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Egypt and Mesopotamia: Ancient Rivals, Ancient Friends

Part II: Death and the Afterlife¹

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IN MANY WAYS the eschatological² differences between Egypt and Mesopotamia are striking, and when comparing these two “First Civilizations,” at no point do they seem farther apart than in their ideas about the afterlife. The *postmortem* existence of the peoples of Mesopotamia (the Sumerians, Babylonians, and Assyrians) was essentially “pessimistic,” offering the dead the promise of a dreary afterlife in a darkened wasteland under the earth. Compared to Mesopotamia, Egyptian beliefs were overwhelmingly “optimistic.” The ancient Egyptians could look forward to a long and happy afterlife either in a farmer’s paradise, as an eternal star floating across the heavens, or in the company of the sun god Re.

In Mesopotamia life was everything. To live and enjoy the fruits of civilization was all that anyone could, or should, expect from their brief sojourn on earth. They had no savior god, no messiah (Scurlock 1995:1883) waiting to succor suffering humans and take them to an idyllic paradise. Since the very nature of being human was to be mortal, any kind of positive or meaningful *postmortem* existence was foreign to the peoples of Mesopotamia.

The Gilgamesh Epic,³ the most famous of all Mesopotamian literary works, paints a revealing portrait of the Mesopotamian philosophy of life and the kind of existence one could expect after death. It is a tale about one man’s futile quest for eternal life, in which Gilgamesh undertook a long journey filled with adventure. He battled cosmic monsters and visited a magical kingdom guarded by scorpion-headed humans, where trees bearing gold and lapis-lazuli fruit grew in abundance. Denied eternal life by Utnapishtum, this lone survivor (along with his wife) of the Great Flood eventually ends up in a tavern somewhere in a far-off land. While having a few beers, the barmaid, a woman named Siduri, asks:

Gilgamesh why are you running about so much?
The eternal life you are seeking you will not find.
For when the gods created mankind they allotted
death to them, life they kept in their own hands
(George 1999: Tablet x, column 3).

Siduri suggests that, instead of wasting his time looking for eternal life, Gilgamesh should take a *carpe diem* approach to life:

Let your stomach be full.

Be happy day and night, and let every day be a day of rejoicing.

Dance in circles day and night, let your clothes be fresh and clean, let your head be clean, wash yourself with water.

Attend to the welfare of the child who holds your hand, let your wife delight in your embrace.

This is the lot of mankind (George 1999: Tablet x, column 3).

When the Gilgamesh epic is compared to Egypt’s best known story about death and the afterlife, namely the myth of Osiris, some striking differences become apparent. Osiris as both a god and the deceased king of Egypt also had to face hardships and enemies, such as his wicked brother Seth, who was trying to destroy him. Yet despite the many obstacles placed in his path, Osiris was successful in his attempt to attain eternal life. Gilgamesh, however, failed to find eternal life and had to face his own mortality. There was no triumph over death, no resurrection, only this life and then *Kurnugia*, “the land of no return.”

Still, the peoples of Mesopotamia did not believe that death meant complete annihilation. Complex burials with luxury grave goods attest to the belief in some kind of *postmortem* existence. The Royal Burials at the city of Ur, excavated in the 1920s (Woolley and Moorey 1982), and the more recent discoveries in 1988 and 1989 of three graves under the floors of the palace of the Assyrian King Assurnasirpal, who reigned 883–859 BCE (for an overview, see Harrak 1990), are good examples of Mesopotamian burial practices. These new discoveries produced a cache of spectacular gold bowls, belts, bracelets and other finely crafted personal objects, many as impressive as the grave goods found in the tomb of Tut-ankh-Amen.

MESOPOTAMIAN FUNERARY ARCHITECTURE

Unlike their Egyptian counterparts, tombs from Mesopotamia do not contain painted scenes illustrating the status or condition of the dead in the afterlife. The above mentioned Assyrian tombs were all located under the stone slab floor in the residential section of the palace. One coffin made of baked clay and shaped like a bath tub contained the remains of a man and more than 200 items of gold (Bahrani 1995:1638). A second tomb contained a stone coffin 2.30 meters long, placed in a subterranean chamber made of baked

mud bricks. This barrel-vaulted chamber contained the remains of a woman and child. An impressive number of items such as a crown, finely crafted pieces of jewelry, several pairs of solid gold bracelets and anklets, necklaces, 70 pairs of earrings, and many other stunning items were found beside them (Bahrani 1995:1638). A niche in one wall contained a tablet with an inscription that identified the woman as Yabâ (Ia-a-ba), the wife of the great empire builder, Tiglath-Peleser III (who reigned 744–727 BCE). Like Egyptian tombs, this one also had a “curse,” warning intruders not to remove any of the tomb’s contents.

Let her [the intruder’s] spirit roam outside in thirst,
in the netherworld let it [her spirit] not receive any
offering from libation of water, beer, wine, or
meal... (Bahrani 1995:1638).

In Mesopotamia there was no religious principle dictating which direction the body should face once placed in the grave, or in what direction the grave should be oriented (Heidel 1946:163). Although in some instances the west was alluded to as the entrance to the underworld (Bottéro 1992:274), in general the burial spot itself was the point of entry for each individual into the underworld. In rare instances, crevices, cracks or holes in the earth’s crust could serve as an entry as well.

In contrast, where the corpse was placed and in which direction the tomb was oriented were important elements of Egyptian eschatology. Here the realm of the dead was on the west bank of the Nile, where the sun disappeared below the horizon and entered the underworld, only to be reborn each morning in the east from the birth passage of the sky goddess Nut. The great necropoleis at Giza, Thebes, and Saqqara, were all located on the west bank of the Nile. One of the titles of Osiris, god of the underworld, was “Chief of the Westerners” (Frankfort 1948:204 and note 76). No “illustrated manuscripts” have been found in Mesopotamia containing vignettes or scenes showing the weighing of the heart or other *postmortem* rituals, such as those found in the Egyptian *Book of the Dead*. Since almost all written documents from Mesopotamia were inscribed on clay tablets, painted scenes on their surfaces are unknown. In contrast, funerary art and architecture are two of the most representative elements of ancient Egyptian civilization.

THE CULT OF THE DEAD

The peoples of ancient Mesopotamia placed great importance on the cult of the dead. Despite their dreary condition, departed ancestors required regular food, drink, and prayer offerings (Bayliss 1973:115ff). Numerous texts indicate that regular funerary offerings were made to the deceased to meet their physical needs in the afterlife (Bayliss 1973:116). Food and drink were placed in front of statues or images of the deceased, or poured down a pipe that led into the tomb. Those who received no offerings were forced to wander the earth in search of sustenance, causing terror among the living. The dead who had no one to make offerings of food and drink were pitied, since they would be forced to eat “the dregs of the (cooking) pot and the scraps of food thrown down in the street”

(Bayliss 1973:116). Unlike the Egyptians, the Mesopotamians did not believe they could ever reach the realm of the gods in the heavens, as we see in *The Pyramid Texts*, and their frustration with this situation is dramatically demonstrated in the following words spoken by Gilgamesh:

Who, my friend, can attain (scale) heaven?
Only the gods live forever with (i.e., like) the sun
As for Mankind, numbered are their days.
Whatever they achieve is but wind! (Tigay 1982:164)

The Mesopotamian concept of immortality did not require the preservation of the corpse for *postmortem* existence, although bones and skeletal remains were considered to have spiritual value and were to be left undisturbed. Mummies in Egypt and bones in Mesopotamia could not be mutilated or scattered about if the deceased were to survive in the afterlife. In Mesopotamia the corpse was not mummified, although the body was washed and sometimes the mouth was tied shut. The corpse then was oiled, perfumed, and dressed in clean clothing. None of the organs were removed or placed in canopic jars as in Egypt, and painted death masks are unknown in the archaeological record of Mesopotamia.

As in Egypt, any disturbance or violation of the tomb by robbers would cause problems for the ghost (*etimmu*) of the dead person and bring his or her postmortem existence to an end. The Assyrian King Assurbanipal records that when he conquered the Elamites in 639 BCE, he destroyed the tombs of their long-deceased kings and carried off their remains to Assyria.

I inflicted restlessness on their ghosts.
I deprived them of their funerary offerings
and pourers of water (Luckenbill 1926–27).

EGYPTIAN ESCHATOLOGY

O ye who love to live and hate to die... (Morenz 1973:187)

It is believed by some that Egyptians were preoccupied with death, and it is true that they prepared for death during their lives “on a scale hardly paralleled anywhere else on earth” (Morenz 1973:187). But, like all peoples, the Egyptians did not crave death. They loved life and did everything in their power to prolong it. As one text states, “the end of life is sorrow.” Nor were they “seized by a yearning for death” (Morenz 1973:188).

Lowly (*dhi*; probably ‘depressing’) for us is death; life
we hold in high esteem (Morenz 1973:187).

In general, textual and artistic evidence indicates that the Egyptians were optimistic about their million-year sojourn in the afterlife, although several descriptions dating from the New Kingdom indicate that death places man in solitude, immobility and out-

ward poverty (Morenz 1973:187). Some texts are reminiscent of the pessimistic afterlife of the Mesopotamians. They call the realm of the dead a land of darkness, where:

Sleeping is their occupation. They do not awaken to their brothers. They cannot behold their fathers and their mothers. Their hearts are deprived of their wives and their children (Morenz 1973:188).

From the Middle Kingdom on we find Egyptian texts known as *The Songs of the Harpers*, which recall the advice of Siduri in *The Gilgamesh Epic*:

Anoint yourself with oil like a god.
 Heap up your joys.
 Let your heart not stink.
 Follow your heart and your happiness
 Do things on earth as your heart commands!
 Wailing saves no man from the pit! (Lichtheim 1973: 163–169, 196–197).

These songs prescribed hedonism in life and were openly doubtful if not agnostic when it came to any kind of guaranteed happiness after death.

nobody comes back from over there that he might tell us their condition or tell us their state to allay our concern until we journey where they have gone... (So) make holiday and be not concerned with it! (Redford 1995:2235).

