it are:

- *inside* the cartouche, stellated circles at Orion's and the goat's face seem to indicate specific stars - a further mysterious cluster lies under his hand - Barnett identifies it as a fish⁶⁹;
- *outside* the cartouche to the left, two more stellated dots flank the seven-star group we have identified as Ursa Minor as Orion strides towards another radiant star flanked by two smaller ones.

There is a marked goat theme to the bowl, first of the Capricorn/Cancer colure (raised under 1. and 8. above) made to coincide with the Sun-Moon axis running vertically down the striding figure of Orion. The word for Capricorn is *Suḫur-Maš*, meaning Goat-Fish, and Orion himself is indeed shown standing on a Goat with a Fish⁷⁰ next to his hand. This must surely be a reference to the start of the New Year at the Winter Solstice as the Sun enters Capricorn when in the evening Orion starts to dominate the sky. Barnett quotes the line, 'Orion appears in the month of Tammuz the God⁷¹, illustrious Vizier of *Anu* (the Sky) and *Ishtar* (Sirius/Venus)' - the same wording as on Icon B. He relies on that line to identify the Orion figure on the bowl not simply as *Papsukkal*/Gatekeeper of the Year, but also by the goat/ibex under his feet - the animal of Tammuz. The colure runs through Auriga the Charioteer, its main star Capella being Amalthea the Nanny Goat, while in his elbow he holds her Kids.

In our next icon we consider the Two Bears, in a much shortened version of our web exposition. We will thereby be able to shed much more light on Icon B, and further insight will finally come from Icon E!

⁶⁵ The arguments systematically proving this are in the full web version of this paper.

⁶⁶ Willy Hartner 'The Pseudoplanetary Nodes of the Moon's Orbit in Hindu and Islamic Iconographies' *Ars Islamica* V 1938, 113-54

⁶⁷ The Crocodile in Far Eastern zodiacs often occupies the Cancer zone next door to Gemini (see web version of this paper).

⁶⁸ Mercury rules Gemini, and in a period when the Levant was occupied by Egypt, we remember that in their animal symbolism the Baboon was the totem creature for Thoth/Mercury, ruler of Gemini.

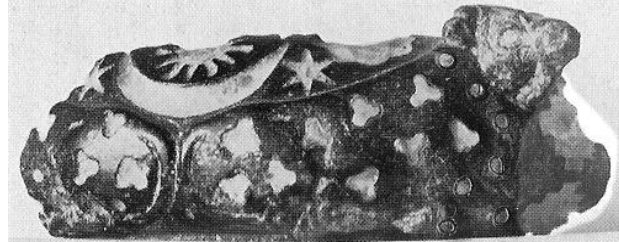
⁶⁹ Possibly a precise reference to Fom-el-Hut, lower paranatellon to Aquarius.

⁷⁰ The fish often features on 2M Levantine seals.

⁷¹ *Pap* = *Bab* (Gate) and *Sukkal* = Guardian in related modern Semitic (Arabic) terminology.

ICON D: THE SHULGI STEATITE BOWL C. 2300 BC

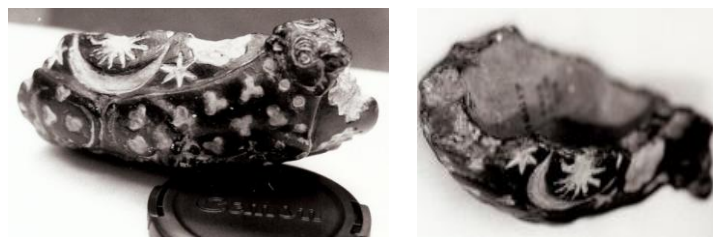
Dug up by Woolley at Ur from under the Kurigalzu floor level of rooms 16/17/18 in the *E-Nin-Mah* temple of the priestesses, with a dedication on the underside to King Shulgi of the Ur III Dynasty, this broken fragment of a shallow circular bowl in black steatite is unique in its astronomical decoration in white bone or shell inlay which includes the distinctive outline of Ursa Major (or Minor) on the intact bull's foreleg. A close-up shows its unmistakable outline amongst the cloud formations on the rest of its body, since it is



Ill.25 Fragment of inlaid steatite bowl c. 2250 - Philadelphia University Museum CBS 14968

picked out in small *round* insertions. Two bovids, probably representing the Bulls of the Horizon, recline rump to rump on the surviving rim, leading us to wonder whether they would have been repeated symmetrically on the broken-off side opposite. The chest area of the complete bull with tiny plaited beard is adorned with a bib consisting of two squared-off octagons, maybe just ornamental, but possibly also a deliberate reference to Venus' 8-year cycle whose significance is now familiar to us. An apt line also comes to mind from the Sumerian *EMEŠ-ENTEN*⁷² in which the two halves of the Year, Summer and Winter, are described as 'pushing against each other like massive, straining oxen'.

Above their abutted rumps the Sun radiates over a crescent, both picked out in the same white inlay and flanked by six-pointed stars that could denote both the Mercury cycle and even the sexagesimal system. To the side of the six-pointed star behind the bull's head is what looks like the lower third of another octagon, this time with curved sides, perhaps echoed on the other side. The bull also has a crescent moon on its forehead (Ill.26), a reminder of the Moon's exaltation in Taurus. Three millennia later Olympiodoros the Neo-Platonist quoted ancient sources: 'The Moon is drawn by two Bulls; by two, on account of her increase and diminution; by bulls, because as these till the ground, so the Moon governs all those parts which surround the earth...'⁷³. The prominence of the Sun and Moon at the juncture of the two rumps proclaims their central importance for daily time-keeping, as well as the task of squaring their cycles in the Luni-Solar calendar. By the 3M BC, and probably from a millennium earlier at least, the Sumerians at the Moon Temple of Ur, with its attached *giparu* (nunnery) and *ziggurat*, were systematically tracking the behavior of the Moon to measure not only months and predict eclipses but also at the New Year to use its position against stars to decide whether an intercalary month would be needed⁷⁴.



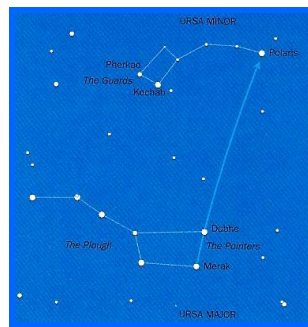
Ill.26 Two further views of the bowl showing its incurved rim and thick walls, taken by the writer from the facsimile of the Philadelphia original in the British Museum: the lens cap gives the scale.

⁷² J van Dijk *SSA* 45, 19

⁷³ Quoted by Brown *ibid.*

⁷⁴ E Hunger 'Die Schaltjahre vom 33. bis 47. Jahre des Shulgi von Ur' *Analecta Orientalia* XII 312-18

Could the broken-off bull have been decorated symmetrically, also with a Dipper outline on its foreleg?
 Certainly in practical life we use one to lead the eye to the other as a quick way of locating the Pole:



Ill.27 Using Ursa Major to find the end-star of Ursa Minor at the Polar Centre

As Polar parantellonta to Orion and Perseus (already referred to above) the distinction *between* them is crucial. Aratus⁷⁵ in his *Phaenomena* - possibly even following the order of the **Mul Apin Star List** (or others like it that that have not survived⁷⁶) - after naming the Polar Centre lists both Bears as the first two constellations in his Star Guide.

