Ancient Egyptian Chronology
Ancient Egyptian Chronology

Edited by
Erik Hornung, Rolf Krauss, and David A. Warburton
EDITORIAL

With this volume of the Handbook of Oriental Studies (Handbuch der Orientalistik) a new editorial board for the ancient Near East takes over from the board that has edited the HdO volumes for so many years. The new editors have been chosen because of their expertise in the fields that pursue the study of the civilizations of the ancient Near East. These editors are: G. Beckman (Hittitology), C. Leitz (Egyptology), B. Levine (Hebrew Bible/Ancient Israel), P. Michalowski (Sumerology), P. Miglus (Near Eastern Archaeology), and W. H. van Soldt (Assyriology, Editor-in-Chief).

The board has planned a number of new volumes in the HdO series and expresses the hope that with these volumes the series will resume its original function of a handbook for Ancient Near Eastern Studies. At the same time, the new board is committed to the publication of volumes that had already been planned and accepted and which are scheduled to appear in the near future. However, it should be pointed out that the present board members do not necessarily agree with the entire content of a volume that they have ‘inherited’ from their predecessors.

Finally, we would like to thank the members of the former editorial board for all their work for the HdO series.

The Editors
CONTENTS

Acknowledgments ................................................................. xi

Introduction ............................................................................... 1
  Erik Hornung

PART I

EGYPTIAN CHRONOGRAPHICAL TRADITION AND
METHOD OF DATING

1. Royal Annals ................................................................. 19
  The Editors

2. The Royal Canon of Turin ............................................. 26
  Kim Ryholt

3. King Lists and Manetho’s Aigyptiaka ................................. 33
  The Editors

4. Genealogy and Chronology ............................................. 37
  Morris L. Bierbrier

5. Methods of Dating and the Egyptian Calendar .................. 45
  The Editors

PART II

RELATIVE CHRONOLOGY

1. Predynastic—Early Dynastic Chronology ............................ 55
  Stan Hendrickx

2. Dynasties 0–2 ............................................................... 94
  Jochem Kahl

3. Dynasty 3 .......................................................................... 116
  Stephan J. Seidlmayer
CONTENTS

4. Dynasties 4 to 5 ................................................................. 124
   Miroslav Verner
5. Dynasties 6 and 8 ............................................................. 144
   Michel Baud
6. First Intermediate Period .................................................. 159
   Stephan J. Seidlmayer
7. Middle Kingdom and the Second Intermediate Period ...... 168
   Thomas Schneider
8. New Kingdom .................................................................. 197
   Erik Hornung
9. Dynasty 21 ........................................................................ 218
   Karl Jansen-Winkeln
10. Third Intermediate Period ............................................... 234
    Karl Jansen-Winkeln
11. Saite and Persian Egypt ................................................... 265
    Leo Depuydt
12. Nubian Kingdoms, Dyn. 25 through the Kingdom of Meroe ........................................... 284
    Karola Zibelius-Chen
13. Chronological Links between the Cuneiform World of the Ancient Near East and Ancient Egypt ........................................ 304
    Jörg Klinger

PART III

ABSOLUTE CHRONOLOGY

1. Radiocarbon Dating and Egyptian Chronology .............. 327
   Sturt Manning
2. Luminescence Dating of Egyptian Artefacts .................... 356
   Christian Goedicke
3. Dendrochronology ............................................................ 361
   Otto Cichocki
4. Dates relating to Seasonal Phenomena and Miscellaneous Astronomical Dates ........................................... 369
   Rolf Krauss
5. Astronomy on the Horizon—A Tool for ancient Egyptian Chronology? ........................................... 380
   Juan Antonio Belmonte
CONTENTS

6. Lunar Days, Lunar Months, and the Question of the
Civil based Lunar Calendar .................................................. 386
   Rolf Krauss

7. Long-term Variation in the Motions of the Earth and the
Moon ........................................................................................ 392
   Kurt Locher

8. Lunar Dates ............................................................................ 395
   Rolf Krauss

9. The Heliacal Rising of Sirius ................................................ 432
   Teije de Jong

10. Egyptian Sirius/Sothic Dates and the Question of the
Sirius based Lunar Calendar ................................................ 439
    Rolf Krauss

    Leo Depuydt

PART IV

CONCLUSIONS AND CHRONOLOGICAL TABLES

1. Conclusions and a Postscript to Part II, Chapter I .......... 473
   Rolf Krauss & David A. Warburton

2. Chronological Table for the Dynastic Period ................. 490
   The Editors

3. Tables for Kushite Rulers ...................................................... 496
   Karola Zibelius-Chen

Abbreviations & Bibliography ...................................................... 501

Index of Personal Names ......................................................... 509
Index of Place Names .............................................................. 514
General Index ........................................................................ 516
ACKNOWLEDGMENTS

It was Wolfgang Schenkel who suggested the project of a *Handbook of Egyptian Chronology* to Brill, Academic Publishers, nearly a decade ago. He will have asked himself in the intervening years whether the work would ever appear.