THE SOUL IN MESOPOTAMIA

In Mesopotamia four essential elements constituted a human being. The *etimmu* was the soul or spirit closely associated with the deceased's physical remains. Its closeness to the corpse (*pagru*) is made clear where the *etimmu* is described as "sleeping" in a grave or lying around unburied (Scurlock 1995:1892). A living being possessed a "life force" or "breath of life" called *napishtu*. In addition to life-giving breath, another airy manifestation that survived a person at death was called the *zaqiqu* (Oriental Institute 1956–1999, 17:58–60). This sexless, birdlike being was mobile and able to slip through small holes and openings. As such, it became associated with dreaming when the body was asleep. Thus the *etimmu* was the body spirit or ghost and the *zaqiqu* was the "free" or "dream" spirit which, like the Egyptian *ba*, could leave the tomb and come back at a later time. Both the *zaqiqu* and *etimmu* went down into the underworld at death. It is likely that the *etimmu* was a harmful spirit that could mete out punishment to the living, while the *zaqiqu* was harmless. If the bones, or *esemtu* (Oriental Institute 1956–1999, 4:345), of the dead were destroyed or mixed together, then the *etimmu* ceased to exist and could not intervene in human affairs either to help or harm the living (Bottéro 1992:271). The dead had

to be fed, watered, and psychologically stroked through prayers and name repetition by a living caretaker (*paqidu*) to insure survival. In one adoption document, a parent tells an adopted child "in my lifetime you shall give me food; when I die you shall make funerary offerings for me" (Scheil 1900:15–16). Like the Egyptian "Opening of the Mouth Ceremony," offering duties in Mesopotamia involved family members and were connected with the process of inheritance. Those who failed to carry out their offering duties risked retaliation by the ghosts of their departed relatives.

Ghosts had superhuman powers and were considered to be malevolent forces who could harm the living just like harmful demons (Bayliss 1973:116). Occasionally, such ghosts could also render favors to the living. In one prayer a sick person beseeches the spirits of the underworld for their help, promising

I will pour cool water down your water pipes, cure me that I might sing your praises (Bayliss 1973:124).

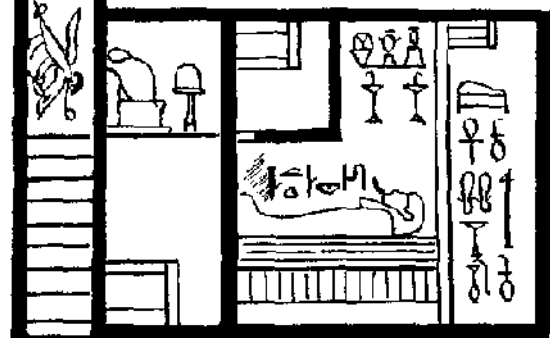
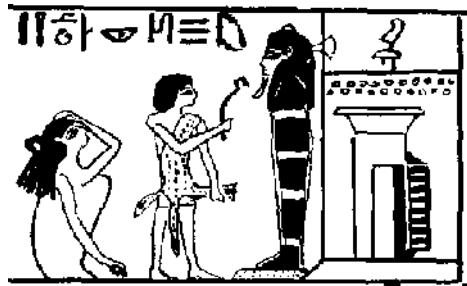
In Mesopotamia the condition of the dead was so depressing that it made the living weep just to hear about it,⁴ but "the land of no return" (*kurnugia*) was no Hell or medieval torture chamber. Nevertheless, it was an unpleasant place, described as a house where people were clothed in feathers like birds.

Where dust is their food and clay their nourishment,

They see no light (and) they dwell in darkness (Thompson 1930:Tablet VII, column iv, lines 34–37).

THE EGYPTIAN CONCEPT OF THE SOUL

In Egypt, as in Mesopotamia, the individual was composed of a number of physical and spiritual elements. There was no single spiritual entity that constituted the "soul." To insure *postmortem* survival of the body, its spiritual components had to be maintained with



The ba of the scribe Neb-qed flies down the steps of his tomb to the burial chamber; Spell 91 of The Book of the Dead

offerings of food and drink. The corpse, considered essential for survival, was inhabited by something called the “*ba*” (Lesko 1995:1763), meaning “animation” or “manifestation” (Frankfort 1948:64), which Redford (1995:2234) describes as the “brother” or personality of the living person. The *ba* was represented in mortuary art as a human-headed bird that was free to leave the tomb and visit places once enjoyed by the deceased.

A second important element was the *ka*, which was created for each person at birth and remained with them throughout their life. After death the *ka* lived in the tomb or, more precisely, in the mummified body (Spencer 1982:58). The *ka* has been interpreted as the person’s twin or double, or a kind of “guardian angel” (Edwards 1993:17–18; Frankfort 1961:91–92; Spencer 1982:29–33). Although Egyptian *postmortem* existence was very physical, depending on a secure tomb and regular provisions, there was a third entity that was very rarefied and distant from the tomb, called the *akh*. Essentially this was the part of the soul that was incorporated into the universe and became one of the eternal stars. In the Old Kingdom, kings and commoners alike could become one of the eternal stars and live above the horizon forever, never disappearing from view, never dying (Lesko 1991:118 and note 40), as *The Pyramid Texts* indicate (Faulkner 1966:155):

- The King is a star [§§1470; 1583]
- The King is this star which illuminates the sky [§362]
- The King will not die because of any dead, for the king is a circumpolar star [§§1468–1469]

It was believed that if a star did not set below the horizon it never died (Frankfort 1948:100). When the sun set below the horizon in the west it died, and was reborn the next morning in the east. Celestial objects such as the moon and many of the stars died when they set in the west, and there was always the popular belief that “the west” was the place where deceased humans entered the underworld as well. This spiritual preference for the west represents a simple, but profound, Egyptian religious concept: what goes below the horizon like the sun and other celestial objects is dead, what remains above the horizon is alive.

In later periods, emphasis was placed on the domain of Osiris, the Fields of Reeds and the Fields of Offerings (Frankfort 1948:110ff). The place of purification was in the western sky where the deceased labored in the afterlife for the gods, and was equivalent to the Elysian Fields of Greek mythology. In the Fields of Offerings the souls of the dead lived an idyllic existence free from want, hunger or disease.

Starting in the Middle Kingdom (2040–1786 BCE), new religious ideas were inscribed inside the wooden coffins of commoners called *The Coffin Texts* (Faulkner 1973). These writings speak of an afterlife spent in the Fields of Reeds where agricultural tasks were re-

quired by the deceased for all eternity to ensure their survival. Since the ancient Egyptian economy was based on agriculture, tasks such as ploughing, sowing, and harvesting in the afterlife were envisaged as requiring the same kind of work, but yielded much better results than the efforts of living farmers. Tomb paintings⁵ show agricultural scenes of fields intersected by canals that produced an abundance of foodstuffs. Wheat reportedly grew to a height of 2.50 meters, each stalk yielding much more than the usual quantity of grain. Palm trees are shown dripping with dates and plump clusters of grapes for winemaking are a common motif in tombs. The Fields of Offerings were envisioned as a land of plenty where the dead lived for millions of years in luxury and good health. The tomb inhabitant, along with his wife and family, were depicted carrying out farming tasks; they never appear to be overworked or to be struggling with the hardships encountered by their living counterparts. If they wished, they could always call on their collection of *shabtis*—small, magical statuettes—to do any unpleasant work for them. No such helpers existed for the people of Mesopotamia.

CONCLUSION

Despite the opposing nature of the Mesopotamian and Egyptian eschatologies, there are a number of similarities between them. Both peoples believed in a very “physical” eschatology. Corpses and bones had to be preserved in some fashion to insure postmortem existence; food offerings and prayers were necessary if the living were to have a safe and happy life free from harm or disease caused by the dead. In both societies the dead had a long reach from the grave since the living had a duty toward them to make offerings in return for the right to inherit property. In some cases both civilizations thought that the underworld was a dark and gloomy place where the dead were asleep. Both had multiple spiritual elements in their makeup. In particular, the *ba* and the *zaziqu* were birdlike creatures who had the mobility to leave the deceased and return again. In Mesopotamia the dead usually were buried under houses and kept close to living family members, while in Egypt they were buried in the desert away from family dwellings. Finally, although the Egyptians generally had a positive view of the afterlife, like the Mesopotamians, there is plenty of evidence indicating that some Egyptians had a pessimistic eschatology, and believed that the here and now was all that really mattered.

NOTES

¹Part 1 of this article, “Geography and Architecture,” appeared in *The Ostrakon 8/1* (Summer 1997):3–9.

²The word eschatology is derived from the Greek *ekhatos*, meaning “end or last,” and *logos*, “study of,” hence “the study of last things.”

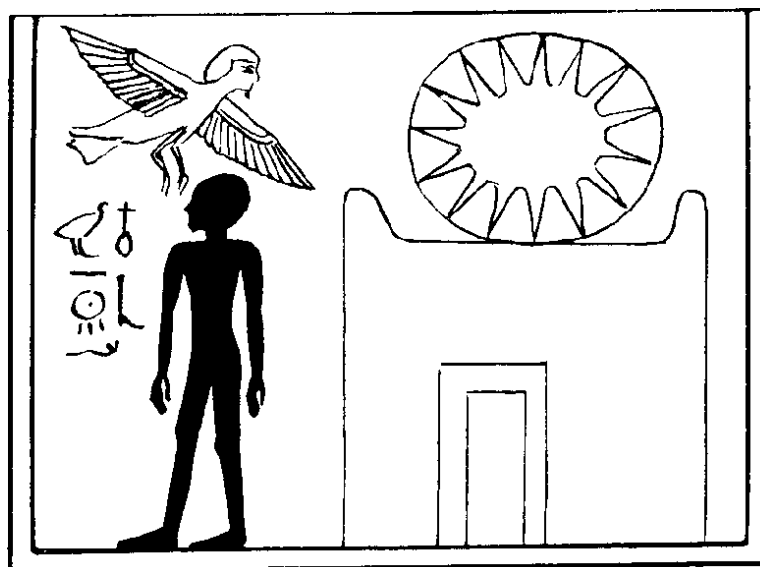
³There are a number of good editions of the Gilgamesh epic now available. See for example Kovacs 1985 and George 1999; Maier 1997 contains many valuable articles about this famous story.