On either side of it [the Polar Centre] the two Bears wheel in unison, and so they are called the Wagons⁷⁷. They keep their heads for ever pointing to each other's loins, and for ever they move with shoulders leading, aligned towards the shoulders, but in opposite direction... Now one of the Bears men call Kynosura⁷⁸ (Ursa Minor) by name, the other Helice (Ursa Major). Helice⁷⁹ is the one by which Greek men at sea judge the course to steer their ships, while Phoenicians cross the sea relying on the other. Now the one is clear and easy to identify - Helice - being visible in all its grandeur as soon as night begins; the other is slight, yet a better guide to sailors, for it revolves entirely in a smaller circle; so by it the Sidonians sail the straightest course⁸⁰. Between the two Bears, in the likeness of a river, winds a great wonder, the Dragon, writhing around and about at enormous length; on either side of its coil the Bears move, keeping clear of the dark-blue ocean. It reaches over one of them with the tip of its tail, and intercepts the other with its coil⁸¹.

In the centuries following his death pictorial renditions of the Ptolemaic sky adapted Aratus' description into a schematic (rather than astronomically accurate) Ying-Yang arrangement of the two Bears counterchanged inside the loops of Draco, as below, so that due to its superiority for navigation we should



Ill 28 The Codex Phillipicus zodiac (in mirror image for easier comparison) 1830 fol.11 u.12⁸²

⁷⁵ Aratus was from Cilicia, the very region Ulansey (see Icon A) calls the birthplace of Roman Mithraism. It was the home territory of several eminent fellow Stoics, who embraced the philosophy that the astronomical cycles causing one's Fate must be borne stoically.

⁷⁶ Maunder 1908 apud Baity 1973 (fn.106) p.406 worked out that Aratus in his description of the constellations 'was using a far older sky-chart or description, one made 'around the 28th century BC at or near 40° north latitude'.

⁷⁷ Of course in the Western tradition Ursa Major is sometimes called 'Charles's Wain' (*cart* is an anagram of *arctos*).

⁷⁸ The literal meaning is 'Dog's Tail', the reason for which is given shortly.

⁷⁹ Because, as we have just demonstrated, Ursa Major spins round the Polar Centre in a helix.

⁸⁰ No wonder that for navigation Kynosura was the more accurate, being closer to the Polar Centre, but no wonder also that Helice, for ever turning, was more obviously identifiable for general orientational purposes.

⁸¹ Translation by Douglas Kidd, *Cambridge Classical Texts and Commentaries XXXIV* 1994 (ll. 27ff)

⁸² *apud*. M Vermaseren in 'The Mithraeum at Ponza' in *Mithraica II* Leiden 1974 which has a ceiling with the two Bears arranged so.

hold at the back of our minds the possibility that on Section 1 of Icon B we could translate *Mul Apin* as *Ursa Minor*, and *Iku*/the square field) as *Ursa Major* (Ill.31): certainly later Arab astronomers maintained the tradition of describing the pan of *Ursa Major* as The Coffin (*Na^csh*), its three tail stars being *Banāt Na^csh*/Daughters of the Coffin - their role being to carry it, or even lie in it. The Assyrian sealing below shows an astronomer-priest before a fire altar with the four stars of *Iku* on an S-shaped cushion set on a pedestal with Venus above and ziggurat behind, celebrating the start of the New Year (Babylon texts specifically cite *Iku* as the New Year constellation).



Ill.29 Ritual of an Assyrian astronomer-priest c.1800 BC - Vorderasiatisches Museum Berlin

We have twice mentioned how *Auriga* points up to both Bears⁸³ on either side of the Pole, in such a way that it joins together the two star corridors leading down to *Perseus* from *Ursa Minor*, and *Orion* from *Ursa Major* (a well-known Homeric line in the *Iliad* describes *Ursa Major* looking down on *Orion*). With *Ursa Minor* lining-up so obviously to *Perseus* via his father *Cepheus*, the curlicue on *Perseus's* weapon (Ill.6) is likely to refer precisely to *Ursa Minor*, replicating the short, tight curl of *Kynosura's* outline shown on some boundary stones as the curly tail of *Gula's* dog (see Haleem 2009).

But Robert Brown⁸⁴ was not happy with the translation of 'dog's tail' for *Kynosura* and suggests it derives from the Assyrian *Antah-surra/Annas-surra* meaning 'Star of the Upper Sphere' or 'Sky High Soaring' respectively, the latter being particularly appropriate (Ill.31). It fits with the line in *Aratus' Phaenomena*

Then, too, the head of Kynosura runs very high when night begins,

and it is believable that the Greeks could have added the consonant K to the beginning of what might have originally come to them transliterated as *Uno/Anosura*, and then by homophony linked to *Kuno/Dog*.

Taking into account all the distinctive Seven-Star groups above and below the Ecliptic as well as all the other Circumpolar groups (see Haleem 2009) we cannot avoid homing in on the centrality of the Bears as:

- substitutes for other constellations;
- star locators;
- Sky clock hands (as described for the La Venta site mentioned under Icon C), and
- Polar pointers,

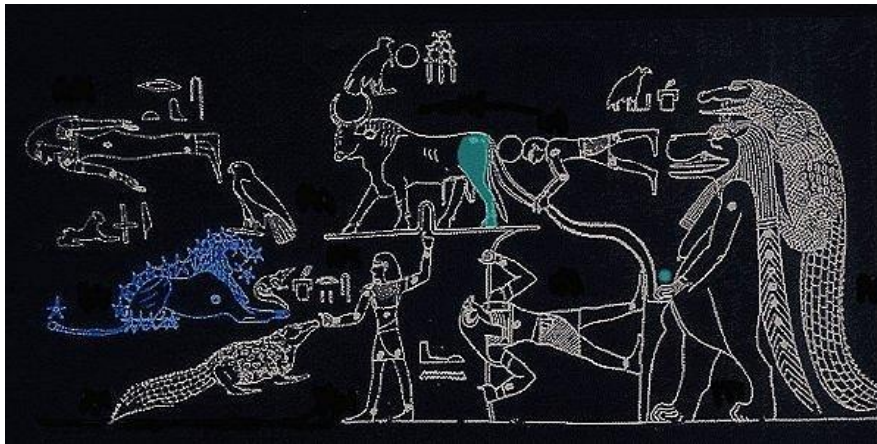
since singly or together they are undoubtedly the most central and versatile indicators with the highest status amongst other stars for providing accurate orientational fixes.