Co-editor Erik Hornung developed the concept of the Handbook and together we selected the authors for each section. The subsequent addition of David Alan Warburton to the team provided an impetus to overcome the inertia that had set in. He and Marianne Eaton-Krauss took over the thankless task of translating and/or editing contributions by authors whose mother tongue was not English, except for Chapters II. 1 and 11, III. 7, 9, and 11.

I am indebted to the Stiftung Preussischer Kulturbesitz who transferred me from the Ägyptisches Museum to the Museum für Vor- und Frühgeschichte in 2001 to do research on the Calendrics and Chronology of ancient Egypt, the Near East and Europe. Although the move deprived me of direct access to an Egyptological library, the *Handbook* would not have seen the light of the day without this change of fortune. Thanks to Wilfried Menghin, Director of the MVF, I could concentrate on the *Handbook* during 2004 and 2005.

Last but not least, I thank Juan José Granados who encouraged me to complete the unloved task.

R.K. February 2006
INTRODUCTION

Erik Hornung

It is widely accepted that chronology is the “spine” of history. The ensuing image is slightly distorted since one can only extend or shorten a spine using violence, stretching it or forcing it like the giant Procrustes into a bed which is far too short. In recent years there have been repeated attempts to cut an entire century off history, and not merely in the “Dark Ages” of antiquity, but even now for the supposedly “invented” Middle Ages. It would thus be more suitable to view time as the clothing of history: a garment can be non-violently adjusted to a changing body. The image of time as a piece of clothing, the habit of mankind and the dress of the deity, can be found in the poem “Song of Time” by the Pakistani poet Muhammad Iqbal (1877–1938), who was doubtless inspired by Goethe’s expression, “the living dress of the divinity” created by the spirit of the Earth “on the whirring loom of time” (Faustus, verses 508f.).

But, first a word on the temporal horizon of the Egyptians. Even ‘Ankhtifi of Mo’allā looked hopefully to a future of “millions of years”, during which no one would approach his deeds. Indeed, before the end of the FIP, these “millions of years” rapidly became a commonplace (being known from a wish for King Merykare in Asyut), ultimately becoming a synonym of the twin temporal concepts neheh and djet. This is most clearly expressed in the representation of the Dyn. 21 illustrated papyrus of Khonsumes in Vienna, where all three stand together, raised on yokes and thus divine, subordinated to the solar

1 In A. Schimmel, ed., Botschaft des Ostens (Tübingen & Basel, 1977), 149.
3 Schenkel, Memphis, 47.
orbit which constantly regenerates time while the sun itself is in the
tow of the hours: solar circuit and time are thus indivisibly woven
together. The memorial temples of the NK Pharaohs are thus “Houses
of Millions of Years” as they guarantee the mortuary cult for the rest
of the horizon of time\(^6\) just as the tomb is the place of “the fullness of
time (\(\text{neheh}\))”.\(^7\) The limited individual stream of life flows into this sea
of the “millions of years”, as Pharaoh ends his in “millions of sed-
festivals” in a specifically royal unit of time. In typical moderation,
Akhenaten wishes to be buried in the new residence Akhetaten “after
the millions of sed festivals which my father Aten has envisioned for
me”, while Nefertiti and the princess Meritaten are to be buried “after
millions of years”.\(^8\)

In the Ramesside era, the horizon of the future grows even further,
to “millions of millions of years”, and thus exceeding our own astro-
nomical temporal horizons.\(^9\) The Inscription Dédicatoire in Abydos expresses
the Ramesside spirit: in wishing Ramesses II “millions more of years
than the lifetime of Re in heaven”,\(^10\) it thus exceeds the temporal dimen-
sions of the cosmos itself. The Egyptians probably had the feeling that
there was immeasurable time in the Beyond which was yet not beyond
the bounds of time. The dead do not belong to eternity, but to the
fullness of time benefiting from a new lifetime with every nightly pas-
sage of the sun-god. In the Beyond, however, all past time is accu-
mulated in the “Place of Annihilation (\(\text{hetemit}\))”: it is there that the hours
fall when they have passed, when they are “swallowed” by the time
which “gave birth” to them.