⁴“But if I must tell you the ways of the underworld, which I have seen, (you) will sit down (and) weep” (George 1999: Tablet x, lines 89–91).

⁵See for example the Dynasty XIX tomb of Sennedjem, or Faulkner 1973:103 (Spell 110).

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The ba and Shadow of the deceased before the tomb door

The Inner Workings of the Egyptian Civil Calendar

James R. Lowdermilk

INTRODUCTION

IN 238 BCE Ptolemy III and his queen, Bernike, brought the highest priests of Egypt from temples throughout the land together in Canopus, near Alexandria. Here the foreign king and queen issued a decree intended to “correct” the Egyptian calendar, so the calendar would remain fixed according to the seasons of the year. Customarily the Egyptian calendar counted 365 days every year, ignoring what we call leap years. The *Decree of Canopus* was issued

in order that the seasons may all correspond to the ordinances of heaven at this time and so that feasts [originally] celebrated in the land in *Peret* [i.e., winter] shall not be celebrated at some time in *Shemu* [i.e., summer] as the result of the displacement of the Feast of Sothis one day [later] every four years (Claggett 1995:328).



The Egyptian’s 365-day civil calendar moves away from solar events—the solstices or equinoxes—or astronomical events such as the Sothic rising, being displaced by approximately one day every four years. For this reason festivals could occur one year in the calendar’s summer but over 700 years move toward the calendar’s winter. It is not the Sothic rising that moves across the year; the dates of this event move across the calendar (or the calendar moves in relation to this event). As the decree states, this situation was recognized by Greek scholars of the time, and their solution was to add one day to the calendar every fourth year, much as we do. The Egyptian priests rejected this obvious solution, and people from Greek philosophers to Roman Emperors to modern scholars have vilified them for not correcting what they viewed as a gross error.

The Egyptian priests had their own reasons to let the civil calendar continue to run at its established pace, however. After all, they had been using the calendar throughout pharaonic Egypt. From the Greek point of view, the Sothic Rising Festival would move one day on the calendar every fourth year, which meant it would move across the Egyptian 10-day week in 40 years. The creators of this calendar may have chosen 10-day weeks, which we call “decans,” because they understood that since this festival follows an astronomical event, it travels across 10 calendar days in almost exactly 39

years. The priests who rejected the *Decree of Canopus* may have understood that the proposed scheme would leave an error of $\frac{1}{4}$ day every 39 years, the equivalent of 9 minutes per year.¹

SOTHIC RISING

Understanding of this situation can be gained through investigation of the Sothic rising. Each star that rises and sets has times when that star resides too close to the sun and is not visible during any part of the night. One morning each year, each of these stars appears to move past the sun and becomes visible for the first time that year, on the eastern horizon. Since the star in question just moved past the sun, it is first visible just before the morning twilight. This is called a “heliacal” rising of a star. The heliacal rising of the brightest star in the sky, the one the ancient Egyptians called

 *spd.t* “Sopdet”—our Sirius and the Greeks’ Sothis—is what the Greeks dubbed the Sothic rising and the Egyptians  *pr.t spd.t* “the going forth of Sopdet.”

Observation of this astronomical event is greatly hindered by the morning twilight, a situation known to astronomers as the “arc of vision.” Atmospheric and weather conditions can influence the day when Sothis first becomes visible. Counting the number of days between these Sothic-rising observations would yield anywhere from 364 to 367 days, with no observable pattern.

This obstacle can be overcome by using a reference point as simple as a standing stone, a permanent wall, or a high ridge-line (Figure 1). With this observation taking place above the twilight, visibility of this star above the reference point regularly occurs in the days following the star’s first appearance of the year. Counting the number of days between these “adjusted” Sothic risings yields an interesting pattern. Most years one would count 365 days between these observations. This is why some authors, such as James Henry Breasted, claimed that the Egyptians chose to count 365 days in their calendar. Almost every four years this count would yield 366 days. This is the reasoning behind the *Decree of Canopus*—to add one day every fourth year. However, years of observations and accurate record keeping would reveal that every 39 years a 366-day count would occur on the third year of a cycle (Table 1).²

Table 1: Pattern by counting days observed in sidereal years³:

365, 365, 365, 366 days most years

365, 365, 366 days every 39 years

The Greek scholars responsible for the *Decree of Canopus* had not spent their time and energy perfecting these observations, because they did not understand this break in the one-day every four-year pattern.⁴ There is debate about whether the Egyptians understood exactly how inaccurately their calendar followed the seasons or the stars. If the Egyptians understood the error between their calendar and such observable events as the Sothic rising, they would have possessed a means to calculate on what dates certain events would occur. This calculation would be slightly more complex than just moving a festival based on astronomical events one day every four years.

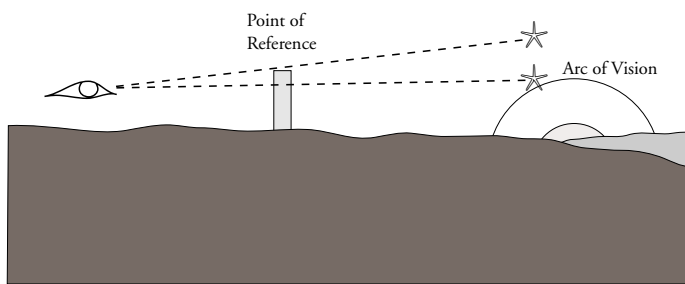


Figure 1

DECAN LISTS

The priests of ancient Egypt observed movements of the stars both through the sky and across their calendar by watching thirty-six stars variously listed in Dynasties IX–XII Decan lists. These thirty-six stars were listed in columns, each representing one decan or 10-day week. Each column contained twelve rows of stars representing the twelve decanal hours of the night, with one decanal hour being approximately 40 of our minutes in length.⁵ When a star representing the current decan rises, the row that star resides in tells the current hour of the night. Using the decan list, it is possible to track the movement of these stars down to the minute.

The Egyptian civil calendar contains 12 months of 30 days each with five additional days residing outside of any month, known as “epagomenal days.” Stars representing the five epagomenal days are tucked into the lower left-hand corner of the Decan lists. With thirty-six decans of 10 days each plus the five epagomenal days, the Decan lists account for 365 days per year. By definition, the initial year that a Decan list was employed, each star provided the correct time of night on the first day of its corresponding 10-day decan. On the second day the star would rise about four minutes later because of the daily motion of the stars. On the third day it would

rise about eight minutes late, and on the fourth day about 12 minutes late. After 10 days the star would rise approximately 40 minutes later than it rose on the first day, and the following day the star moved into the next decan, marking the next later hour.

The next year the Decan list is employed, each star would rise 1.01 minutes⁶ early on the first day of its 10-day week, hardly a noticeable difference even to a skilled observer. After four years each star would rise approximately four minutes early on its first day, and its rising would correctly begin the decanal hour of the second day of its decan. Four years later each star would yield the correct time on the third day of its decan, and as time progressed this change would become increasingly apparent. These lists account for 365 days every year and neglect leap years. Therefore, the stars are allowed to wander away from their original positions by the equivalent of about one day every fourth year. Continuing these observations over longer periods of time, one would observe that each star moves across its 10-day decan in only 39 years.

Many people, from Ptolemy III to the modern scholar Otto Neugebauer, have suggested that the Egyptian calendar moves away from observed events by the equivalent of about one day every fourth year. They believe this is accurate enough to warrant the use of a year with $365\frac{1}{4}$ days, or a “natural year,” for calculations ranging for more than forty years. Neugebauer has suggested that these decanal stars would move across each 10-day period in about 40 years. By actually observing these stars, the Egyptian priests must have known that they move 10 days across their 365-day calendar in almost exactly 39 years—knowledge that is incorporated in the design of the Decan lists by the choice of 10-day decans.


SOTHIC CYCLES

Another ancient scholar who bases his calculations of the Egyptian calendar on the “natural year” of $365\frac{1}{4}$ days was Censorinus, author of *De die natali*, written about 240 CE. He wrote that the Sothic rising coincided with the first day of the Egyptian civil calendar approximately 100 years earlier, in 139 CE. Using the assumed one-day-every-four-year movement of this calendar, he calculated that the Sothic rising should coincide with the first day of the Egyptian calendar every 1,461 Egyptian years (Clagett 1995:334). This calculation promulgated the error of using the one-day-every-four-year movement of the Egyptian calendar over great periods of time.

Since the appearance of astronomical events occurs in the Egyptian calendar approximately one day late every four years over short-term observations, many authors have erroneously extended this movement into the long term, when astronomical events follow behind the Egyptian calendar at the accurate rate of 10 days every 39 years. This calendar provides 36 decans and five epagomenal days, for a total of $36\frac{1}{2}$ decans, which requires 1,423.5 Egyptian years for an astronomical event and this calendar to realign. The Sothic Rising Festival is based upon observation of an astronomical event. Therefore 1,423.5 Egyptian years are required for this festival to be

celebrated on the first day of the first month of the Egyptian calendar, wander through the year and reoccur on the first day of the calendar again, in what is called a Sothic cycle.

THE BEGINNING OF THE EGYPTIAN CIVIL CALENDAR

It is commonly suggested that Egyptians began counting the 365 days of their civil calendar on the date they called  *wp.t* *mp.t* “Opening of the Year,” now known as the Sothic rising (Breasted 1906:1/26). Counting back Sothic cycles from the year 139 CE gives 2711 BCE and 4136 BCE as the only reasonable candidates for the approximate beginning of the Egyptian civil calendar. The first generally accepted reference to the civil calendar comes from the reign of Shepseskaf (Dynasty IV), beginning around 2472 BCE, but mention of the five epagomenal days in the pyramid texts gives the possibility of an earlier origin.