It is more revealing from now on, as *Aratos* and his contemporaries did, to always consider the Two Bears together as a duo, so coming back to the *Shulgi Bowl* we have a real possibility that the damaged bull completing the pair could have had the other Bear on *its* foreleg, whichever way round. We have seen how both appear on the *Faroughi Bowl* and that the way *Ursa Minor* appears just below *Taurus* on it literally

⁸³ *La tête du Cocher qui porte Amalthea, n'est pas éloignée de l'Ourse, Helice, comme l'observe Germanicus* . (Dupuis OTC III p.101)

⁸⁴ Robert Brown *Proceedings of the Society for Biblical Archaeology* 1893 P.464

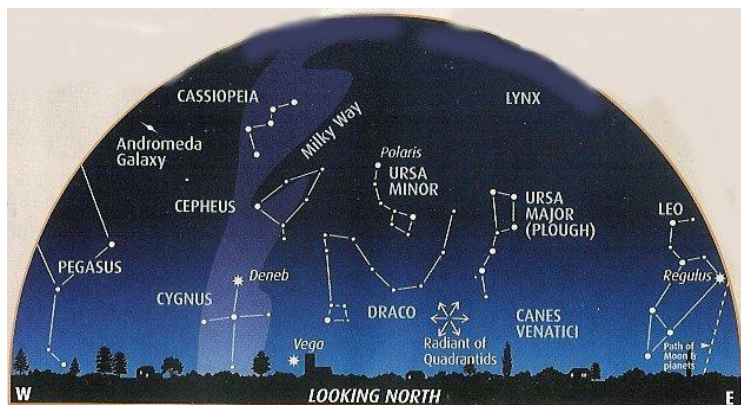
fits the position of its foreleg. But, given that the documentary evidence from Egypt sees *Ursa Major* as the *back leg* of the Bull (below) we could reason that, if the outline appears on the bull's *foreleg* on the bowl, we cannot rule out that on the Shulgi Bowl it may exclusively represent *Ursa Minor*!



Ill.30 *Seti I ceiling: central panel: the hind leg of the bull is named in the 3 hieroglyphs above it as Meskhetiu/Ursa Major*

HOW THE SHULGI BOWL THROWS LIGHT ON THE MUL APIN TRIAD NAMED IN SECTION 1 OF ASTROLABE K

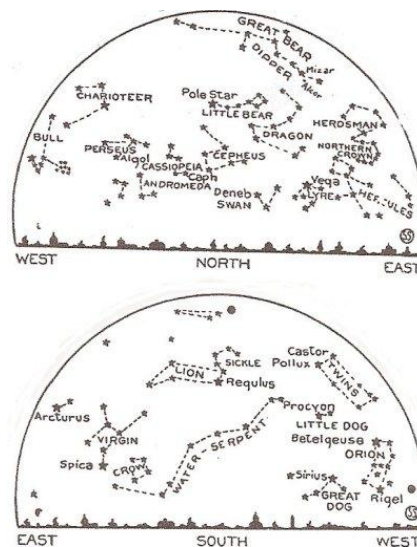
Going back to the two pointers in their Ying-Yang arrangement on Section 1 of Astrolabe K labelled *Apin* and *Iku*, it would now not seem surprising if they too refer, in a more diagrammatic way, to the Two Bears (c.f. Ill.10 with Ill.31). If in Mesopotamia the start of the New Year is at the Winter Solstice, then for Twelfth Night on 6 January the star map below gives the positional points for *Ursa Major* when *Capella*, the brightest star of *Auriga*, is at the Zenith - exactly the position it is shown at as the hind leg of the Bull on the *Seti I ceiling* (Ill.30) - *Ursa Minor*, too, is in exactly the position it takes on the foreleg of the Bull in *Icon D*! Indeed, *Ursa Minor*, *Draco* and *Ursa Major* conclusively fit the outlines of the line and two pointers on *Icon B's Section 1*, and looking again at the scene in Ill.29 we wonder if the four stars on the S-bend cushion could even be the pan of *Ursa Minor*, in the superior role of being round the Polar Centre itself, as *Mul Apin*, 'Leader of the Stars' (the added title given to it on the label in Section 1 of *Icon B*).



Ill.31 *The striking upright position of Ursa Major as Bull Haunch looking north on Twelfth Night at 2200hrs on 6 January 2007 (both halves of the sky around the Winter Solstice, with Perseus at the Zenith, are shown in Ill.39)*

Other sources indicate just how important *Ursa Minor* was in ancient astronomy: but because it has not been equated with *Mul Apin* before, commentators have consistently overlooked it, concentrating on *Ursa Major* alone and often confusing the two. It had always puzzled me that, given the Bears' prominence in the sky, they should appear to be mentioned so little in the Mesopotamian texts, but this is because scholars usually assign *Ursa Major* to *Margidda*, a name not cited that often. However, given their telling configuration in relation to *Draco* in the star map above, assigning them to *Mul Apin* and *Dilgan/Iku*

immediately rectifies these seeming omissions since **those** two names, matching the central role of the Bears, do appear repeatedly in the texts. As a double check, three months later at the Spring Equinox, as Orion starts to sink away from the sky on the western horizon, at midnight Ursa Major is now immediately overhead at the zenith with Leo and Virgo rising up over Hydra below, just as depicted on the Seleucid



Ill.32 The striking zenith position of Ursa Major in the early evening in April (top), with Auriga and Perseus over Taurus further down signalling the arrival of Spring⁸⁵

clay tablet (Ill.17), whilst Ursa Minor now lies underneath, horizontally parallel to it. Here the configuration of the Two Bears as the two pointers on Section 1 of Astrolabe K still makes sense, and if, as Weidner was not sure, we were to reverse the ambiguous labelling (Weidner in HBA was not sure which way round to put them) to give *Iku/Dilgan* to the inner pointer and *Apin* to the outer pointer, for the Spring Equinox scenario this would continue to make sense.

We now believe the circular bowl dedicated to Shulgi could when complete have been meant to depict both Ursa Major and Ursa Minor on the contrasting Bulls, but on the remains we have, one or other is depicted on the *foreleg* of the intact one. We are told by Brown⁸⁶ that ‘the star *a Ursae Minoris* was...known as the ‘chariot’, the *Alrucaba* of the Alphonsine Tables, otherwise *Errucchaba*⁸⁷, *Arrucabatho*, etc... originally the name, not of a single star, but of the constellation’ (perhaps because of its alignment to Auriga the Chariot). We have already mentioned how In Akkadian *Antahsurra* fits Ursa Minor ‘soaring high’ - in Greek with a K in front becoming Kynosura. On Icon B this leaves Ursa Major’s rectangular pan as *Iku/Dilgan* - with Venus the third body listed in the first Mul Apin Star List triad.

ICON E: THE DE RAVESTEIN MIRROR BACK 6C BC

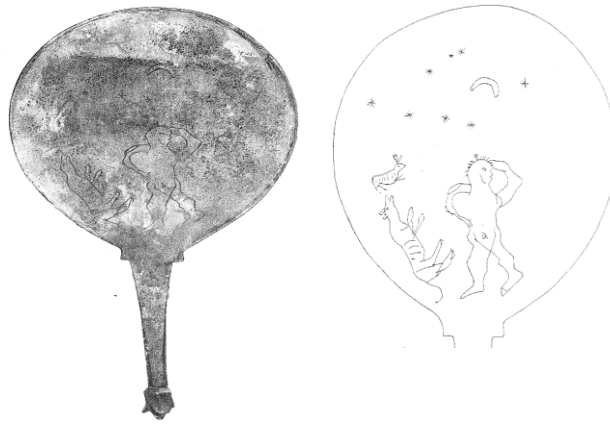
The backs of bronze mirrors used 9-6C BC by the Etruscans provide a fund of astro-iconography: Gerhard in *Etruskische Spiegel* points out how conducive the Etruscan mirror disc shape is for themes connected with heavenly phenomena. The profuse use of Greek mythological subjects on many such mirrors bears this out⁸⁸, and are usually beautifully drawn with anthropomorphic renditions of the Greek Pantheon to celebrate the feats of Zeus, Venus and Mars, Hermes, Sun Apollo, Moon Artemis - and sometimes Orion.

