

The chronology of ancient Egypt

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In the world of the east Mediterranean and the Near East, the detailed historical and archaeological chronologies of ancient Egypt and Mesopotamia have long provided a backbone for establishing timescales in other cultural provinces of this large key area in world history and archaeology. However, they do not provide that backbone easily or with uniform exactitude. The margin of error grows in size as one moves back in time from the mid-first millennium BC to the preliterate past where modern science-based techniques (radiocarbon dating and the like) take over. So far radiocarbon studies, including those incorporating calibration, have not yet brought us to the point where they can improve on historical dating.

Basic profile

The indispensable hard core for dating ancient Egypt's long history is still today the long sequence of kings by whose regnal years their subjects dated their records. These kings belong in families or groups (cf. the Plantagenets or House of Windsor). In the third century BC the Egyptian priest Manetho listed thirty such 'dynasties', with the last Persian rulers later termed a thirty-first, before Alexander and the Ptolemies under whom he wrote his *Aegyptiaka* or History of Egypt in Greek. Much of that grouping goes back a thousand years before Manetho, and is visible in ancient Egyptian lists of rulers also. In the nineteenth century AD, egyptologists have found it convenient to group these dynasties in turn into just a few large periods that correspond to the profile of Egypt's ancient history (see Table 1). Ideally, if all pharaohs had followed in one long line (no gaps, no overlaps) and every reign-length were known precisely, then an exact chronology would be established from 300 BC back to about 3000 BC. Unfortunately, the lengths of a good number of reigns are not completely known, or not known at all, and in the 'intermediate periods', national unity broke down with rival lines of kings reigning contemporaneously. However, a variety of resources exist by use of which one may largely overcome these gaps and obscurities, particularly from the second millennium BC onwards.

Table 1 Basic profile of Egyptian periods, indicating margins of dating error.

<i>Prehistory</i> : 'predynastic'	c.300 years
<i>History</i> :	
Archaic or 'protodynastic' period	>200 years
Old Kingdom, then 1st Intermediate period	c.100 years
Middle Kingdom, then 2nd Intermediate period	30–20 years
New Kingdom, then Late period (incl. 3rd Intermediate)	20–10 years
Saite-Persian periods	0
Graeco-Roman age	0

Lists

Three epochs offer data here. Latest is Manetho, third century BC. His history is long lost, but the Epitome or list of kings from it survives in three versions of the third to eighth centuries AD (Julius Africanus, Eusebius, George the Syncellus). A convenient edition is given by Waddell (1940). The list is incomplete (not naming all kings), and the figures for both reigns and dynastic totals show variants, some clearly wrong; Egyptian names are often garbled in their Greek form.

A thousand years and more before Manetho, we have five 'king-lists' from archaeological sources. At Karnak, the great temple of Amun in ancient Thebes (now Luxor), Tuthmosis III (c. 1450 BC) included a table of earlier kings. However, its arrangement is heraldic rather than chronological and it contains but few rulers; so its utility is very limited. The other four documents all belong 200 years later, to the time of Ramesses II (three) and his father Sethos I (one). These two kings each included in their respective temples at Abydos a list of names of over seventy kings in order, from the founder 'Mene(s)' down to themselves. Tjunuroy, an official of Ramesses II, included a similar list in his tomb-chapel at Saqqara, the necropolis of Memphis. These lists give principally the kings of the Archaic period and the three great epochs, what we now call the Old, Middle and New Kingdoms, almost wholly omitting rulers of the first two intermediate periods, plus 'censored' characters like Queen Hatshepsut and the Amarna age kings (Aten heresy). None give reigns or dates. However, the fifth New-Kingdom document, the so-called Turin Canon of kings, did originally give an almost complete run of rulers from the beginning down to (Ramesses II) in whose time it was written, along with lengths of reigns in years, months and days so far as then known to its author. Regrettably, this priceless scroll broke to pieces en route to Turin some 160 years ago, and it can only be partly restored; furthermore, other data indicate that its lengths of reigns are not error-free. So, it is invaluable, but not a complete answer. Finally, originating over a thousand years earlier still (even though the extant copies are by some claimed to be later), there is the so-called Palermo Stone. This once gave the complete sequence of years (noting events in each) for all the early kings of the Archaic period into the mid-Old Kingdom. But, again, we are left with fragments, not the whole document; so, more than

one theoretical reconstitution is possible, with different resulting figures for the length of that period of time. For all these lists, see the useful critical study by Redford (1986).