Recent excavations have uncovered megalithic stone circles with astronomical alignments at a Neolithic site in the Nabta Playa depression of southern Egypt. These standing stones could provide the unchanging points of reference necessary to accurately observe not only the Sothic rising but the rise times of other stars. Dates from sacrificial cattle burials (Malville 1998:488–491) show this site was active during dates spanning the 4136 BCE date for beginning the Egyptian calendar. The earliest inhabitation at Nabta Playa was only during the fall and winter. Later, large walk-in wells were constructed to enable some inhabitants to remain throughout the year (Wasylukowa 1997:933). These inhabitants then were available to observe the zenith sun passages three weeks before and after the summer solstice. The stones were erected not only with the ability to make astronomical observations, but also to mark the day of the zenith sun passage, when the sun passes directly overhead, casting no shadow at noon of that day.

CALENDARICAL MATHEMATICS

The number of days counted between successive spring or summer zenith passages is usually 365 days. As we might expect, almost every fourth year the zenith passage arrives one day late, or 366 days after the previous corresponding passage. However, usually every 33 years the zenith passage arrives one day late on the fifth year of a cycle, but sometimes it takes only 29 years.⁷ Thus, the zenith passage breaks its four-year cycle one year late on average every 32 years (Table 2). By comparison, the Sothic rising breaks its four-year cycle one year early every 39 years. Today, we understand that the year measured from the stars, the sidereal year, differs from the year measured by the sun, the solar year, and both years are measurable with naked-eye observation and accurate long-term record-keeping.

Table 2: Pattern by counting days observed in solar years:

365, 365, 365, 366	days most years
365, 365, 365, 365, 366	days on average every 32 years

Once the patterns in Tables 1 and 2 were established for the observations made on the stars and the sun, people who possessed this knowledge developed ways to interpret these patterns. A new method of division was invented to describe this data: unit fraction division. Using this method and modern notation, the stars cycle every $365 + \frac{1}{4} + \frac{1}{(4 \cdot 39)}$ days, and the sun cycles every $365 + \frac{1}{4} - \frac{1}{(4 \cdot 32)}$ days. In plain English these formulae translate to “the sidereal year is 365 days with one extra day every four years, gaining an extra quarter day every 39 years” and “the solar year is 365 days with one extra day every four years, losing a quarter day every 32 years.”

The cyclical patterns exhibited by counting the number of days between solar and stellar observations provide a paradigm for understanding unit fractions, and it may have been this paradigm that prompted the Egyptian priests to invent such fractions. The need for people to be able to perform calculations involving these formulae could explain why the Egyptians chose to use unit fraction division throughout Egypt’s ancient historical times. These formulae provide a basis for accurately predicting the dates of the Sothic rising or winter solstice, when the Sothic Rising Festival (*pr.t spd.t*) and Birth of Re Festival (*msu.t r*) were celebrated (Wells 1994:1). These formulae could have been used to announce the occurrence of the Sothic rising 22 days before this event occurred in Year 7 of (probably) Sen-Wasret III, as stated in Papyrus Berlin 10012 from Illahun (Clagett 1995:321).

The choice of a 365-day civil calendar year aids the computations necessary to identify the dates of solar and stellar events. The dates of festivals based on these events would generally move on the calendar one day every four years. For festivals based on stellar events, the extra day would come one year early, on the third year, every 39 years. For festivals based on solar events the extra day would come one year late, on the fifth year, on average every 32 years. These movements follow the patterns presented in Tables 1 and 2. The choice of 365 days also aids in computations necessary to identify the phases of the moon.

Papyrus Carlsberg 9, written about 144 CE, tells of the Egyptians’ knowledge at this late date of a lunar cycle, 25 civil years long, revolving around the 365-day calendar. The papyrus begins, “here is the procedure of enumerating the 25 years of the moon in order to make them known” (Clagett 1995:302). This procedure starts with the second lunar month in Civil Month 2 of *Akhet*, Day 1, a very auspicious date near the beginning of the civil calendar year. Nearly every 25 civil years, this coincidence repeats with a lunar month beginning with the same phase of the moon on the same date. This 25-year pattern repeats the phases of the moon 309 times almost every 25 civil years or 9,125 (=25*365) days.

It is clear that the Egyptians understood this 25 civil year lunar cycle during the Late Period, but there is debate about whether the priests had knowledge of this cycle at much earlier dates. When Richard Parker applied the 25-year cycle of Papyrus Carlsberg 9 to

the year 856 BCE, “the month starts in every case exactly one day before the morning of invisibility” (Parker 1950:17). Applied to times 500 years earlier, the lunar months would start two days early. For this reason many scholars, including Parker and Neugebauer, have claimed that the Egyptians had no knowledge of this procedure prior to 357 BCE, the earliest dates the procedure applies to accurately.

If the Egyptians noticed this 25-year pattern at a much earlier date, it would have been used to predict the future dates of the phases of the moon, “in order to make them known” (Clagett 1995:302). After 525 years these predictions would become incorrect by placing the moon one day ahead of its observed phases.⁸ Within 1,000 years the moon would be moving nearly two whole days away from its predicted cycle. The longer an incorrect calendar scheme is used the more error it accumulates, making its inaccuracies more apparent. Had this become apparent to the Egyptian priests, a calendar correction would have become necessary.

CALENDAR CORRECTIONS

A possible correction to the 25-year lunar cycle of the Egyptian civil calendar is to skip one day every 525 YEARS. This is equivalent to not counting one day every 21st lunar cycle and could be accomplished by counting only 364 days less than twice every millennium. The five epagomenal days of the calendar do not belong to any 30-day month, and one of these days could easily be skipped during the necessary year. The Egyptian unit fraction representation of this cycle in modern notation would show that the moon cycles 309 times every $25 \times 365 - \frac{1}{21}$ days. This formula could be used to calculate the year to skip the proper day in order to keep this cycle in line with the moon.

Neugebauer and Parker (1960–69) have suggested that the Egyptians had not noticed the 25-year patterns in the lunar cycles until the Late Period. In that case there is only a $\frac{1}{30}$ probability⁹ that the 25-civil-year lunar cycle would properly line up with the records given in Papyrus Carlsberg 9. This document begins its cycle on a very auspicious date. Had the aforementioned error not been accounted for, it is highly unlikely that the accumulated error would have placed this calendar date in line with the beginning of an observed lunar month. Therefore, since this lunar cycle was not currently in need of reform in 144 CE, the ancient Egyptian priests must have previously observed that this 25-year lunar cycle had a slight but correctable error. They must have already called for a calendar reform before the Late Period, correcting for this error and continuously keeping this cycle in check.

The Egyptians’ choice of 365 days per year with 10-day weeks provides a calendar system accurate to less than 30 seconds of the sidereal year. Ptolemy III and subsequently Julius Caesar proposed calendars loosely based on this system by adding one day every four years while introducing an error of 9 minutes per year. The Egyptian Hour-Watcher Priests understood this difference at least as early as the sixth century BCE. Instruments used by an astronomer priest

named Hor bear the inscription: “(I) knew the movements of the two disks [i.e., the sun and the moon] and of every star to its abode” (Clagett 1995:491). Although the Egyptian priests understood these movements, they were not fully understood by such luminaries as Ptolemy III, Julius Caesar, Censorinus, and Otto Neugebauer, which has led to more than 2,000 years of confusion regarding calculations involving the Egyptian calendar. These calculations can be rectified by realizing that this calendar of 365 days follows behind the actual movements of the stars by exactly 10 days every 39 years.

NOTES

¹*The Astronomical Almanac for the Year 1999* (Nautical Almanac Office 1999:C1) gives Sidereal Year = 365 days, 6 hours, 9 minutes, 9.8 seconds.

²*The Astronomical Almanac for the Year 1999* (Nautical Almanac Office 1999:C1) gives Sidereal Year = 365.256363 days = y_0 .

Counting the number of days per n^{th} year = $d_n = \text{TRUNC}(y_0 + r_{n-1})$, with the remainder of day in n^{th} year = $r_n = y_0 + r_{n-1} - \text{TRUNC}(y_0 + r_{n-1})$, where $r_0 = 0$, and $n = 1, 2, 3, \dots$

Lambeck (1980:3) gives the Length of Day increasing by 0.001 – 0.002 sec./100 yr. This means that 5,000 Years Before Present the Sidereal Year = 365.256074 days with negligible difference when used for y_0 .

³[A sidereal year is the time required for one complete revolution of the earth about the sun, relative to the fixed stars; see note 1 above—EDITOR]

⁴Claudius Ptolemy (1998:139)—no relation to Ptolemy III—in *The Almagest*, speaks of confusion between lengths of the year. Meton and Euktemon give 1 year = 365 + $\frac{1}{4}$ + $\frac{1}{6}$ days, Kallippos gives 1 year = 365 + $\frac{1}{4}$ days, and Hipparchus gives 1 year = 365 + $\frac{1}{4}$ – $\frac{1}{300}$ days.

⁵Neugebauer and Parker (1960–69:1/102) give decanal hours that are based on 10° intervals, and they vary from 27min, 12sec to 47min, 40sec. When based on 10-day intervals, the decanal hours are consistently about 40min with the stars appearing to move ahead of the sun by about 4min/day.

⁶If the Sidereal Year = 365.256363 days, then the Decan lists do not account for 0.256363 days each year. This error is spread equally through 365 days or 0.256363/365 day = 1.01min.

⁷*The Astronomical Almanac for the Year 1999* (Nautical Almanac Office 1999:C1) gives Tropical Year = 365.242190 days; same procedure as in note 6 with $y_0 = \text{Tropical Year}$. [A tropical year is the time interval between two successive passages of the sun through the vernal (spring) equinox—EDITOR]

⁸*The Astronomical Almanac for the Year 1999* (Nautical Almanac Office 1999:D1) gives synodic month = 29.530589 days. Therefore, 309 synodic months = 9,124.952001 days, which is $\frac{1}{21}$ days short of 9,125 days every 25 civil year cycle. [A synodic month is the average time between successive new or full moons—EDITOR]

⁹Only one day out of the month will make the two systems coincide with a probability of 1 day/29.53 days.