The greatest possible extreme appears in the post scriptum to Book
of the Dead, chapter 62, promising the deceased (in the role of the sun-
god Re!): “The fullness of time (\(\text{neheh}\)) without limits is given to me,
for I am the heir of \(\text{Neheh}\) to whom \(\text{djet}\) is given”. One immediately

\(^6\) Cf. M. Ullmann, König für die Ewigkeit—Die Häuser der Millionen von Jahren: eine
Untersuchung zu Königskult und Tempeltypologie in Ägypten (Wiesbaden: AAT 51, 2002).
\(^7\) References in P. Vernus, “La stèle C 3 du Louvre”, RdÉ 25 (1973), 217–234,
esp. 223–224 (i), also the occasional designation of the Necropolis. The tomb can also
be the “Horizon” of \(\text{neheh}\), cf. F.-J. Schmitz, Amenophis I. (Hildesheim: HAB 6, 1978),
213–214.
\(^8\) Murnane & Van Siclen, Stelae, 25, 41.
\(^9\) The statue of Bakenkhons in Munich, KRI III, 298; Hymn in P. Berlin 3049:
J. Assmann, Ägyptische Hymnen und Gebete (Zurich & Munich, 1975), 127 B. A first time
on the Cairo stele CG 34025 of Amenhotep III: \(\text{Urk.}\) IV, 1653, 16.
\(^10\) Inscription Dédicatoire, line 27 = 31; KRI II, 325, 7–8; cf. U. Luft, Beiträge zur
recalls the dialogue of the Beyond in chapter 175 where Osiris asks Atum about the lifetime in the Beyond and is giving the comforting assurance that it is “millions of millions of years”.

This concerns the future. As far as the horizon of the past is concerned, the Royal Canon of Turin\(^{11}\) gives totals for the dynasties of the gods and demi-gods (“The Followers of Horus”) before Menes and the beginning of the Dynastic Period which take us to nearly 37,000 years. The Early Dynastic kings are assigned long reigns, totalling almost another 1000 years up to Izezi, so that the Egyptians of the NK could look back towards a temporal horizon of nearly 40,000 years since the start of the world. That is a great deal when compared with the figures in the Christian and Jewish traditions. This matches statements made by the ancient authors. Herodotus (2, 142) reports that the Egyptian priests accounted for a human line of ancestors of 341 generations, which he reckoned amounted to 11,340 years before which lay the age of the gods. Greek historians, such as Hekataios of Abdera already reached the gods in the 16th generation. Genealogies as long as those given by Herodotus are generally encountered in the LP, the best known being the family tree of Memphite priests of Dyn. 22 which includes more than 60 generations.\(^{12}\) In another note, Herodotus (2, 145) dates Hercules 900 years before his own day, and Dionysos “some 1000 years”.

Our principal witness for the ancient Egyptian chronology is Manetho, and he must likewise have had similarly high numbers which were then forced into a truly Procrustean bed by the Christian authors who thus made it compatible with the Biblical chronology whose priority could not be doubted. At the same time, however, some individual items were systematically extended in order to achieve accord (particularly for the period between Menes and Adam), or in order to make the Egyptian past appear older.\(^{13}\) Even in pre-Christian times, there were efforts to claim a chronological precedence for Greece at the expense of Egypt. Eudoxus of Cnidus (d. 356 BC in Egypt) opposed Herodotus’ figures using the trick of transforming years into months.\(^{14}\) From Manetho,


\(^{12}\) Berlin 23673: Borchardt, *Mittel*, 96–100; a good illustration of the document will be found in the catalogue A. Grimm, S. Schoske, D. Wildung, *Pharao: Kunst und Herrschaft im alten Ägypten* (Munich, 1997), no. 89. l.