⁸⁵ From James Stokley The Science Newsletter XI, no.312 p.209

⁸⁶ *Primitive Constellations* p.21

⁸⁷ c.f. Erechthoneus, driver of Auriga (Phaeton/Bellerophon in other myths).

⁸⁸ *Corpus Speculorum Etruscorum* is the work in progress companion series to *Corpus Vasorum Graecorum*, composed of volumes covering mirrors in the museums of Europe and America. This mirror is given fuller attention as Cat. no. 27 of Roger Lambrecht’s contribution to *Corpus Speculorum Etruscorum* (Royal Museum of Brussels), though he simply rates the image as graffiti. The Museum’s collection consists almost entirely of the former private collection of Baron E de Meester de Ravestein, a Belgian diplomat in Rome (1847-59) who with H Brunn, Secretary of the Institut Archéologique de Rome, foraged outside the city for antiquities.



Ill.33 Etruscan mirror back from Lambrecht's Catalogue, Brussels Royal Museum, and drawing by Gerhard

This mirror, found at Praeneste in the Etruscan⁸⁹ heartland of Italy, is also reproduced in Gerhard's book⁹⁰. The handle ends in a three-petalled flower; the reflective side is slightly concave and when polished would have reflected a dull image of the owner's face. But the unusually rough drawing on the back is a shock, interpreted by Gerhard as showing the crude outlines of Orion, Lepus and Sirius engraved with a deeply scored double line and showing a crescent moon and star inside a V-shape of seven further stars above him. The wide end of the V-line of stars faces in the same direction as Orion's glance. The original owner, Baron de Ravestein, commenting on it in his own catalogue of the collection⁹¹ wrote, 'par les dessins de notre miroir on a voulu donner une idée de ces constellations. Nous disons une idée de l'ensemble, non une imitation parfaite'. He quotes Brunn's account of the artefact who, exclaiming at its crudity, wrote, 'moins on retrouve un principe artistique dans ce dessin, plus on est porté à reconnaître dans le choix des sujets une intention sérieuse de représenter un fait ou une idée quelconque'.

Because of Lepus and Canis Major (Sirius) at the side, Gerhard had no hesitation in naming the figure in *contrapposto* pose as Orion. His raised side faces right and the Sirius dog, as on an actual star map, lies to the left, with Lepus displaced from where it should be under Orion's feet. Thus due to the use of artistic licence already evident, we become uncertain about which stars are marked in the V-line - especially on what scale to read them. Echoes of the *Mul Zappu* stars seen on cylinder seal designs come to mind (Ill.23) though here we have a seven-star group with an eighth standing outside the wide end which could mean it is a different set of stars. So we must proceed carefully. The V over Orion could literally be immediately above his head as a local constellation; or an actual seven-star group near Orion enlarged from its actual size (such as the Pleiades) - or even, being a zone where many of the brightest stars fall just above or below the Ecliptic, a wide-sweeping set of stars on a much larger-scale to either side beyond Orion as plotted out in the map below, since if Sirius and Lepus are displaced because in their true positions they would fall off the mirror's circle, this could also be true of the V-line of stars. Taking the drawing literally, a clinching factor for identification could be that two stars are closer together on the top line in the kind of ratio we get between α and β Aurigae (Menkalinan and Capella), so that

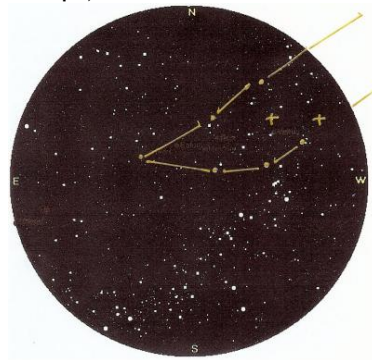
- on the lower line starting at Regulus the obvious bright stars to jump to are:

⁸⁹ Their ritual practices derived in many ways from the earliest Mesopotamian tradition of the eight-fold zodiac - and included divination through liver extispicy and bird augury.

⁹⁰ Gerhard *Etruskische Spiegel* III, ccxliiiA, 3/*Paralipomena* 207 (lxxxiii) described in IV p.22 as 'ein pränestischer Spiegel des Herrn de Meester, welcher zuerst mit Brunn's text in den *Monumenti dell'Istituto* VI, 24,5/*Annali* XXX p.388 erschien'.

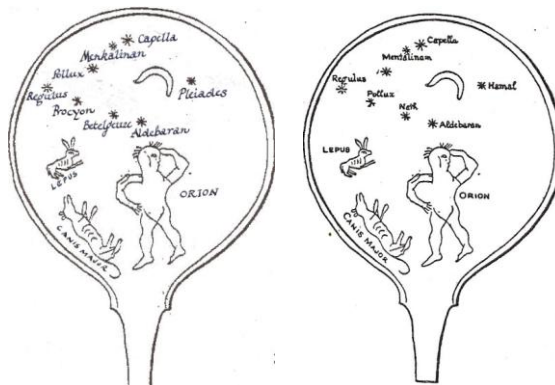
⁹¹ *Musée de Ravestein - Catalogue Descriptif* 1882, Vol. I Cat. No. 830 p.550

- Procyon;
 - Betelgeuze in Orion;
 - Aldebaran in Taurus (the line runs on to the Pleiades which could be the star inside the V).
- (On the mirror-back drawing these three stars dip together almost horizontally on the same level with each other, as on the star map.)



Ill.34 The Seven-Star Chain starting at Regulus (for orientation locate Orion's belt just below first) - with possibilities for the eighth at Al-Nath (left cross) or the Pleiades (right cross) - or even Mirfaq in Perseus where the top line ends

- For the three stars on the upper line those that most obviously run from Regulus are:
 - Pollux in Gemini;
 - Menkalinan in Auriga;
 - Capella in Auriga (the latter two more closely spaced in the sky than the other stars).



Ill.35: Tentative identifications based on the lists above (L), compared with Gerhard's own handwritten labelling (R)

If we label the design accordingly, it turns out we mostly agree with Gerhard's own interpretation (above right) the only points of difference being that he did not mark the Pollux star at all, preferred Al-Nath below Auriga to Betelgeuze - and he put $\alpha\gamma$ /Hamal as the lone star with the Moon. For the moment we take ours as a working solution, but first we should look into the interesting background to this artefact.