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Unraveling the Mystery of Four Scribed Lines in the Great Pyramid of Khufu

Robert Lowdermilk (with James R. Lowdermilk)

ON 22 MARCH 1997 my two sons, Rusty and Jim Lowdermilk, Dr. Mark Lehner and I visited the intersection of the Ascending and Descending Passages in the Great Pyramid of Khufu. We were interested in inspecting the floor of the Descending Passage that was in line with and under the Granite Plug Block. After examining the visible floor on either side of the wooden walkway we decided to examine the Granite Plug Block. It appeared that these plug blocks had been cemented in place and a wooden block placed in front of them to secure them while the mortar set. Deep depressions cut in the limestone walls on either side of the Ascending Passage and in front of the Granite Plug Block appear to have been created to hold the securing wooden block. A third hole, located on the east wall more than a foot in front of the Granite Plug Block, may have held the base of a wooden angle brace that reinforced the wooden cross block.

After examining the Granite Plug Block we decided to measure the distance from this block to the floor of the Descending Passage. We placed a wooden six-foot carpenter's rule at the upper east corner of the Granite Plug Block and, taking our line from the roof of the ascending passage in front of this block, we began measuring the incline distance to the floor. Jim noticed a scratched or scribed line on the East Wall immediately adjacent to the Carpenters Rule. The six-foot long Rule didn't extend to the floor, so we moved it along a line that would have been a projection of the scribed line we had discovered—and found that the scratched or scribed line continued on to the floor of the Descending Passage. It was very faint and would have been totally missed had it not been for the headlamp Jim was using to align the Carpenter's rule parallel to the alignment of the Ascending Passage. Dr. Lehner had the impression that it was "an ancient line," though he couldn't say how old it might be.

The next day Rusty, Jim and I revisited the same area with an Egyptian Inspector. We reexamined the scratched or scribed line, then resumed our originally intended task of measuring the distance from

the face of the Granite Plug Block to the floor of the Descending Passage. Again as we measured from the corners of the Granite Plug Block, we found three more lightly scratched or scribed lines.

In all we had discovered four lightly scribed lines that extended to the floor of the Descending Passage, one from each corner of the Granite Plug Block. Some were harder to see than the others, and either modern restoration or ancient flaking had put gaps in some of them. They all appeared to be parallel and in line with the ascending passage segment that was in front of the Granite Plug Block.

We photographed these lines both days. They are barely visible in the resulting photographs, but close examination of our first photographs verifies their existence. On the second day, after taking our last set of photographs, we went to Dr. Lehner's dig and informed him of the three additional lines we had discovered. He suggested that we investigate the literature to learn who else might have reported these lines.

In April 1998 my son Jim visited Dr. Lehner's dig and also the location where we had found the four lines, where he photographed them again using a macro feature on his camera. This made the lines more distinct than they appeared in our March 1997 photos.

In November 1999 Jim and I returned to Egypt and again visited Dr. Lehner's dig. This time we returned to the area of the four lines under the Granite Plug Block with Dr. Lehner and an Egyptian inspector, and photographed the scribed lines with Jim holding the carpenter's rule parallel to them. Comparison of these and earlier photographs indicate that modern restoration had been the cause of further damage to these previously ignored lines.

Jim and Dr. Lehner each measured the width of the base of the Granite Plug Block and the width of the passage immediately in front of it, to investigate the possibility that blocks of the same size would have been able to descend below the present location of the Granite Plug Block. We found that the passage immediately in front of the Plug Block was wider than the Plug Block and all four corners of the short segment of the Ascending Passage below the Granite Plug Block appear to have been cut out in a manner that could have accommodated the passage of blocks coming from the Ascending Passage.

A search of the literature has turned up only one reference that might refer to these four lines, W. M. Flinders Petrie's book, *The Pyramids and Temples of Gizeh* (1990:57). In order to give the full flavor of the subject that Petrie is discussing, I will include the paragraphs before and after the one in which he refers to the lines.

These will practically show what errors may creep in, by not using a continuous measure like a steel tape. The object of measuring the joints, as well as the total length, by steel tape, is sufficiently illustrated by this comparison.

One source of error may arise from following the coarsely-scratched prolongations of the anciently drawn lines, and of the ascending passage floor and roof. These have been made by modern measurers; they were always rejected, and a more accurate method employed. The measures from the steel tape onwards, by rods, down to the end of the built passage, where it rests on the rock, are not of the same accuracy as the others; the broken parts of the passage sides, and the awkwardness of measuring over the large block of granite, without any flat surface even to hold the rods against, prevented by taking more care over a point where accuracy is probably not of importance.



Figure 1: Rusty Lowdermilk (standing) and Robert Lowdermilk (seated) measure a scribed line on the wall of the Descending Passage

What does seem clear is that Petrie saw, recognized, and classified as old "the coarsely-scratched prolongations of the anciently drawn lines." Petrie's classification

seems also to support Dr. Lehner's original impression that the lines were old.

If the lines are old then, what could they have been used for or why were they made? Will answers to those questions help identify their age?

Possible uses of the four lines include:

1. As positioning aids to help someone measure the distance between the plug block and the floor of the descending passage. But wouldn't it have been easier to just measure that distance rather than scribing the four lines and then measuring? Measurement may have been the reason they were created, but why four lines when two would have sufficed for this type of measurement? Petrie also suggested that measurements taken from these lines introduced er-

ror and therefore did not use them. At the very least we know that if a surveyor scratched these lines, they would have been drawn prior to Petrie's survey in the late 1800s.

2. As guidance in the construction of something:

A. A ramp. If a wooden or stone ramp were to be constructed, perhaps to help raise and direct the king's sarcophagus into the ascending passage, then only the two lower lines would have been required and the upper two would not have been scribed.

B. A passage under the floor of the Descending Passage. Since all four lines extend down to the floor of the Descending Passage, these lines might have been used to precisely locate the projection of the Ascending Passage on the floor of the Descending Passage. With this information the perimeter of an entrance to a passage beneath the floor that would be directly in line with the Ascending Passage could have been established. In this case all four lines would have been needed to establish the exact location of the passage entrance.

C. A chute. Such a structure might require all four lines so that it could confine the space under the Ascending Passage to accommodate the passage of blocks coming from the Grand Gallery through the Ascending Passage to the floor of the Descending Passage. This would have made blocks stored in the Grand Gallery available to

plug a passage under the floor of the descending passage. Since the only reason for a chute is to conduct blocks coming from the Ascending Passage across the gap made by the Descending Passage, and these blocks would be needed only to fill a passage that was under the floor of the Descending Passage. The four scribed lines would have allowed a chute to be very precisely located. In fact, if I were a craftsman instructed to construct a chute in this location, I would have scribed lines exactly like those we found in order to accurately locate where to place the edges of that chute. If the lines had been used to build a passage under the floor of the Descending Passage and a chute had been used to conduct blocks into that passage, that would explain why the four scribed lines are there.

We can only speculate about why a passage might have been created under the floor of the Descending Passage. The construction of a chute leading to a passage is the only plausible explanation for the four anciently drawn lines, located as they are, on the walls of the Descending Passage, with each extending from one of the four corners of the Granite Plug Block to the floor of the Descending Passage.

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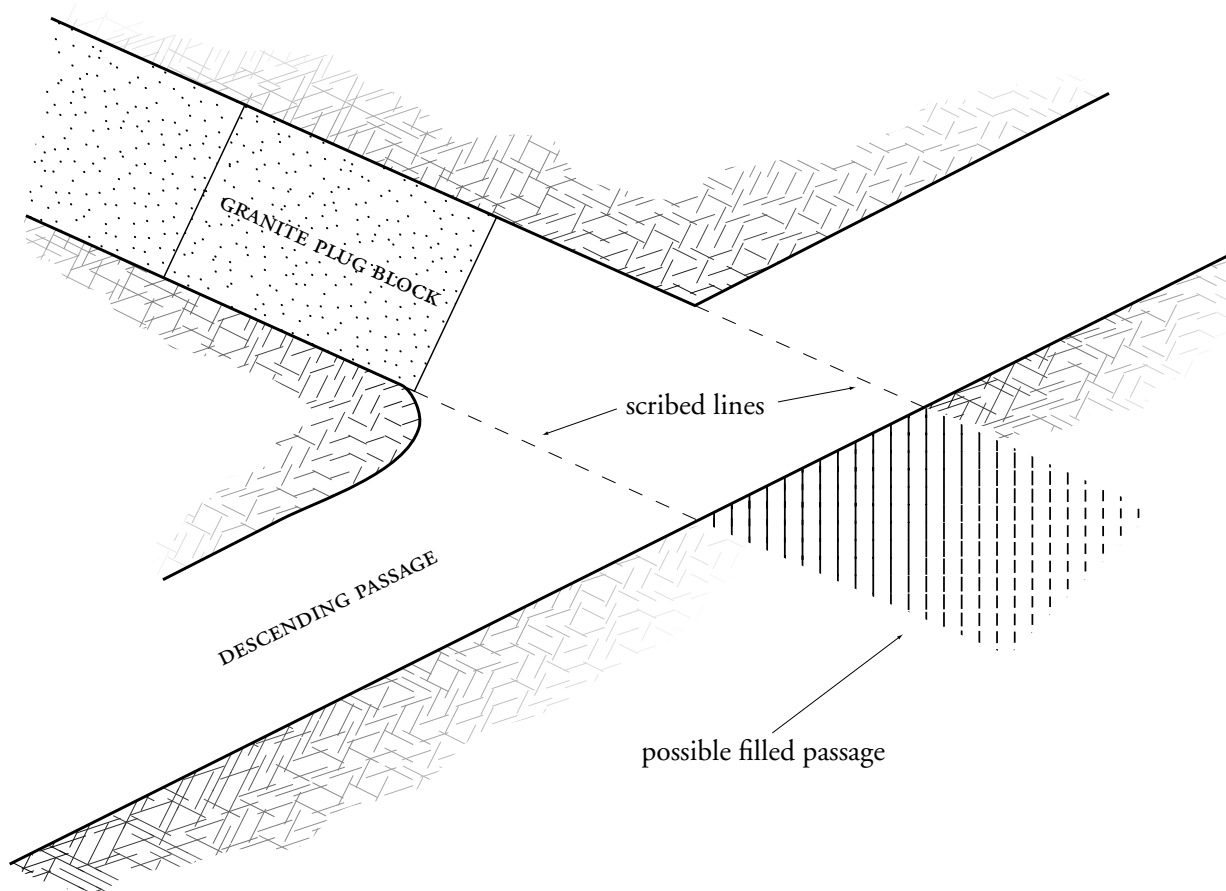


Figure 2: Location of the scribed lines within the descending passage

Grandfather's Egypt

A Lecture presented to the ESS by Jeff Sellick, 15 February 2000

Notes Compiled by Bonnie O'Leary

Dr. Edward Burton Mc Dowell's photographs of Egypt in 1913 and 1924 brought the erudite physician, historian, and adventurer back to life the evening of 15 February 2000. His grandson, Jeff Sellick, ten years a Park Ranger and now editor of two National Park Service publications, showed the reconstructed hand-tinted lantern slides and slides from black-and-white stereopticon negatives.