Georgios the Synkellos (8th cent. AD) cites a figure of 11,985 years for the reigns of the gods (and thus close to that of Herodotus), with Hephaistos = Ptah assigned 9000 years. This Synkellos simply interprets as months, which allows “only” 727\(\frac{3}{4}\) years for Ptah. From sometime after the reign of Ramesses II, this Memphite god had usurped the place of the Sun-god Re at the head of the divine dynasty although Diodorus (I: 13, 2) still maintains the older tradition (with Helios as the first king of Egypt). Eusebius claims that 13,900 years separated Hephaestus and “Bites”, following which is another total of 11,025 years, and thus 24,925, which he then interprets as months like Synkellos, reducing them to 2,206 years, which fitted perfectly with the Biblical 2242 years between Adam and the Flood, while radically cutting the Egyptian temporal horizon.

In the traditional chronicle of the 30 dynasties, with 113 generations, the total number of years is named as 36,525, whereby the largest share of 30,000 falls to Hephaestus; as the last native Pharaoh Nectanebos, some 15 years before Alexander the Great, is assigned the Anno Mundi 5147. In his work on Life and Opinions of Philosophers, written around 200 AD, Diogenes Laertios goes further: he calculates that 48,863 years separated the invention of philosophy by “Hephaestus, the son of the Nile” and Alexander the Great—and he adds the number of solar and lunar eclipses in this period. From Zoroaster to Xerxes, the Lydian Xanthus reckoned 6000 years, and Plutarch gives a similar estimate in De Iside 46 placing 5000 years between Zoroaster and the Trojan War. This “older” Zoroaster, who belongs in the seventh mill. BC, plays an important part in modern esoteric literature, frequently as the teacher of Hermes Trismegistos.

The figure of the king “Menes” the Egyptians created a fictional beginning for the historical era. With echoes of the gods Min and Amun, it also served as a shortened version of the name of Thutmose III, and thus served in an ideal fashion as a link between the world of the gods and the Dynastic kings. It is not, however, a mere question of the identity of the names as the Egyptians were frequently satisfied with distant echoes. Every attempt to equate Menes with a concrete name of the Archaic Period, particularly Narmer and ‘Aha, has been fruitless. With the fictive image of Menes, known since the

---

15 Immediately following this, however, he allows a variant that, “according to some priests” it was Hephaestos.

time of Hatshepsut and placed at the head of the list of kings for the first time by Sety I in the table of Kings at Abydos, the beginning of history is given a form, as in Genesis the beginning of humanity is attached to Adam as the first human. The Christian chronographers perceived the analogy and attempted to bring the two into temporal accord. As the founder of the Egyptian state, the deeds of Menes—emptying the swamps and founding Memphis—make him a bearer of culture.17

The universal historian Orosius reckoned some 5200 years separated Adam from the birth of Christ, and the figures used by the other early Christian authors generally fit into the same general framework. According to Sextus Julius Africanus (ca. 217) the Creation dates to 5500 years before the birth of Christ. Jerome (Hieronymus, 347–419) gives the date of 5198 BC, Victorius of Aquitaine is exact with 25/III/5201 BC. The medieval chroniclers, such as the Russian Nestor Chronicle from the early 12th century or the continuation of the Chronicle of the Frankish kings by Fredegar reckon that the world began around 5200/5500 BC, while the Jewish Calendar places it slightly later, 7/X/3761 BC, although the Kabbala of the 13th and 14th centuries estimated the duration of the worldly ages at 7000 years each, the succession ending absolutely in the 50th millennium.18

This temporal horizon, with a maximum of six or seven thousand years, was maintained through the Renaissance, and even to some extent afterwards. The 18th century Freemasons began their calculations with the round figure of 4000 BC (which is also found in Zedler’s Universal-Lexikon),19 although in 1704 Père Pezron made Year 1 of the world 5872 BC, and thus substantially earlier;20 whereby he also assigned priority to the Assyrians and Chinese, before the Egyptians. It was at about this time that Isaac Newton attempted to “improve” the Egyptian chronology, in order to recover the priority for the Old Testament, and because the Egyptians “in their vanity had made their monarchy

---

19 Johann Heinrich Zedler, Grosses vollständiges Universal-Lexikon (Halle & Leipzig, 1749) LXI, col. 818.
a few thousand years older than the world". He could not imagine that only a century later William Herschel would work with the hypothesis that the world was two million years old, and that even Kant had assumed a substantially greater temporal horizon.