ARCHAEOLOGICAL CONTEXT AND ICONOGRAPHICAL BACKGROUND

Although the site of the tomb where the mirror was found is not specified, Brunn and de Meester recorded that they found it inside a large metal *cistus*⁹² resting on three lion paws decorated with incised drawings of athletes. With it were a strigil, comb and piece of cloth suggesting the owner was himself an athlete keen on keeping in good condition. But the presence also of three bronze model *vulvae* inside it introduces the likelihood, according to the Baron, that the owner was a follower of the Anatolian cult of Kybele since, as in the equivalent Greek Eleusinian Mysteries of Demeter, such objects were hidden in *cistae* and revealed in the dark during the rites. It is worth digressing briefly here to consider the iconography of the Universe as the Great Mother since one of her attributes, a mirror, helps explain why a

⁹² Cat. no. 599 in Vol.I of the Baron's own publication of the collection which came out in 1882 in two volumes as *Musée de Ravestein - Catalogue Descriptif*, the mirror alone also separately listed as no. 830 later in the same volume.

male athlete should have such an item in his bag. We see how the crescent moon and star inside a V-line of stars features on this Etruscan statue of the Anatolian Goddess Kybele (from the Sumerian *Ki*/Earth and *Belat*/Lady) - in her metaphysical form the Great Mother of the Universe. Graeco-Roman myths describe



III.36 Statue of Kybele in the Capitoline Museum, Rome - from Inghirami *Monumenti Etruschi* VI pl.R4

how Orion and the Pleiades would accompany Diana the Moon on the hunt (Kybele would at a common level stand for Moon-Earth as one, but sometimes also doubled for the other female planet, Venus). The statue above shows her on the Lion Throne of Time and the Solstices, holding a poppy head⁹³ suggesting Sleep and Night, and a Mirror for the clear Day sky. The crescent Moon conjunct Venus (or possibly even the first star, *Mul Apin*) provides the stud holding up the V-shaped cascade of her stellar veil.

A Roman floor mosaic from Rudston in Yorkshire (below) confirms this symbolism - with a somewhat crudely rendered Venus - in more familiar naked Graeco-Roman mode - at the centre of an eight-fold zodiac holding the same two attributes of mirror and poppy, accompanied by a Triton holding up the torch of Life/Day and Death/Night, underlining Venus' exaltation in Pisces at the start of a new synodic period. Her doves, pecking at poppies or pomegranates, fill in the corner quadrants. This mosaic re-emphasises for us the use even into Roman times of the Venus cycle in an eight-fold division of the sky - expressed in Britain with the charming *naïveté* of Romano-Saxon taste.

Given the main astronomical purpose of this chapter, the links of the de Ravestein mirror with the rites of Kybele confirms our thoughts on the importance of the Venus cycle hidden in the structure of the eight-fold zodiac given to us on Astrolabe K and the Faroughi Bowl. The mosaic shows in the four semi-circles surrounding Venus and her Triton the opposing Four Cardinal signs representing the Four Seasons:

- ◇ **SPRING: TAURUS** with crescent Moon held on a rod parallel to its back, with the caption TAURUS OMICIDA - 'Man-Killing Bull', an interesting reversal of the Mithraic idea;

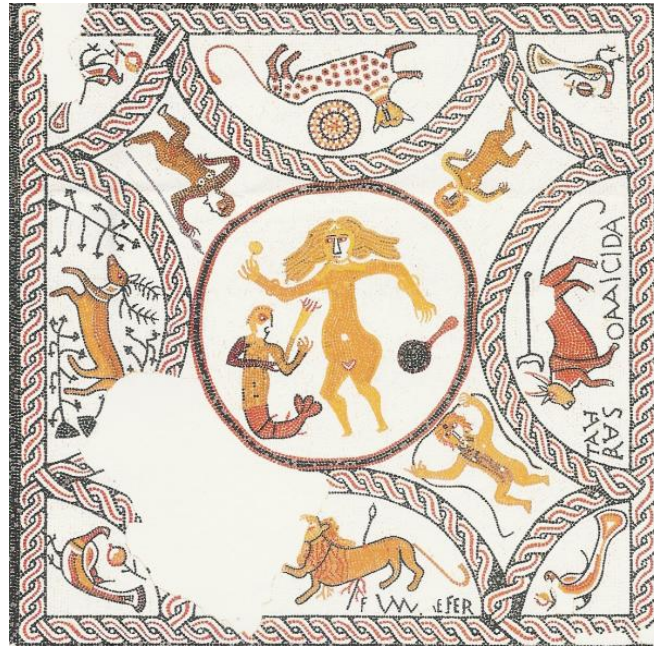
AND OPPOSITE

- ◇ **AUTUMN: AQUARIUS** as *Leopard* (in Akkadian a translation given for *Udkaduḫa*/Cygnus) with spotted starry sky disc over its back reminding us of the perennial association in the ancient world of leopard with the Night Sky, and at right-angles to these
- ◇ **WINTER: STAG** (for Scorpio) the bare-branched trees echoing the twig-like structure of its antlers, perhaps a visual rendition of the Akkadian *Lulim* (*Stag*)/Cassiopeia, used in Hyperborean Britain with Ophiucus as circumpolar paranatellon for Scorpio (in Britain rarely visible above the horizon, even when technically the Sun rises in Scorpio in November);

AND OPPOSITE

⁹³ On statues of the Great Goddess the larger and easily identifiable pomegranate was more common, and on statues of Diana of Ephesus the seed pods for the counting of the days, years and aeons are exteriorized in the fruits of her many-tiered necklace.

- ◇ **SUMMER: LEO** transfixed by a spear and spurting blood, with the caption [LEO] F[R]AMMEFER - 'Spear-bearing Lion';



Ill.37 Roman floor mosaic from the villa at Rudston, now in Hull Museum⁹⁴, 3-4C AD

At cross-quarters to these figures in the smaller compartments of the octagon are four hero figures: **OPHIUCUS**, **PERSEUS** and **HERCULES** (the missing, figure could have been **BOOTES** or **ORION**⁹⁵). Taken as whole, the mosaic with Venus at the centre of an 8-fold zodiac has many of the ingredients of a deconstructed Taurochtony: Herodotus himself, we remember, refers to Mithra and Venus as one and the same, perhaps misunderstanding, yet indicating the truth of, the link between the Duat sky region at the New Year, the Sky Hero and the starting point of the Venus cycle.

That the owner of this mirror must have followed the cult of the Great Goddess is reinforced by the fact that the mirror itself, if surprisingly found in a male tomb, is in context⁹⁶ as one of several artefacts associated with the rites of the Great Goddess where the mirror itself is a reference to the Great Goddess as the Sky, much as a cross indicates allegiance to the rites of Christ. Indeed, below is a striking example



Ill.38 Seal showing Christ beneath the Paschal Moon and the Seven-Star - from Guthrie

of the retention of an old icon for the new religion as the Classical Pantheon gave way to Christianity. Guthrie in his study of Orphism⁹⁷ found the scene above engraved on a conical haematite seal in the Berlin Museum. It shows seven stars and a crescent above Christ/Orion crucified on the Meridional Tree with Ecliptic Crossbar and the inscription **ORPHEOS BAKKIKOS** in Greek underneath - evidence of unbroken

⁹⁴ David S Neal and Stephen R Cosh *Roman Mosaics of Britain I: Northern Britain* London 2002 - Mosaic 143.2 Ill.no. 325). This eight-fold zodiac compares interestingly with those found in other villas of the region and illustrated in the same volume.