Original data and archaeological and scientific evidence

Three broad categories of primary evidence are available to correct, refine and extend reconstruction of Egyptian chronology from mere lists. The first is original documents and associated archaeological data. Varying greatly in their abundance (or scarcity) from one period to another, original documents that bear royal names and regnal dates are of the greatest value in establishing the true lengths of various reigns. Purely archaeological observations can help to confirm what the written record supplies. Thus, Shoshenq III built and decorated a new granite gateway at Tanis for the main temple, c. 800 BC, by first cutting up into blocks a huge statue of Ramesses II (c. 1250 BC), then using these fragments to build his gateway. The original owner's name appears on surfaces hidden within the joints and inner surfaces of the structure. Of the order of these two kings (and their associated dynasties), therefore, there can be absolutely no doubt.

Similar evidence of sequence exists for earlier periods. The predynastic sequence of Badarian, then Naqada I ('Amratian'), then Naqada II ('Gerzean') is attested stratigraphically in the village-site of El-Hemamiyeh in Upper Egypt (Brunton and Caton-Thompson 1928: 69–79). In turn, late Naqada II material culture (e.g. pottery) is also that of the early Archaic Period – Dynasty 1 of historical Egypt.

Evidence of the sequence from the Archaic Period (Dynasties 1 and 2) to the Old Kingdom (Dynasties 3–6) is shown by:

- (i) the annals on the so-called Palermo Stone, where Dynasty 1–2 kings are clearly earlier than the rulers of Dynasties 3–6;
- (ii) a mass of inscribed stone vessels of the Archaic Period rulers which was collected and deposited in storage-galleries beneath the Step Pyramid of Djoser (third Dynasty). These were sealed off during the building work (Lauer 1939).
- (iii) At Saqqara, the late fifth Dynasty pyramid complex of Unas overlies tombs that contained sealings of Dynasty 2 kings, obliterating any superstructure of these tombs (Edwards 1971: 20, 65).

Later, Old-Kingdom decorated blocks with the names of several kings were reused in building Middle-Kingdom pyramid-temples, as at Lisht, in the structures of Amenemhat I (c. 1930 BC) (Goedicke 1971). Likewise, reused material is found in New Kingdom buildings. The third pylon at Karnak, built by Amenophis III (c. 1380 BC) contained as 'fill' material from the Dynasty 12 kiosk of Sesostri I (c. 1900 BC), along with various stelae of the Second Intermediate Period and early New Kingdom (Dynasty 18) (Björkman 1971: 127ff. 131ff.).

The close association of a wide variety of material remains, including the ubiquitous pottery, with well-dated structures and pieces ensures a closely-sequenced archaeological record in Egypt for over 3,000 years, though there is still room to refine many details. Then, that close record can be of service in dating other Egyptian sites and remains lacking textual evidence, and in correlations with the archaeology of neighbouring regions.

Among first-hand data, either single, long genealogies or synthetic genealogies built up from groups of related inscribed objects (e.g., statues, coffins, stelae, etc., belonging to one family or community) are a valuable supplement, especially when kings' names recur in succession in different generations in sequence. This particularly applies during the Late period (examples, cf. Kitchen 1986).