It is a fascinating and still undescribed phenomenon how the great voyages of discovery moved in parallel so that the Spanish, British, Portuguese and other seafarers moved forth into hitherto unknown parts of the world, bringing new continents into view, and thus the new discoveries in space went hand in hand with the extension of time, ultimately exploding the far too narrow temporal confines of the Christian chronographers. And, again Egypt played a decisive role since the ancient pre-Christian records were again put to use from the Renaissance onwards. The decisive quantum jumps which continue up to the present day began in the late 18th century as the study of geology began. In 1778, Buf
don estimated the age of the earth at 100,000 years, a figure which was used by Goethe in Faustus when Mephistopheles remarks on Faustus’s vision of ruling the sea:

This is naught new for me to explore
Knowing this a hundred thousand years of yore (verses 10210f.)

Similarly Cuvier, who in an elegant phrase of Heinrich Heine’s, “proved in the most ungallant fashion that our mother earth is many thousands of years older than she had hitherto admitted”, and Jean Paul is surprised that “the earthy sphere ... grows older by the day, backwards (and not just forwards)”. It must have been a deeply wrenching experience for the times that the firmly established temporal horizon of the Creation in the OT would be weakened with such terrifying speed.

With the temporal requirements of geology demanding ever greater spans of time, the 19th century saw the final abandonment of the chronology of the OT. In 1870, Lepsius still assumed that the most ancient remains of mankind and their worked stones were 30 to 50,000 years old. However, millions of years were soon accepted; even Herschel,

---

whom Jean Paul cites, reckoned with 2 million light-years for the most distant stars, and thus a corresponding age for the universe; Kant refers to “millions of years and centuries” in his General Natural History and Theory of the Heavens. In the 20th century, astronomy would change this to billions of years—whereby we come closer to the Ancient Egyptians. In 1929, Hubble’s discovery of the expansion of the universe gave another push. We have now all experienced an age during which the cosmos gets to be billions of light years larger, and consequently older, every couple of years. In fact, the process does not appear to be finished—a fine example of how rapidly one can adjust to the extreme acceleration of exploding time in history.

After this time travel to the further horizons, we can return to Egyptian chronology, as we understand it today. From the beginning, Egyptology had an intense preoccupation with chronology, and generally took the highest available figures of antiquity, which were once again in vogue since the Renaissance—rather than the Biblical figures. Champollion-Figeac placed the debut of the Dynastic Period at 5867 BC, and that of Dyn. 18 at 1822; John Gardner Wilkinson who always preferred to orient himself on the OT used the values of 2320 and 1575; Lepsius lay between them at 3892 and 1591. One can see that they rapidly came close to the presently accepted dates for the NK, but that the earlier period was still the subject of great differences in the 19th and early 20th centuries AD. Petrie consistently maintained that the historical period began in the 6th millennium and even in 1935 Borchardt put Menes at 4056 BC whereas Eduard Meyer, followed by Breasted, came close to our own estimates with 3315. Fundamental for the earlier chronology was the discovery of the Illahun Papyri (ended in 1899) with their Sothic and lunar dates which offered the first fixpoint before the NK. We can marginally note that even in 1870, Lepsius (immediately joined by Georg Ebers) energetically dismissed an Egyptian prehistoric stone age, and attributed all of the stone tools to the historic period. It was only after 1890 that a window into the deeper prehistoric past of Egypt was opened with a series of blows beginning with the discovery of the Naqada culture and fundamental

26 A. Wiedemann provided a useful synopsis of the early propositions in Ägyptische Geschichte (Gotha, 1884), 732f, and Borchardt, Annalen, 48–51, enlisting their “Main Errors”.
27 Lepsius (n. 25); cf. Georg Ebers, “Über die Feuersteinmesser in Aegypten”, ZÄS 9 (1871), 17–22.
reflections of Georg Steindorff. After some initial uncertainty with a broad spectrum of variations, the framework was gradually refined in the course of the 20th century, and C-14 dates for the OK now lead to considerable irritation when they lie a mere century above the otherwise acceptable values.

Egyptian chronology is still the touchstone by which all of the other chronologies in the ancient world are measured and the issue of its reliability is thus central. A survey and examination of the chronological prospects for the third and second millennia BC in the different parts of the ancient world was the object of a series of meetings, beginning with Gothenburg in August 1987 at the initiative of Paul Åström, and continued in August 1990 by Manfred Bietak at Schloss Haindorf, and in November 1996 at the same venue, and then in May 1998 in Vienna. These last two already took place under the auspices of Bietak’s major Sonderforschungsprojekt (Special Research Project) “Synchronization of Civilizations in the Eastern Mediterranean in the 2nd millennium BC”; another conference was held at Haindorf in May 2001.