⁹⁵ We could say Mithra combines all four male constellations into one Sky Hero, quite apart from the Solstitial Aquarius!

⁹⁶ The mirror is thus a protective instrument to ward off evil, in the way Perseus used his shield as a mirror against the Gorgon.

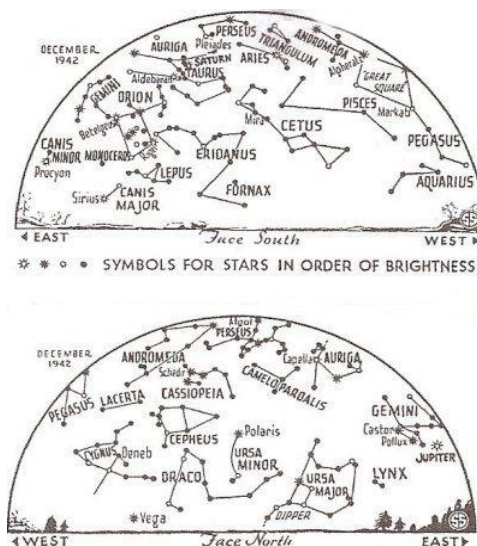
⁹⁷ W C K Guthrie *Orpheus and Greek Religion* 1935

continuity in the mystical societies that kept alive the secret rites of the cycle of death and resurrection - associated in the Primordial Religion with the myth of Tammuz and Inanna/Ishtar, Osiris and Isis or, in the Greek Classical world, Orpheus and Euridice.

This makes absolute sense for, whilst the birth of Mithra/Christ was assigned by the Early Church to the Winter Solstice, the symbolism of the Crucifixion and Resurrection were made to coincide with the Spring Equinox at the start of the Jewish (also Babylonian) month of Nisan⁹⁸, showing that the pagan version of the death and rebirth of the Year as a God, whether Osiris, Bacchus, Dionysos, Christ or Tammuz, was fused into Christianity at Easter and Christmas in a reiteration of their everlasting metaphysical truths. As we see from the version on our Etruscan mirror, the ancient near-eastern religion of the Mother Goddess never completely died out and was taken up for adaptation by the Christian Gnostics.

THE LIKELY IDENTITY OF THE V-LINE ON THE DE RAVESTEIN MIRROR WHEN REVERSED

Stokley⁹⁹ wrote a special piece on ‘The Seven Brightest Stars Visible in December’ (marked ☼ on his map) - naming Betelgeuze, Rigel, Pollux, Sirius, Aldebaran, Capella and Procyon - Rigel being the only one we have *not* included in the mirror’s V-line, having named Menkalinan in Auriga instead. This is an indication that such a theme is a tradition in the minds of astronomers that he picked up on. But checking the crude outline of Orion on the mirror against his star map, we realize that it is Orion’s right side under Gemini which should be raised. We realised we should be looking at the image the other way round!



Ill.39 The sky at night in December from Stokley, with full depiction of Orion with raised right arm (note also how Perseus is at the Zenith in December¹⁰⁰, appropriate for the Mithras celebration on 21 December)

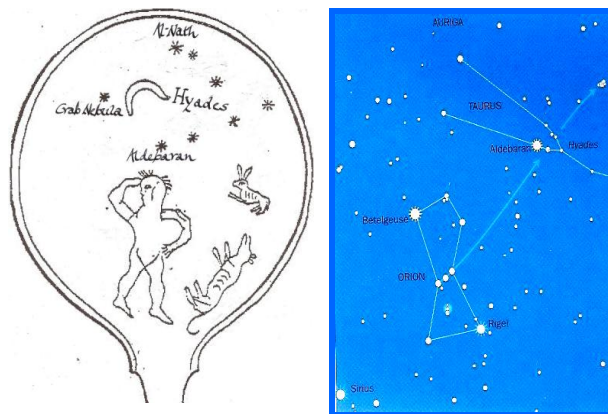
On other mirror-back designs in the Etruscan Mirror Corpus Catalogues we noticed that titles for the Gods are often written backwards, in mirror writing, meaning the image will have been reversed in the process of transferring the design by a tracing (even though we know early Greek inscriptions could be written in either direction). Looking at the outline of Orion in Stokley’s diagrammatic map, since we know Orion faces out, the upraised arm under Gemini follows his raised right shoulder and, at the ready to defend himself, his left arm with the bow is held out towards Taurus (c.f. the characterization of Taurus on the Rudston mosaic as ‘Taurus Omicida’). Thus the general tilt of the constellation has the right shoulder

⁹⁸ See a fuller discussion in Haleem (2008) in the section on Intercalation at the very end which quotes Roger T Beckwith's work on Jewish and Christian calendars.

⁹⁹ James Stokley ‘Seven Bright Stars’ *Science News Letter* Nov 28 1942 pp 346-7

¹⁰⁰ As noted under Icon A, Perseus high in the night sky from Autumn foreshadows the dramatic appearance of Orion in Winter.

higher than the left - very obvious in an actual star map. We should therefore start all over again and re-read the design on the mirror-back the other way round¹⁰¹, despite the further displacement of Sirius and Lepus. This way round, the direction of the V-line of stars is crucially reversed - which means two new, strikingly close alternatives present themselves for its identity, the first being the literal match below:

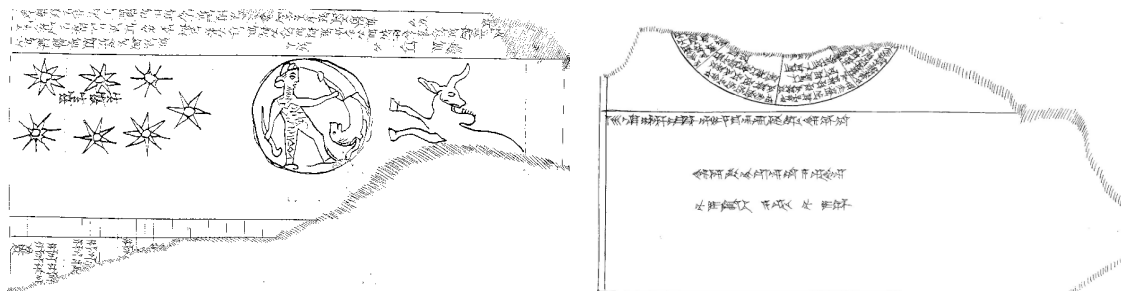


Ill.40: Drawing of the reversed mirror back - with best-matching star map comparison to Orion and Taurus

MUL ZAPPU ON THE TAURUS SELEUCID TABLET AND THE IDENTITY OF THE SIBITTI

We saw on the Faroughi Bowl representations of both Ursa Major and Minor, as well as of *Mul Zappu* on the rim, its outline clearly distinguishable from the dipper shapes of the Bears. Though in the past identified by scholars as the Pleiades, from its position on the rim of Icon C along the Gemini-Sagittarius axis we argued *Mul Zappu* must be Auriga. The Gnostic ring (Ill.38) could clinch this, given the apex of the V on the seal is placed at the top, like Auriga's outline with Capella at the top. So despite the V-line over Orion being such a good match to *Gu-Anna*/Taurus, the alternative of *Mul Zappu*/Auriga is far more significant because of its association with the Sacred Seven God (*Ilu Sibitti*) - which Taurus definitely does not have.