Secondly, the matter of synchronisms. In the second and first millennia BC, especially in the New Kingdom and later, international relations show up links between rulers in Egypt and other Near-Eastern states. Those of Babylon and Assyria corresponded with Amenophis III, Akhenaten and Tutankhamun in the fourteenth century BC, while Ramesses II signed a treaty with Hattusil III of Hatti in the thirteenth century. Shishak of the Bible (Shoshenq I) invaded Judah and Israel five years after the death of Solomon, and so on. Given the very precise Mesopotamian dates available during 911–630 BC, and such dates accurate to within a decade or so during the fifteenth to tenth centuries BC, these correlations help to set closer limits for Egyptian reigns.

Thirdly scientific and astronomical evidence. When egyptologists are locked in battle over whether to start the eighteenth Dynasty in 1550, 1540 (or even 1530) BC, haggling over just a decade or so, then radiocarbon dates are no help. A normal standard deviation of c. ± 80 years usually translates to a range of about three centuries after calibration (cf. examples in Hassan and Robinson 1987). Indeed, the historically derived Egyptian chronology was a principal source in demonstrating the need for radiocarbon calibration, which was eventually achieved through dendrochronology. Of course, before history, in the Predynastic period, our very limited stratigraphic sequences can be very materially helped by use of science-based modes of dating. (For radiocarbon in particular, cf. Hassan and Robinson 1987.)

Astronomy is quite a different story – at first sight. Lunar dates and the so-called Sothic cycle have been summoned to provide supposedly exact dates for the second millennium BC. But here too, snags and limitations create problems. Mentions of a new moon on this or that date in the Egyptian calendar can in principle give a closely-precise date, under certain conditions. One must know in what reign, and in what regnal year, the observation is dated. These moon-risings recur in the ancient calendar every twenty-five years (see Parker 1976: 180–1; cf. Parker 1957), so one has to know the general date of the document within half-a-century to begin with. In other words, this approach is all right for fine tuning, if the general date is fixed. This method is of some limited help in dating the twelfth Dynasty in the nineteenth and eighteenth centuries BC. Such an observation for Year 52 of Ramesses II helps to set his accession in 1279 BC, less likely in 1290 BC. Just 200 years earlier, more lunar dates similarly would indicate the accession of Tuthmosis III in 1479 BC, less likely 1490 BC. Their dates then set limits for the reigns of most of the rest of the New Kingdom. One may emphasize the paucity of eclipse data, which would otherwise have added greater precision. Only two significant solar eclipses from the ancient Near East may be cited. The first is the total solar eclipse of 15 June 763 BC, which dates the eponymy of Bur-sagale: in Assyria eponyms refer to officials who held office, a different man for each year. Full listings exist from 911 BC down to 648 BC, hence the one eclipse dates the whole series (Unger 1938: 414). The second eclipse, recorded in a Demotic papyrus, is that of 30 September 610 BC, which immediately followed the death of Psammetichus I, and confirms his reign as 664–610 BC (Hornung 1965: 38–9).

The Sothic cycle operates on a far grander scale, as do its problems. First, the historic Egyptian calendar was 365 days long (the classic treatment of ancient Egyptian calendars is still Parker 1950). It was therefore a quarter-day (0.24224) too short. So, after four years, the calendar year ended a day too soon, as the Egyptians had no leap-year. It ended a month too soon after about 120 years, and six months too soon in some 730 years, with ‘summer’ calendar-months in the winter season and vice-versa! And after about 1,460 years, the calendar had crept through an entire year, and its New Year’s Day came right again, if not for long. That day was supposed to coincide with the annual rise of the Nile-flood in July. It so happened (by chance) that also in July, after seventy days’ invisibility, the Dog-Star Sothis first became visible again at dawn just before the rising sun swamps its fainter glow. This phenomenon is known as the heliacal rising of Sothis. Its coincidence with the Egyptian calendar New Year is reported for the year-period 139/142 AD, and so its two preceding coincidences with the calendrical New Year have been calculated for 1313 and 2769 BC (Parker 1976: 182). Clearly, if some Egyptian document within one of these 1,460-year periods should mention a rising of Sothis at natural New Year in terms of the wandering calendar, then a swift calculation should show how far the calendar had moved from New Year, how many years it had taken to do so, hence the date BC of the mention.