The slide show, lovingly recreated by a grandson who was two when Dr. Mc Dowell died in 1960, gave a wonderful picture of Egypt when there were no crowds of tourists and hundreds of tour busses. The Doctor's 1913 comments regarding the populations of Alexandria ("half a million") and the city of Cairo ("nearly one million") caused the audience to laugh.

What bulky equipment was needed during the Doctor's 30 year nationwide career as a travel lecturer! As Jeff said, "the results of all this equipment give him eternal life." The commentary was both Jeff's and captions on the photographs, with the 1913 and 1924 trips combined into one program. Dr. Mc Dowell also shot movies, but the films were destroyed in 1940 when they became unstable.

Perhaps the best way to describe the lecture is to list some of the "sights" we saw: an irrigation system (still the same today); 3,000 year old loaves of bread preserved by the dry desert; treasures in the tombs, including a lovely gold-plated chest; the Doctor's eight man crew and their camp in the Fayyum; the three Pyramids at Giza; the 70-foot tall Great Sphinx with paws still partly buried in the sand; and an especially artistic photograph of a camel at sunset. An Arab wedding was pictured (with the Doctor's comment: "the husband can get the knot untied but no luck for the bride"). The Doctor treated his crew to milk and corn meal while he had his own delicious food, a crate of live chickens, carried along on one of the camels. There were 200,000 people living in the Fayyum, one of them a "suspected German spy." Scenes included a pottery works and hundreds of jars on Nile boats that easily traveled to the north on the Nile's current, or were

helped south by the prevailing north wind. There were charming photos of children and it was hard to realize they are now very old, if still alive. One young boy was in a boat made by his father with a sail made of many pieces of material lovingly stitched together by his mother. The colors in the tomb of Seti I were as bright as though they had just been painted. Two men sawing a log (like the irrigation system and ploughs) was also the "same as today."

The Doctor and his bride (on their 1924 honeymoon) stayed at the Winter Palace Hotel for \$4.00 or \$5.00 a day—with meals! There were pictures of the temples at Luxor and Karnak, and that of Hatshepsut, as well as the two Colossi of Memnon...all very little changed from what we see today.



The Temple of Amen-Re, Karnak, in the Nineteenth Century

The program ended with scenes of the discovery of the tomb of Tut-ankh-Amen with Harry Burton's photographs ("I made arrangement with Lord Carnarvon," the Doctor wrote), also chariots and golden beds, and the pharaoh's "wishing cup" with "may Tut-ankh-Amen live forever" written on it. There were dried bouquets of flowers, gold buckles, collars, breast-plates, the pharaoh's shoes (cork and reed sandals), and his cane with Nubian and southwest Asian prisoners pictured on it. His golden throne showed his young wife lovingly rubbing perfume onto his body.

Many attendees had not seen photographs of these artifacts, so the endearing re-creation of a grandfather's travels made for a most interesting program. How lucky we were to have Jeff Sellick present the work of "an engaging and committed professional."

Discoveries at the Pyramid Complex of Sen-Wasret III

A Lecture presented to the ESS by Adela Oppenheim, Curatorial Assistant in Egyptian Art, Metropolitan Museum of Art, 4 May 2000

Notes Compiled by Norma J. Livo


This was a no-script, split-screen, *tour de force* look at the ultimate jigsaw puzzle. Since 1990, the Metropolitan Museum of Art has been excavating the pyramid complex of the pharaoh Sen-Wasret III at Dahshur. Excavation of the complex, constructed for one of the greatest rulers of Egypt's Middle Kingdom, has resulted in the discovery of more than 17,000 fragments of beautifully carved temple reliefs depicting deities and funerary rituals.

Adela Oppenheim made the stereotype of a dull scientific archeologist disappear; she not only was knowledgeable, enthusiastic, and passionate about her topic but also warm and oh so human. Ms. Oppenheim needs only her dissertation to complete her Ph.D. degree, and has spent the years since 1990 working at the Dahshur site.

She said that Sen-Wasret III, fifth pharaoh of Dynasty XII, built extensively throughout Egypt. He fought, conquered, and defended his country. The fortress he built in Nubian territory is evidence of his conquests to the south. Ms. Oppenheim believes that subtlety in Egyptian art reached its peak during his reign in the Middle Kingdom. Using head sculptures, she directed our attention to the features of the pharaoh's face, which reveal a man of advanced age with prominent ears and a wrinkled forehead, a serious and somber image. She also showed a sphinx with the same facial style, though his torso was that of a young, fit man. How long Sen-Wasret III ruled is unknown, but *sed*-festival clues point to the possibility that it was more than thirty years. She summed up by stating that this pharaoh was a man of wisdom and experience, but not necessarily of old age.

As Ms. Oppenheim showed images of five of the pyramids at Dahshur, she told of a French excavator, obviously influenced by his Welsh mining father, who used a quick but not brilliant method of exploring in 1894–95. His work was done on a massive scale and did immense damage to the treasures. He found no true burials but did uncover five boats, some of which are in museums in Pittsburgh and Chicago. The others remain in Egypt. Recent careful and thorough excavations have found inner enclosure walls, chapels in some pyramids, one of the largest temples of the Middle King-

dom, and a pyramid complex that had a long life. New Kingdom people came back to it to make offerings and left their inscriptions. Early restoration workers also left inscriptions. The temple was used as a limestone quarry by stone robbers, who hacked off the inscriptions before removing the building blocks. More than 17,000 fragments of beautifully carved reliefs depicting deities and funerary rituals have been found. Pieces are spread all over, and only the substructure survives today. She and her co-workers have painfully pieced some fragments from the temple walls back together. She said the workmanship on the pieces is exquisite, and cited a scene with a basket and cobra as an example; the detail on the cobra easily gives the impression that it could come to life and slither away into the desert sands.

No burial has been found in the main pyramid but some of the smaller pyramids flanking it contained burials. Unhappily, robbers had crushed grave goods and threw pottery everywhere. Fragments show a bee with tiny details, a bird with detailed carving, a few fragments of a possible ship scene, a room of deities in processions, a catalog of all the gods of Egypt, elegant offerings, flayed foxes forming the glyph sign  *ms*, a realistic flying falcon, and a ram-headed god, along with war and fighting imagery.

Ms. Oppenheim saved the jewelry treasures for the last. Mixed into the dirt within a niche the archaeologists found a rare cache that may have belonged to one of Sen-Wasret's queens. It had escaped the notice of the early grave robbers and consisted of 7,000 tiny beads, scarabs, gold lions from bracelets with knot clasps, cowry shells, claw anklets, and much more. The beads were of carnelian, turquoise, gold, and lapis lazuli, which our speaker sorted by size and type. These incredible treasures were restrung at the Egyptian Museum, where they now are on display.

This truly was a night of shared joy in discovery! Ms. Oppenheim gave us a "and you were there" feeling in her fascinating presentation.

The Pyramids and the Sun: Egyptian Art in New York and Boston

A Lecture presented to the ESS by Dr. Donald Hughes, 21 March 2000.

Notes Compiled by Will Mahoney

Don Hughes had the good fortune this past winter to see two exhibits focused on ancient Egypt, at the Metropolitan Museum of Art (New York) and the Museum of Fine Arts (Boston).

The Met's "Egyptian Art in the Age of the Pyramids" was the first show devoted exclusively to art and artifacts of the Old Kingdom. The 230+ works spanned a period of approximately 500 years, from 2650 to 2150 BCE. As seen from the images in the show, the classic artistic conventions we associate with ancient Egypt had already been established by this early period.

Ancient Egypt's penchant for depicting people, animals and plants in a highly stylized manner was apparent from the images Don showed us. Another long standing ancient Egyptian artistic convention—the way children were depicted—surfaced during the Old Kingdom. From this time forward, children generally were shown naked with a finger at their mouth and sporting a youth lock. Slides of statuary underscored yet another convention, that of advancing the man's left foot.

In addition to "classic" Egyptian poses and subject matter, animation, realism, and even humor were seen in the images from this early time. Nothing illustrated the Old Kingdom's grasp of realism better than the statue of the seated overseer, director of building the Great Pyramid. This was a true portrait of the sitter, showing his corpulence and advanced age. The faces on the Libyan and Near Eastern captives were beautifully and individually rendered, too. Don pointed out how in portraits, artists showed the sitter's real hair peeping out from beneath the wig, a bit of realism seen in the Old Kingdom but not beyond. The everyday life of commoners was also legitimate subject matter. Statuettes of laborers, including a miller, butcher, potter, and cook, show them going about their everyday tasks. Although some Egyptian art may seem static and timeless, reliefs and paintings of dancers and musicians from this time were full of animation and activity. The relief of a monkey harassing a crane offered proof that the ancient Egyptian artists could have a playful sense of humor!