On a second Seleucid tablet (with the remains of an eight-fold zodiac on the back)¹⁰² both *Mul Zappu* (labelled as such) and Taurus are shown, with between them what Weidner describes as a hero fighting a



Ill.41: The Taurus and Gemini Tablet recto, with partially broken off 8-fold zodiac on the back

lion in a moon-disc. By the time the scribe copied this tablet in the 2C BC from an earlier original, the precession of the Vernal Point backwards into Aries during the First Millennium had brought in a new Vernal Point, but the Bull was a reminder that it had always been the Leader of the Zodiac from which the cycle of the Calendar had originally been measured (the message of Mithraic icons in the Roman era four centuries later). The Bull on the tablet has a bristly hump - the inclusion of the Pleiades within Taurus - whilst the hero with Phrygian cap in the disc fighting the leonine dragon with club and dagger is clearly a proto-Mithraic figure. Bearing in mind that both the Virgo and Leo sides of the other Seleucid tablet each featured a planetary exaltation (of Mercury in Virgo and Jupiter in Cancer, the sign next to Leo), so on the

¹⁰¹ Robert Brown (*ibid.* p.137): 'Geminus says that on the xxivth day of the Twins according to Euktemon the shoulder of Orion rises'

¹⁰² With the Virgo/Leo/Cancer tablet the only other to survive of a supposed full set from Uruk, looted, broken up and sold singly.

Taurus tablet if *Mul Zappu* is identified as Auriga it is to proclaim the Dragon of the Lunar Nodes whose head is exalted in Gemini, the sign next to Taurus (see 8. under Icon C): so two signs are evoked on this side, as on the Leo tablet). Early on we emphasised Auriga's use as *stepping stone*, and therefore dual reference to, the Two Bears - whose lengthwise star corridors we have remarked on as running through it to Orion or Perseu. Here we leave out intermediate steps to the argument as given in Haleem 2009 and cut to the chase to underline Auriga's extraordinarily high status, given it triply represents *The Sibitti/Sacred Seven*: it is itself a 7-star sign marking the axis of the Eclipse Dragon and it is aligned to the 7-star Bears (the Sagittarius/*Mul Zappu*/Gemini Axis crosses the opposition between the Two Bears at right-angles (Ill.21) thus Hyginus calls Auriga/Erechthonios/Phaeton *Father of Helice and Aega'* (Bk 1,2).

In the *Mul Apin Star List*¹⁰³ the *Sibitti* stars, 'The Great Gods', are mentioned *only once* - in the context of just those surrounding stars in the Duat region (see map below) within which Auriga plays its part:

- i.42: *The star which stands behind [beyond] Iku/the Field: Anunitu [Venus in Andromeda, above Pisces]*
- i.43: *The star which stands behind [beyond] it: Luḥunga/the Hired Man [Perseus above Aries, Weidner thinks]*
- i.44: *Zappu/MUL-MUL, the Seven Gods (Sibitti), the Great Gods (Ilu Rabūtu)*
- ii.1 : *The Bull of Heaven (Gu-anna), the Bull Jaw (Gišlie/Hyades) foremost of Anu (AGA Anim)*
- ii.2: *Sibzianna (Orion), Guardian of the Gate of Heaven, Vizier of Anu and Ishtar*¹⁰⁴
- ii.3: *Gemini, next to LuLal and Lатарak [Leo]*¹⁰⁵



Ill.42 *The Perseus-Andromeda star chain and Orion, Taurus and the Pleiades take up the main swathe of the sky. Also visible are Ursa Majoris and Minoris inside the coils of Draco, the former leading down via Gemini to Orion, the latter down via Perseus to Taurus, with Auriga bestraddling both corridors, intercepting the Π^{β} \times Dragon axis crosswise.*

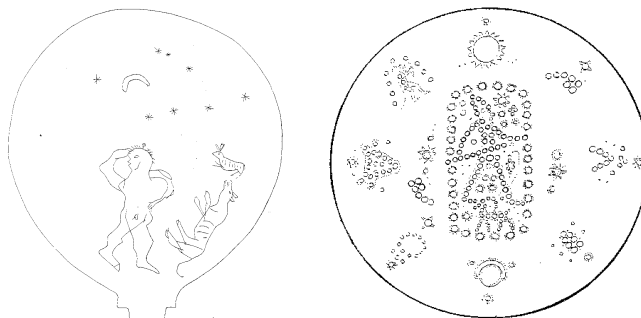
¹⁰³ Main translation in the Hunger/Pingree edition of *Mul Apin* with my own emphases added.

¹⁰⁴ The same epithets as given on the Gemini Section (4) of Astrolabe K.

¹⁰⁵ *Lатарak*/Leo is labelled in Section 5 of Astrolabe K.

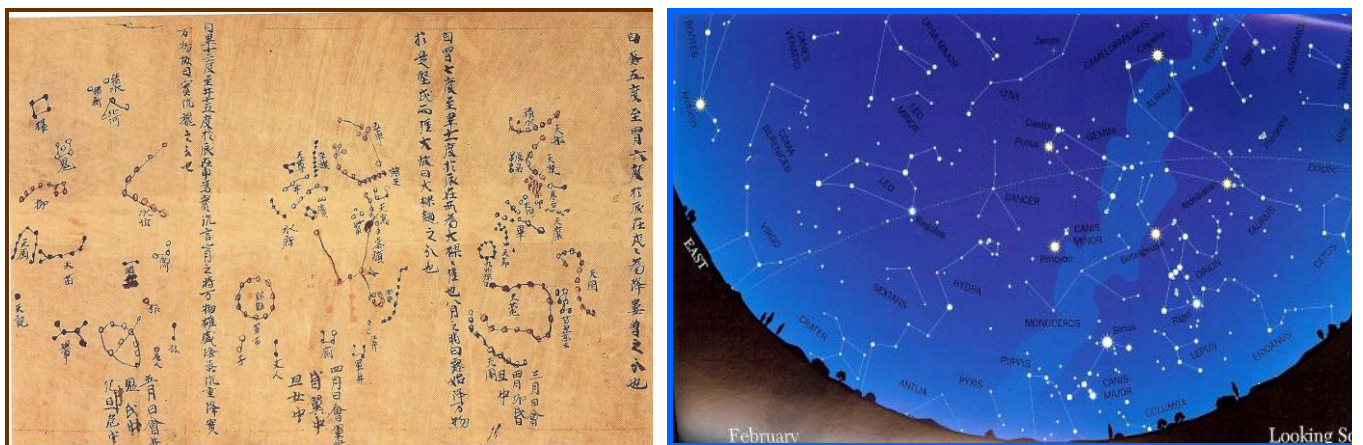
The *Sibitti* are mentioned between Perseus-Aries and Taurus, and Sayce & Bosanquet when reading that line interpret *Mul Zappu* as Auriga (Barnett repeats this opinion, but considers the *Sibitti* to be different from *Mul Zappu*) - while Weidner saw *Mul Zappu* as *Šugi*/Perseus. Though both stand out as significant V-lines on star maps, both running down to Andromeda, Perseus does not count as a 7-star group and does not stand out as distinctively as Auriga. Listed as they are *before* Taurus, Orion and Gemini and *after* Perseus and Andromeda, the **Mul Apin** text indicates the *Ilu Sibitti* lie at the very heart of the Duat. If we simply follow the pattern of one constellation named per line by one or more epithets, then line i.44 must conclusively refer to *Mul Zappu*/Auriga as the Divine Seven-God/*The Sibitti*, The Great Gods/*Ilu rabūtu*.