If only it were so simple! Unfortunately, there are several problems. One is the rarity of such dates in our existing texts. One exists under Sesostris (II or III) of the twelfth Dynasty, another under Amenophis I in the early eighteenth Dynasty. Another is the fact that (on its own) such a date is only correct within four years (unless a fine-tuning lunar date can fix it closely). A third is that the date BC to be calculated varies with the latitude of the place of observation – itself a controverted matter. The further south the observation was made, the later the date BC. Despite a very local theoretical plea, unsubstantiated by any decisive factual data, for locating the observations at Elephantine, at ancient Aswan (Krauss 1985), it seems far more likely that the twelfth Dynasty observations were made near Memphis, in the then capital-suburb of Ithet-Tawy, while the eighteenth Dynasty observation occurs in a papyrus found at Thebes, actually the capital under Amenophis I. So, a ‘Memphite’ reading for the first Sothic date and a ‘Theban’ reading for the second Sothic date make best sense – but are not cast-iron. On these sensible locations, the twelfth Dynasty would be set at 1963–1786 BC, versus Krauss’s 1937–1759 BC (range of 26/27 years), and the reign of Amenophis I (eighteenth Dynasty) at 1525–1504 BC versus Krauss at 1514–1493 BC (range of 11 years). By dismissing the Sothic date of Amenophis I entirely (which is hardly justified), Helck (1987) would lower the beginning of the eighteenth Dynasty from 1550 BC (Krauss: 1539 BC) to 1530 BC, which is probably too low. Within this framework of king-lists, original documents, Sothic data, etc., one can then date the rest of the New Kingdom within close limits, so that its end (end of twentieth Dynasty) falls on recent calculations within a six-year range, c. 1075–1069 BC (Kitchen 1986: 532–3). Fairly close limits of within a decade also apply to the succeeding period, coming down to zero, with exact dates for the twenty-sixth Dynasty from 664 BC (Kitchen 1986: *passim*; lunar date, Parker 1957a).

So, from about 30 years in 2000 BC, through 20/10 years by 1500 BC, to 11 years in the thirteenth century BC and less into the first millennium BC, dates come exact from 664 BC. But before the eleventh Dynasty and 2000 BC, back into the third millennium BC and the

Table 2 Outline chronology of ancient Egypt.

<i>Predynastic period (prehistory)</i>		<i>New Kingdom</i>	
<i>About BC</i>		1550–1295	18th Dynasty
4000	Taso-Badarian period	1295–1186	19th Dynasty
3700	Naqada I (Amratian) period	1186–1069	20th Dynasty
3500–3000	Naqada II (Gerzean) period		
<i>Archaic period (protodynastic)</i>		<i>Late period i: 3rd Intermediate</i>	
3000–2840	1st Dynasty	1069–945	21st Dynasty
2840–2700	2nd Dynasty	945–715	22nd Dynasty (Libyan)
		818–715	23rd Dynasty (Libyan)
		727–715	24th Dynasty (Libyan)
		780–656	25th Dynasty (Kushite)
<i>Old Kingdom</i>		<i>Late period ii: Saitic/Persian</i>	
2700–2600	3rd Dynasty	664–525	26th Dynasty
2600–2500	4th Dynasty	525–404	27th Dynasty (Persian Empire)
2500–2350	5th Dynasty	404–399	28th Dynasty
2350–2190	6th Dynasty	399–380	29th Dynasty
2190–2160	7th–8th Dynasties	380–343	30th Dynasty
		343–332	31st Dynasty (Persian Empire)
<i>1st Intermediate period</i>		<i>Graeco-Roman period</i>	
2160–2106	9th Dynasty	332–323	Alexander the Great
2106–2010	10th Dynasty	323–30	Ptolemaic Dynasty
		30–AD 641	Roman and Byzantine age
		AD 641	Arab conquest
<i>Middle Kingdom</i>			
2106–1963	11th Dynasty		
1963–1786	12th Dynasty		
<i>2nd Intermediate period</i>			
1786–1633	13th Dynasty		
1786–1602	14th Dynasty (W. Delta)		
1648–1540	15th Dynasty (main Hyksos)		
17th cent.	16th Dynasty (local Hyksos)		
1633–1550	17th Dynasty (Thebes)		