An alabaster statue of a standing woman, Don explained, was a rarity for the Old Kingdom. Statues of couples, however, were common and it was interesting that the men and women were shown nearly equal in size (and therefore social stature?).

The Boston Museum of Fine Arts' exhibit, "Pharaohs of the Sun: Akhenaten, Nefertiti, Tutankhamen," assembled art and artifacts from the intriguing and short-lived Amarna period, and compared art that came before during and after this time. Amarna art was a continuation of, as well as a departure from, the artistic conventions established during the Old Kingdom, yet the artists of this period infused their work with a naturalism, emotionalism, animation, and fluidity of line that was altogether fresh. Also, for the first time, intimacy between members of the royal family was expressed in art. We saw slides of Akhenaten in the unprecedented "extreme style," in which he is portrayed in a highly exaggerated, elongated, almost cat-like fashion. The exhibit also showcased everyday items including a bronze ax blade, donkey yoke, and lattice stool made with mortise and tenon joints. A faience figurine of the god Bes recovered from this period revealed that the outlawed, familiar deities were yet worshipped, albeit in secret. The Amarna style did not die completely with the end of Akhenaten's reign, but persisted to some extent with his successors, Tutankhamen and Horemheb.

Watching Don's slides was like sampling and savoring a box of fine chocolates. The art and artifacts were reminders of how absolutely exquisite were the creations of ancient Egyptian artists and artisans.

EDITOR'S NOTE: interested readers may wish to consult the catalogues from these exhibitions if they did not have the good fortune to attend in person:

O'Neill, John P., and Carol Fuerstein, eds. 1999. *Egyptian Art in the Age of the Pyramids*. New York: The Metropolitan Museum of Art.



Freed, Rita E., Yvonne J. Markowitz, and Sue H. D'Auria. 1999. *Pharaohs of the Sun: Akhenaten • Nefertiti • Tutankhamen*. Boston: Museum of Fine Arts.



Do You Speak Egyptian? Some Egyptian Words in English

Troy Leiland Sagrillo


Department of Near and Middle Eastern Civilizations, University of Toronto


NO LANGUAGE exists in a vacuum, free from outside influence, and English is no exception. Because of the Norman Conquest of England in 1066, a huge number of French words entered the English language, and many of these words can be traced back even further into Latin and Greek. A small handful of these originally derived from Demotic and/or ancient Egyptian. The following is a list of some of the more secure examples, including a few borrowed into English from Arabic and biblical Hebrew. It should be emphasized of course that these are loanwords, and are not part of the original Germanic heritage of Old English (Anglo-Saxon); English, an Indo-European language, is in no way related at a fundamental level to ancient Egyptian, an Afro-Asiatic language.


ADOBE: The English word *adobe* is borrowed directly from Spanish *adobe* (“sun-dried brick”), which borrowed the word from Arabic الطوب *al-tūb* (“the brick(s)”; the Arabic word was pronounced /aṭ-ṭūb/; many Arabic loan words in Spanish preserve the Arabic definite article *al-*). The Arabic finds its source in Coptic τῶβε *tōbe* (“brick”; Westendorf 1965/1977:221) which goes back to Demotic *tb* (Erichson 1954:671) and Egyptian  *db.t* and the variant form  *db.t* (“brick, ingot”; Faulkner 1962:321).

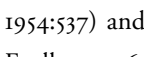
BABOON: Some scholars (such as von Bissing 1951) have suggested that *baboon*, which derives from Old French *babouin*, may have its origin in the name of a baboon-headed Egyptian god named  *b3by* (Old and Middle Egyptian), as well as the later form  *b3b3* (Late Egyptian). In Greek the deity was known as Βαβυν (*Babun*) or Βεβων (*Bebōn*). However, while this theory looks attractive—especially as no etymology is otherwise known for the Old French term (though it presumably comes from Latin)—it must be admitted that the use of specific god’s personal name for the general word meaning “baboon” pre-


sents some difficulties. The possibility exists that *b3by* was the general word for “baboon,” for which the deity was named, but has been lost to history.



BARGE, BARQUE, BARK, BARQUENTINE, BARKENTINE: These terms for various types of boats all have their origin in the Latin words *barica* and the variant *barca*. These stem from Greek βάρης (*baris*), which is the name given by Herodotus (1926:2/§96) for a type of flat-bottomed boat used on the Nile. The Late Egyptian word  (*b(i)r*; “transport ship, freighter, scow”; Jones 1988:136–137), or Demotic *br* (Erichson 1954:119) is the source of the Greek, and is very likely itself a loan word into Egyptian from some other, unknown language. (The English word *embark* is of course ultimately derived from Egyptian as well.)



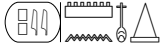
EBONY: *Ebony* comes into English from Latin *ebenus*. The Latin in turn is a loanword from Greek ἔβενος (*ebenos*), which derives from Egyptian  *hbny* (Faulkner 1962:158). Interestingly, the Copts borrowed the word ΕΒΕΝΟΣ (*ebenos*; Vycichl 1983:39) back again, directly from the Greek!


EGYPT, COPT, GYPSY: The word *Egypt* has a long history, but it ultimately derives from the ancient Egyptian language itself. In English, the word comes most immediately from Latin *Ægyptus*, itself being derived from Greek Αἴγυπτος (*Aiguptos*). It seems however, as far back as Dynasty XVIII, this term was known to the Bronze Age Mycenaean Greeks because there is a Linear B text mentioning a man named *a3-ku-pi-ti-jo* (“(the) Egyptian”; Vycichl 1983:5). This Mycenaean Greek name is clearly derived from Egyptian  *hwt-k3-ptḥ* (“temple-estate of the *ka* of Ptaḥ”), the name of the temple-estate of Ptaḥ at Memphis. Early in Egyptian history the name of the temple-estate was generalized to the entire city of Memphis, and the Greeks adopted it for the entire country. The words *Copt* and *gypsy* also derive from the same source (during the Middle Ages, the gypsies were thought—incorrectly—to have come from Egypt, and were thus “Egyptians”).


GUM: The English word *gum* derives from Old French *gomme*, coming from Latin *gummi*, *cummi*. In turn, the Latin derives from Greek κόμμι (*kommi*), itself coming from Demotic *qm3* (Erichson 1954:537) and back to Egyptian  *qmy.t* (“gum, resin”; Faulkner 1962:279).

IBIS: *Ibis* comes into English from Latin *ibis*, a direct borrowing of Greek ἰβίς (*ibis*). There is no doubt that the Greek word comes from Demotic *hb* (Erichson 1954:272) and Egyptian  *hby* (Faulkner 1962:158); Coptic has ϣἰβῶι (*hibōi*; Westendorf 1965/1977:354).

IVORY: The English word *ivory* finds its roots in Old French *ivoirie*, deriving from Latin *ebur*. It is thought that the origin of this word is to be found in the Egyptian word  *sbw* (“ivory”) and  *sbw* (“Elephant”; Faulkner 1962:2). While final proof is wanting, given that there is no known Indo-European root for ivory, it seems safe to follow this suggestion.

MEMPHIS: The name of the city of Memphis comes into English from Greek Μέμφις (*Memphis*). The Greek is derived from Demotic *mn-nf(r)* and Egyptian  *mnf* (Westendorf 1965/1977:477, which comes from the older  *mn-nfr*. *Mn-nfr* was an abbreviated writing of the name of the pyramid of Pepi I of Dynasty VI,  *mn nfr (ppy)* (“(Pepi)’s (pyramid), the enduring (and) beautiful”; Fischer 1996:73). Over time, the name of Pepi’s pyramid—which is at Saqqarah, the burial ground of Memphis—was generalized to stand for the entire city of Memphis (compare this to *hw.t-k3-ptḥ*, discussed under ‘Egypt’).

OASIS: English borrows the word *oasis* from the Greek word ὄασις (*oasis*), via Latin. The Greeks in turn had borrowed the Demotic word *whi* (Erichson 1954:98) and Egyptian  *wh3.t* (Faulkner 1962:66). The Arabic word وَاحَة, *wāḥah* (“oasis”) is a direct borrowing of Coptic ⲠⲮⲁⲛⲉ (*ouaḥe*, pronounced /waḥe/; Westendorf 1965/1977:284).

PHARAOH: The word *pharaoh* is of course Egyptian in origin, and comes into English via the Hebrew bible where the word occurs as *phr* (פַּרֹ'ה). Behind the Hebrew is the Egyptian term  *pr-ḥ*, which literally means “Great House,” a reference to the Royal Palace (Faulkner 1962:88). Originally *pr-ḥ* was not a title and referred only to the Royal Palace, but by the New Kingdom it came to be used as a reference to the office of the king (much as reporters will use “White House” to refer to the office of the President of the United States, such as in “the White House announced today...”). By the Third Intermediate Period *pr-ḥ* was being used as an actual title of the Egyptian king, and it was during this time—or slightly later in the Saïte Period (Dynasty XXVI)—that it probably entered into the Hebrew lexicon.

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House of Scrolls

Egypt: Antiquities From Above. By Marilyn Bridges and Penelope Lively. Boston: Little Brown, 1996.

This book is a real treat for those who have seen the antiquities of the Nile valley only on location or in photographs taken at ground level. Now all those sites can be viewed in crystal clear, black-and-white aerial photographs taken from low altitudes. A new dimension is added to these delights when, for example, an entire temple complex can be seen in one photograph instead of piece-meal from ground level. Tourists in these views are like ants—unable to block the view.