If we now cross-compare the main content of Icons E and C (shown next to each other below for ease of reference) interesting contrasts emerge. The crescent moon lies above Orion's head on the mirror: at his feet on the bowl. Orion's stance on the mirror bears some resemblance to that of the constellation itself, where on the Faroughi Bowl there is less of a match because he strides forward Egyptian-style in sideways profile as Osiris in the guise of a Syro-Pharaonic Ruler: being an extra-zodiacal figure he is placed at the centre of the bowl with Ursa Major and Minor at a slant along the axis of his belt that joins up to his upper arm to make a V (Ursa Minor below Taurus' head looks just like its foreleg). Although on the bowl his Belt



Ill.43: Icons C and E compared, the right elbow of Orion accentuated in the opposite direction to the V-line

and right elbow are extended and exaggerated into a V-shape on the same axis as the V-shapes Taurus and Scorpio make in the other direction at either end of the bowl diameter, its apex points in the *opposite* direction to our chosen reading so there is a contradiction here, since in the sky Orion is usually depicted as *facing towards* Taurus. Finally, on the bowl, instead of Lepus near Orion's feet as shown on the mirror, Orion stands on a goat or ibex whose solstitial symbolism we have demonstrated. At first sight we seemed to have no parallel for the Dog of Sirius on the mirror- but we came to the conclusion in our analysis of the bowl that the ring of stars on the rim beneath Taurus, following Chinese precedent, represented Sirius:



Ill.44 The Dun-Huang Star Map showing the Winter constellations in the centre panel, with the ring of stars lining up to Orion's Belt representing Sirius (BL Ms. S3326) - compared to the equivalent Night sky for February at 2200hrs

We hope we have established the identity of three separate seven-star groups, as found on these five Mesopotamian artefacts, which can so easily be confused with each other, and also finally pinpointed the stellar identity of the *Sibitti*. But tantalizingly, in the final analysis we must leave the definitive answer on the nature of the V-line above Orion on the de Ravestein Mirror as ambiguous, in the hope more material will finally emerge - simply because it seems to be intentionally different from the more rectangular outline of *Mul Zappu*, though this again could be artistic licence. Picking out the brightest stars surrounding Orion in the maps through half-closed eyes, it is still plausible to think the V-Line is built up by a combination of them centred on Betelgeuze, and mapping the Duat (Icon B concentrates on that zone. Dupuis says it is Orion who is described as Ninus/Nimrod, 'the mighty Hunter before the Lord' by the Assyrians in the Bible, and quotes Cedrinus' assertion that 'Zoroaster was born from the blood of Ninus'.

Accepting the inclusion of heavenly phenomena in the iconography the five icons discussed above means we can start to make sense of items such as cylinder seals, paintings and sculptures bearing related images. Whatever the individual contributions of Susa, Sumer, Akkad, Assyria and Babylon may have been to the primordial Magian tradition, they resulted not only in more detailed observation of sky phenomena over the centuries, but also in a renaissance of pure Zoroastrianism in the 6C BC under the Achaemenids, Seleucids and Parthians. We need always in our attempt to read their astral imagery to identify ourselves with *their* mind-set - not ours - as a civilisation experiencing the planets and stars as Gods and Goddesses of benign or malevolent influence on human affairs on Earth - akin to the bias we might have for germs or DNA as prime causes today. Bear in mind that astronomy for calendrical purposes *developed into* astrology once it was realised the energy fields of planets against stars had predictable effects and meaning for events on Earth. For the Babylonians they formed a continuum since there is no astrology without the infrastructure of astronomy (astrologers today use tables, and rarely look at night sky on a nightly basis!).

Proving my case through textual evidence alone has not been possible, and I hope I have shown how oblique ways of pinning down ancient near-eastern sky iconography by matching images using the discipline of art history to observable sky phenomena are valid and reliable approaches. Elizabeth Baity¹⁰⁶ said, some decades after Weidner's perceptive comment at the head of this chapter, '*there is a need for an international astro-iconographical index*'. I hope we can all work together on taking this further.

NOTE: Due to space restrictions¹⁰⁷ I have had to omit much evidence backing analyses given in full in Chapter 19 (Haleem 2009)¹⁰⁸ on my website devoted to the Canon of Ancient Near Eastern Art (CANEA). Comments, questions and feedback are welcome via the website e-mail¹⁰⁹. A short booklet on a related website (Haleem 2008)¹¹⁰ looks in closer detail at Astrolabe K as part of an exposition of the Mesopotamian Theory of Correspondences, within which astronomy, astrology and its imagery play a central role (in her overview of archaeo-astronomy Baity (*ibid.*) points out that a further factor in Neolithic inherited culture included the search for minerals and semi-precious stones to be woven into the worship of the planetary and stellar Gods).

¹⁰⁶ Her magisterial synthesis of our knowledge of Astroarchaeology was made in a hugely long paper read to the 36th annual meeting of the Society for American Archaeology, Oklahoma, on May 8 1971 which fully lays out the many indications of Neolithic beginnings for the discipline of astronomy: 'Archaeoastronomy and Ethnoastronomy So Far' *Current Anthropology* XIV 1973, 389-449 (see fn.3).

¹⁰⁷ Thus references have been given in the footnotes as they crop up since the entire Bibliography and cross-references will not be ready until the Catalogues of images and related Commentary chapters in the whole book it forms part of are completed. The full website version is punctuated by short 'tutorials' on features of early Mesopotamian astronomy crucial to understanding the iconography that in our era of astrophysics cannot be assumed as common knowledge any more.

¹⁰⁸ Posted on my website at www.layish.co.uk: Click the Sphinx and then the Research into the Ancient Near Eastern Canon of Art box - then choose the chapter 19 link. The chapter still needs refinement, so check for updates.

¹⁰⁹ **If you quote me, please acknowledge me!** Like Tim Berners-Lee for the Internet or Professor Sanger for the UK Genome Project, I like to share knowledge without charge, but it is a courtesy to let me know what you want to use - and to acknowledge your source! By this token I should like thank Dr Diana Stein at London University for calling my attention to the 2010 Aram Conference.

¹¹⁰ See fn. 41