Old Kingdom, the margin of error grows to at least a century, and perhaps two centuries by the beginning of Egyptian history and the Archaic period with the first Dynasty. Nevertheless, the range of doubt is not great enough to accommodate the results of Haas et al. (1987), who dated nearly eighty radiocarbon samples from mortar of pyramids and from other sources, producing a chronology nearly four centuries older than that commonly accepted. In purely Egyptian terms, a Menes can be set at c. 3100 BC, c. 3000 BC or c. 2900 BC. Here we have no sufficiently-precise external controls to do any better at present: any date in this range is compatible with the very few radiocarbon dates produced for the terminal Predynastic (Close 1984; Hassan 1985; Hassan and Robinson 1987). Hence the need for renewed efforts in improving the radiocarbon record (cf. Bruins and Mook 1989). Table 2 gives a conspectus of Egyptian dates as currently acceptable.

References

- Åström, P. 1987. *High, Middle or Low? Acts of an International Colloquium on Absolute Chronology held at the University of Gothenburg 20–22 August 1987*, Part 1 (of 2 Parts). Gothenburg: Paul Åströms Förlag.
- Åström, P. 1989. *High, Middle or Low? Acts of an International Colloquium on Absolute Chronology held at the University of Gothenburg 20–22 August 1987*, Part 3, Gothenburg: Paul Åströms Förlag.
- von Beckerath, J. 1987. Das Kalendarium des Ebers und das Sothisdatum vom 9. Jahr Amenophis' I. *Studien zur Altägyptischen Kultur*, 14: 27–33.
- Björkman, G. 1971. *Kings at Karnak*. Uppsala: Uppsala University.
- Bruins, H. J. and Mook, W. G. 1989. The need for a calibrated radiocarbon chronology of Near Eastern archaeology. *Radiocarbon*, 31 (3): 1019–29.
- Brunton, G. and Caton-Thompson, G. 1928. *The Badarian Civilisation*. London: British School of Archaeology in Egypt.
- Close, A. E. 1984. Current research and recent radiocarbon dates from northern Africa, II. *Journal of African History*, 25: 1–24.
- Edwards, I. E. S. (ed.). 1971. Early history of the Middle East. *Cambridge Ancient History* (3rd edn), I, Part 2. Cambridge: Cambridge University Press.
- Franke, D. 1988. Zur Chronologie des Mittleren Reiches (12.–18. Dynastie) – Teil I: Die 12. Dynastie; -Teil II: Die sogenannte 'Zweite Zwischenzeit' Altägyptens. *Orientalia* 57: 113–38, 245–74.
- Goedicke, H. 1971. *Re-used Blocks from the Pyramid of Amenemhet I at Lisht*. New York: Metropolitan Museum of Art.
- Haas, H., Devine, J. M., Wenke, R., Lehner, M., Wolfli, W. and Bonani, G. 1987. Radiocarbon chronology and the historical calendar in Egypt. In *Chronologies in the Near East* (eds O. Aurenche, J. Evin, and F. Hours). British Archaeological Report, International Series, S379, pp. 585–606.
- Hassan, F. A. 1985. Radiocarbon chronology of Neolithic and Predynastic sites in Upper Egypt and the Delta. *African Archaeological Review*, 3: 95–116.
- Hassan, F. A. and Robinson, S. W. 1987. High-precision radio-carbon chronometry of ancient Egypt, and comparisons with Nubia, Palestine and Mesopotamia. *Antiquity*, 61 (231): 119–35.
- Helck, W. 1982. Palermostein. In *Lexikon der Ägyptologie IV* (eds W. Helck and W. Westendorf). Wiesbaden: Otto Harrassowitz, cols. 652–3.
- Helck, W. 1987. Was kann die Ägyptologie wirklich zum Problem der absoluten Chronologie in der Bronzezeit beitragen? In Åström 1987; pp. 18–26.
- Helck, W. 1988. Erneut das angebliche Sothis-Datum des Pap. Ebers und die Chronologie der 18. Dynastie. *Studien zur Altägyptischen Kultur*, 15: 149–64.
- Hornung, E. 1965. Die Sonnenfinsternis nach dem Tode Psammetichs I. *Zeitschrift für Aegyptische Sprache*, 92: 38–9.
- Kitchen, K. A. 1986. *The Third Intermediate Period in Egypt (1100–650 BC)*, 2nd edn. Warminster: Aris & Phillips Ltd.
- Kitchen, K. A. 1987. The basics of Egyptian chronology in relation to the Bronze Age. In Åström 1987, pp. 37–55.
- Kitchen, K. A. 1989. Supplementary notes on the basics of Egyptian chronology. In Åström 1989, pp. 152–9.