Marilyn Bridges is well known for her aerial photographs of ancient and historical sites. Her work has been exhibited widely and is in the permanent collections of many museums. She has received many awards, including a Guggenheim Fellowship. Ms. Bridges has gone to great effort to bring us for the first time an extensive study of the most important antiquities of ancient Egypt, totaling some sixty-five photographs. Each picture fills either a full page or one-and-a-third page. Included are such famous sites as those at the Giza plateau, Abu Sir, Saqqara, Dahshur, the Fayyum, Maydum, Karnak, Luxor, Medinet Habu, the Ramesseum, Deir el-Medina, Valley of the Kings, Deir el-Bahri, Beni Hassan, Dendara, Esna, Edfu, Philae, Kom Ombo, Abu Simbel, and more.

A short essay by Penelope Lively, who was born and raised near Cairo, serves as an introduction to the photographs. In a short Afterword, Marilyn Bridges tells of her difficulties with the Egyptian government and military bureaucrats before being allowed to fly over the monuments, which in all fairness are in some cases very close to sensitive installations. Thus the major portion of the book is devoted to the thrilling photographs of *Egypt: From Above!* A true delight for the Egyptophile!

Chuck Toth

Sacred Luxuries: Fragrance, Aromatherapy and Cosmetics in Ancient Egypt. By Lise Manniche. Ithaca: Cornell University Press, 1999

At 10 inches high and 9 inches wide, with beautiful photographs, this book makes an excellent small coffee table book. It contains photographs of artifacts from Tut-ankh-Amen's tomb as well as from Dynasty XVIII tombs of the nobles, the Old Kingdom, Predynastic Period, and Late Period. Additionally, it includes copies of drawings from the manuscripts describing how the Egyptians use plants, along with drawings of the plants.

One of the most delightful photographs is of an unguent jar in the form of a female monkey holding her young. The alabaster jar is from the Dynasty VI tomb of Mer-en-Re. In the photograph the jar is backlit and the *cartouche* of the king is clear, as is the bee and sedge (meaning "King of Upper

and Lower Egypt"), and an *ankh* (meaning "to live"; "life") of what is probably part of the phrase "may he live forever." The little monkey form highlighted by the backlighting is exquisite.

This book is far more than just beautiful pictures, however. The primary sources are the inscriptions at the Ptolemaic Temple at Edfu; the herbalist Dioscorides, whose work, *De Materia Medica*, was translated into both Arabic and Persian; *The Pyramid Texts* of the Old Kingdom; Pliny, who often made reference to Egypt; and Theophrastus, who wrote *Enquiry into Plants*, which lists plants used for perfumes, most of them relevant to Egypt. The first chapter is a list and description of the plants, with drawings, mostly from *De Materia Medica*. Some plants are from Egypt. Roots, barks, and resins traveled easily and apparently often. The list includes cinnamon, cardamom, lily, iris, mint, and lotus. It also includes frankincense and myrrh. For each the author gives the botanical name, a short history, and archaeological finds.

Incense was used in the temples—different scents at different times of the day and different seasons. Funerary practices included anointing the body with a fragrant unguent, and some mummies are said to have smelled of cinnamon upon unwrapping them. The most remembered unguent was not a sacred scent, but rather an incense

used for the treatment of various ailments. In Latin it is called *kyphi*, a borrowing of the Egyptian *kapet*. The book includes recipes for this popular unguent and others as well as their uses.

Scent also was used in love and rebirth—the perfumes of luxury. The lotus and mandrake pictured in the banqueting scenes on New Kingdom tomb walls have proven to have a light narcotic effect. Manniche argues that the hunting and fishing scenes on the tomb walls are not of daily life but are regeneration scenes, with lotus and mandrake flowers and the *Tilapia nilotica*. Medicinal oils are listed along with their use both in ancient Egypt (from Dioscorides), and in modern herbal remedies.



Banquet scene from the tomb of Nakht (Theban Tomb 52; Dynasty XVIII)

Cosmetics are common from the time of the initial unification of the Two Lands. The Narmer Palette is a prime example. Fundamental to the wellbeing of Egyptians was cleanliness, and they went to great effort to clean and apply pleasing scent to their hair and wigs. One medical papyrus gives instructions for preventing gray hair, and the hair of some mummies appears to have been dyed with henna. In the dry climate of Egypt they also used creams to soften the skin. In fact workers from Deir el-Medina were paid in an "anointing" oil. The Egyptians are noted for using eye makeup, the green made from malachite (copper-based) and the black from galena (lead-based). The medical papyri contain prescriptions for combating a variety of eye ailments. Manniche says there also is some evidence that the Egyptians used face paint, lip tint, and body decoration.

The word "aromatherapy" in the title might cause some to wonder about the scholarship of the book, but the author says, "I had occasion to read through many popular books on aromatherapy, where reference was frequently made to ancient Egyptian practices in both texts and illustrations. Much of the information was inexact, being based on secondary sources, if not on pure imagination." That is not the case here. In addition to being scholarly, this is a beautiful book, very enjoyable to read, which presents a different perspective on some facets of the life of the ancient Egyptians. Lise Manniche is a Professor of Egyptology at the University of Copenhagen and the author of several books, including *An Ancient Egyptian Herbal*, *Sexual Life in Ancient Egypt*, *City of the Dead: Thebes in Egypt*, *Ancient Egyptian Musical Instruments*, and others.

Amarna Diplomacy: The Beginnings of International Relations. Edited by Raymond Cohen and Raymond Westbrook. Baltimore: John Hopkins University Press, 2000.

This book grew out of a conference held in 1996 in Bellagio, Italy. The conference brought together scholars in the fields of Political Science, Assyriology, International Relations, Egyptology, Anthropology, and even Conflict Analysis, to discuss the interrelationships of the major and minor Middle Eastern “powers” in the fourteenth century BCE as reflected in the cache of cuneiform tablets collectively known as the “Amarna Letters.” The book caught my eye because Raymond Cohen has previously written extensively about the political relations amongst these powers, in which he sees a fully-fledged diplomatic system comparable to that which exists today between modern states.

Since authors from a variety of disciplines wrote the individual chapters, some will be of more interest to Egyptophiles than others, but all seem to represent a high level of scholarship. To me, a few chapters are not particularly relevant; these deal mainly with social psychology, game theory, or theoretical international relations (IR), where terms like “Constructivism” and “Realpolitik” are discussed. The IR writers want to use Amarna as a test case for their theories because it is sufficiently removed in time that, as one writer indicated, no one cares who won. They admit that as a test case it isn’t definitive because of the paucity of material; the same problem bedevils Egyptologists.

Fortunately, Cohen and Westbrook wrote a highly informative introduction to the players on the Amarna stage, as well as an insightful concluding chapter to try to tie the divergent offerings together. The other chapters are grouped under the broad headings of “The International System,” “Foreign Policy,” “Imperial Policy,” “International Transactions,” and “Diplomacy.” An amateur Egyptophile might do well to read the introduction and conclusion first in order to get a good overview, then go to the chapters of interest. What follows here is a sampling of the ones I found most interesting.

Mario Liverani, a Syro-Palestinian archaeologist, leads off with the “Great Powers Club,” a theoretical analysis of ancient diplomacy that is quite readable, and treats in special detail the role of gift exchange between Great Kings. Raymond Westbrook, a specialist in ancient law, examines “International Law in the Amarna Age” to determine the legal concepts that existed in the Amarna Period. Perhaps the most striking feature of international law is that it tried to mirror domestic family law of the day by envisioning the Great Kings—those of Egypt, Mitanni, Babylon, Hatti, Alashya, and Assyria—as a family of “brothers” whose actions were governed, or at least constrained, by the gods.

William Murnane, a well-known Egyptologist, describes in “Imperial Egypt and the Limits of Power” how Egypt governed—or failed to govern—its Syrian vassals, and details the complexities of their relationships. He also contrasts the Egyptian monolithic worldview of the pharaoh as Supreme Being, with the international role of the pharaoh as just one member of the more-or-less equal brotherhood of Great Kings. Alan James takes up many of the same themes in “Egypt and Her Vassals: The Geopolitical Dimension,” where he analyzes Egypt’s actions in terms of how far (in time and distance) various classes of vassals were from Egypt. He documents in detail that the closer the vassals the greater the control, and discusses possible motives for Egypt’s indulgence of Amurru expansionism. Nadav Na’aman analyzes “The Egyptian–Canaanite Correspondence.” He discusses the linguistic and cultural differences between Egypt and the Syro-Palestinians and concludes there is no evidence for annual, regular tribute from outside Egypt; he also finds no evidence that Egypt saw herself as a protector of her vassals from each other.

Egypt’s relationship with Mitanni receives good, detailed examinations by Egyptologist Betsy Bryan in “The Egyptian Perspective on Mitanni,” and by Assyriologist Pinhas Artzi in “The Diplomatic Service in Action: The Mitanni File.” Bryan is concerned with inferring the history of the relationship between Egypt and Mitanni from its beginnings in conflict, through co-existence alliance, and the ultimate abandonment of Mitanni by Egypt to the Hittites. She discusses the contrasting meanings of dynastic marriage in the two cultures, a theme that is also taken up by Samuel A. Meier in “Diplomacy and International Marriages.” Artzi, by contrast, is interested in how the diplomatic efforts of various parties seemed to have worked. Both are good but quite different approaches.

Raymond Cohen discusses the evidence for military and civilian “Intelligence in the Amarna Letters” and finds that Egypt deliberately collected foreign intelligence, especially through her vassals. How diplomacy worked and how it differs from modern diplomacy is explored by Christer Jonsson in “Diplomatic Signaling in the Amarna Letters,” and especially by Goeffery Berridge in “Amarna Diplomacy: A Full Fledged Diplomatic System?” Berridge takes issue with Raymond Cohen’s central thesis that the system was “full fledged.” His criticism is based on a lack of evidence for resident diplomats, the lack of mediation in international crisis, and especially the lack of permanent diplomatic contact between hostile powers. The examination is thorough and thought provoking.

In summary: there is a great deal to interest anyone who is curious about the relationships between Egypt and her neighbors in the fourteenth century BCE. Most of the writing is good and lively, with only occasional lapses into jargon or parochial *esoterica*. There is a wealth of material, a lot of it very good material indeed. Highly recommended.

Robert C. Bigelow