Åström chose the title “High, Middle or Low” for his symposium and thus placed his finger on the central question, which is still not solved today: the choice between a longer, shorter, or medium position for Hammurabi of Babylon. The conference in Gothenburg did close with a formal vote on which of the three alternatives the participants preferred: against 3 votes and 3 abstentions, the “Low” chronology was adopted, and it is absolutely clear for Egypt that for the NK, this is the only chronology with which we can live. There, I endeavoured to avoid the astronomical problems when discussing the chronology of the NK, and Kitchen also stresses in his most recent contribution that the Egyptian chronology “is not based on these meagre astronomical data”. Helck was not a friend of astronomical data either.

The apparent precision of astronomical and other sources from the natural sciences (including the ice of Greenland) is always enticing, and it is difficult to resist the charm. However, we should recall just how long it was generally agreed that the original introduction of the Egyptian

---

28 Cf. Åström, ed., *High, Middle or Low?* Published in *Ä&L* 3 (1993).
30 He stressed in “Zur Chronologiediskussion über das Neue Reich”, *Ä&L* 3 (1992), 63–67, that the dated monuments should be awarded priority before the astronomical data.
calendar produced Eduard Meyer’s “oldest date in world history” of 19/VII/4241 BC—until this was demolished by Otto Neugebauer and Alexander Scharff in 1939. Even v. Beckerath’s “earliest absolute date in Egyptian history” (Chronologie, 45) is an astronomical date (the heliacal rising of Sothis at Illahun) and cannot be maintained. The controversy surrounding the Venus-dates in Mesopotamia, and the constantly renewed and alternatively calculated eclipse-dates in Western Asia (which do not touch Egypt) or the Sothis and lunar dates in Egypt have repeatedly demonstrated the problems of the astronomical dates and contributed to the primacy of the purely historical dates. They are and remain our most important source.

In an inscription in Karnak, the HP Osorkon proclaims that the cult was regularly performed, “even as the moon in its course” due to his efforts, and thus the moon and its regular phases would appear to be the very pattern for precision. But lunar dates are repeated at quite short intervals and are hardly useful if they cannot be embedded in a fine mesh of other reference points, as is, for example, the case for the Illahun dates. From 21 lunar dates in that archive, R. Krauss has now calculated the alternative dates for the first year of Senwosret III at 1862/61 or 1837/36 BC, and here it is the large number of dates which really brings weight since a single lunar date can bring no more than one further confirmation for a date which has been calculated using other means. Sothic dates with all of their countless parameters and uncertainties are likewise only of value as confirmations, and can never serve as the point of departure. And it almost never goes without any editing.

In addition, the Egyptian scribes probably never aimed for such precision; rather in their administrative tasks they will have been satisfied with rough approximations. It is thus that J. J. Janssen, who is profoundly familiar with their work, notes the “accuracy of the Egyptian scribes which is notoriously unreliable”. This will have applied to their methods of measuring time, which was extremely successful despite all its unreliability. The Egyptian calendar never depended upon intercalations and is of winning simplicity. This applies not only to the constant length of the year, but also the schematic division of the year (three seasons, best given their Egyptian names, Akhet, Peret and Shemu,

---

32 Reliefs III, pl. 16; Caminos, Chronicle, § 32 and 37f.
each of four months of 30 days each). In Pharaonic times there was never an era with a constant continuous numbering of years: with each new Pharaoh, the count began anew.

Egyptian scribes thus had no inhibitions about copying older texts in extenso without “modernizing” them, and the campaigns of a Pharaoh could be used by another later pharaoh; royal constructions could be newly dedicated with the addition of new names. But the framework of Egyptian history can only be relative, using contemporary dates from three millennia. Nevertheless here, encouraging progress has been made in the primary task of establishing a correct sequence of kings.

As a festival celebrated (with the object of replenishing his powers) in the 30th year of a king’s reign, the sed-festival is chronologically relevant, and has frequently been included in chronological discussions. The apparent exceptions to the 30-year rule led to the assumption that this festival was regularly celebrated every 30 years, regardless of actual reigns. However, most of the exceptions have been eliminated, and there remain only a few uncertain cases (Hatshepsut, Akhenaten), which can be explained in terms of particular circumstances. In the case of Hatshepsut, the celebration can be linked to the accession of Thutmosis I (or II); in Akhenaten’s case it can be anchored to the transition to the worship of Aten as king. A rigid 30-year sequence—as has occasionally been proposed—is improbable in the extreme.