- Krauss, R. 1985. *Sothis-und Monddaten. Hildesheimer Ägyptologische Beiträge* 20. Hildesheim: Gerstenberg Verlag.
- Lauer, J.-P. 1939. *La Pyramide à degrés, III. Complements*. Cairo: IFAO, pp. 1–24.
- Luft, U. 1989. Illahunstudien IV: Zur chronologischen Verwertbarkeit des Sothisdatums. *Studien zur Altägyptischen Kultur*, 16: 217–33.
- Parker, R. A. 1950. *The Calendars of Ancient Egypt. Studies in Ancient Oriental Civilization*, 26. Chicago: Chicago University Press.
- Parker, R. A. 1957. The lunar dates of Thutmose III and Ramesses II. *Journal of Near Eastern Studies*, 16: 39–43.
- Parker, R. A. 1957a. The length of the reign of Amasis and the beginning of the twenty-sixth Dynasty. *Mitteilungen des Deutschen Archäologischen Instituts Abteilung Kairo*, 15: 208–14.
- Parker, R. A. 1976. The Sothic dating of the twelfth and eighteenth Dynasties. In *Studies in Honor of George R. Hughes. Studies in Ancient Oriental Civilizations* 39 (eds J. H. Johnson and E. F. Wente). Chicago: Chicago University Press; pp. 177–89.
- Redford, D. B. 1986. Pharaonic King-Lists, Annals and Daybooks. SSEA Publication IV. Missisauga: Benben Publications.
- Unger, E. 1938. *Reallexikon der Assyrologie, II* (eds E. Ebeling and B. Meissner). Berlin/Leipzig: W. de Gruyter, p. 414.
- Waddell, W. G. 1940. *Manetho* [bound with Robbins, F. E., *Ptolemy Tetrabiblos*]. Loeb Classical Library. Cambridge (Mass.) & London: Harvard University Press/Heinemann.
- Wells, R. A. 1987. The Amarna M, X, K boundary stelae: a modern calendar equivalent. *Studien zur Altägyptischen Kultur*, 14: 313–33.

Abstract

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The chronology of ancient Egypt can only be recovered (and then, inexactly) by combining several approaches. These include the sequences of kings and reigns, grouped into dynasties and larger periods. Original documents and interstate synchronisms (plus genealogical data) permit considerable control. To some extent, if their ambiguities can be overcome, lunar and ‘Sothic’ dates from astronomy can help. Other science-based techniques (e.g., radiocarbon) are not precise enough to help, except in the prehistoric epoch. The margin of error of c. 200 years in early third millennium BC sinks to 20/10 years during the second millennium, and to zero in 664 BC.