The most certain and best documented cases of a sed festival which was actually celebrated concern reigns where the chronology does not offer any difficulties (Amenhotep III, Ramesses II, Ramesses III). In a number of rather dubious cases, the alleged evidence of a sed-festival has been used to argue a reign of more than 3 decades, even where there is otherwise no evidence. This concerns Amenhotep II and Thutmose IV in particular, but all of the “sources” for the sed-festivals of these rulers are mere wishful thinking, although Wente and Van Siclen refer to “jubilee evidence in favor of a long reign for Thutmose IV”. They also take the alleged sed-festival of Hatshepsut as the basis for proposing a reign of 13 years for Thutmosis II. A sed-festival is also proposed with regard to the length of the reign of Senwosret III.

---

34 On the issue of the date, etc., cf. Hornung & Staehelin, Sedfest.
Such conclusions are too risky, and this also applies to the references to a “first time of the sed-festival” by kings of the MK and NK. Were we to use this in, e.g., the case of Amenhotep I as a reference demonstrating a reign of more than 3 decades, then we would come into conflict with the documented reign of 21 years,38 and in the case of Psammetichus II whose reign is certain to have lasted 6 years, the “first time” cannot have any real meaning, and the same is true of Shoshenq I, likewise with 21 regnal years.

With Hatshepsut, the “repetition” of sed-festivals, promised by Amun and Thoth in their divine speeches in the chapelle rouge at Karnak cannot be taken at face value. With Amenhotep II and Thutmose IV, “the first time and repetition of the sed-festival” is merely the expression of a wish, which cannot allow any historical conclusions. Only with a “second time of the sed-festival”, known for Pepy II as well as the Archaic kings Den and Qa'-a,39 do the sources depart from the wishful “repetition”, and this also applies to the “3rd sed-festival” of Thutmose III and Amenhotep III, as well as the multiple repetitions documented for Ramesses II.

The abundance of sed-festival wishes, documented for virtually all the dynasties, has no chronological importance. The sed-festival was merely understood increasingly as an ideal measure of time and used in parallel with other concepts of time, precisely in order to wish Pharaoh the longest possible regnal era, whereby the hoped for chain of jubilee-festivals can be projected into the Beyond. Eduard Meyer already suggested “that this festival cannot be used for chronological purposes”,40 and recent research gives us no reason to change this appraisal.

Aside from the astronomical dates, the physical sciences offer a number of other aids, among which C-14 radiocarbon dating has been

38 In the inscription of the “astronomer” Amenemhet, L. Borchardt, Die altägyptische Zeitmessung (Berlin & Leipzig, 1920), Pl. 18. E. F. Wente, “Thutmose III’s Accession and the Beginning of the New Kingdom”, JNES (1975), 265–272, esp. 271–272 sought to use the references to a sed-festival and an alleged coregency with Ahmose to increase the length of the reign.


40 E. Meyer, Geschichte des Altertums II, 1 (1953), 149, note 2.
widely used, and become indispensable for Prehistory and the Archaic period. For the Dynastic period this procedure is, however, neither sufficiently reliable nor sufficiently precise. Climatic or seasonal dates such as harvests, the inundation, or preferred dates for expeditions in the desert regions from either bank of the Nile can provide useful checks, but we still lack a systematic and modern collection of the available dates. Even today, historical periods and events continue to be explained in terms of climatic change, although a causal relationship has never been demonstrated; the links with volcanic eruptions, such as Thera, have triggered debates, but not led to any definitive conclusions.

Highly problematic are dates based on stylistic, linguistic and palaeographic criteria. Here there are amusing discoveries, such as the dating of a Hellenistic bronze of Socrates to “ca. 700 BC”, which I noted in the Manchester Museum. The “Memphite Theology” has been pushed back and forth across the entire history of ancient Egypt from the Archaic period to the Ptolemies, like the unstoppable efforts to date the NK Books of the Netherworld to the MK or even the OK. In sculpture, there are still difficulties in the attribution of statues dating to the MK and NK and the LP. The dating of the handwriting of the Brooklyn oracle papyrus 47.218.3 can serve as an exemplary warning. In this case, 50 higher officials and priests all personally signed a document as witnesses, in Thebes on October 4, 651 BC (Julian). Examined individually, one would date the signatures quite differently, but the date of the protocol clearly assigns them all to exactly the same single day.

Synchronisms with the Near East are particularly useful when they can be linked to the relatively reliable Assyrian chronology. By contrast, the numerous synchronizations with the Hittites are virtually useless as the Hittite sources cannot provide either dates or regnal lengths. Our reliable point of departure remains the beginning of the reign of

---


42 R. Parker, A Saite Oracle Papyrus from Thebes in the Brooklyn Museum (Providence, 1962).
Taharqa in 690 BC. As Depuydt shows in his contribution, the sequence with a "day-exact chronology" begins on June 20, 688 BC (Julian), with the sale of a slave. The recently discovered inscription of Sargon II in the Tang-i Var Pass in western Iran from the year 706 does not offer absolute precision about his immediate predecessors, as had been initially hoped, and thus alternatives remain (Shebitku as coregent or sole ruler). And there remain many uncertainties in the TIP, as critics such as David Rohl have rightly maintained; even our basic premise of 925 for Shoshenq’s campaign to Jerusalem is not built on solid foundations. Nevertheless, there is such a web of dates, genealogies and relations between Egypt and the Near East that dramatic changes can be excluded (whereas Rohl wanted to cut off 141 years), above all due to the adjoining Ramesside era. In addition, there is archaeological material (such as, e.g., coffins) which has generally not been exploited for dating purposes, and there remains the prosopography of the officials and priests. For the TIP, there remain also the aids offered by the apis-bulls with their very precise data.

Alfred H. H. Hopf, S. Derbyshire. Already at Gothenburg, there was general agreement about the dates for beginnings of the NK. Helck, Kitchen and Hornung/Krauss all worked with the very narrow range of 1540 to 1530 BC for the start of the reign of Ahmose, and after some debate, there is now general acceptance for the reign of Ramesses II at 1279–1213 BC. Although we must remain wary of confusing consensus with actual fact, for the NK we now have such a fine mesh of relative dates which are themselves also woven into NE dates that major adjustments can probably be excluded. While there is room for minor cosmetic corrections, we are relatively confident about the framework. And now NE material allows for the fall of Babylon to be set at ca. 1500 BC. We can now trust that dendrochronology will provide greater precision—as the precise dating of the shipwreck of Uluburun with the Nefertiti scarab providing grounds for hope. The links in both directions—backwards to Amarna and forwards to the Ramessides—mean that even for the ancient crux of the length of the reign of Haremhab, those favoring a

---

43 Although L. Depuydt now also allows for the possibility of 691 BC, “Glosses to Jerome’s Eusebios as a Source for Pharaonic History”, CDE 76 (2001), 30–31, note 1.
44 Gasche et al., Dating. They argue for 1499 BC, but allow alternatives for 1507 and 1491 BC.
shorter reign are so hard pressed for explanations that the controversy would appear to have been silenced. In chronological issues we can never take a single item and redate it while disregarding the larger context in which it is fixed. Herein lies the great value of Manfred Bietak’s endeavor to synchronize the civilizations of the 2nd millennium by bundling and weaving them together.

After the departure of Parker and his “astronomically certain” dates there was a certain aporia with regard to the chronology of the MK. However, we will now have to take leave of Parker’s date for the start of Dyn. 12 (1991 BC) and agree on a date around the middle of the 20th century (although ca. 36 years still separate v. Beckerath and Krauss, with Kitchen in the middle). This offers encouraging possibilities for the extension of the FIP, which has hitherto been cut short. It is painful to recognize that the Near Eastern synchronism of Neferhotep I will have to be dropped, but a certain degree of scepticism is always required when dealing with synchronisms.

We are treading on very thin ice in the 3rd millennium, even though fantastically precise dates based upon astronomical orientations of the pyramids are still being published. While the general orientation does offer a certain framework, this is complemented by relative chronology. It no longer seems necessary to raise the dates for the pyramid-builders of Dyn. 4, to provide more building time and thus we can retain the 23–25 years of the king-lists. At the top we can begin with Dyn. 0 for the start of the Dynastic period in the 4th millennium, which is essential for the synchronisms with the Near East.

The most recent large-scale summary of Egyptian chronology is Jürgen von Beckerath’s Chronologie des pharaonischen Ägypten of 1997 which provides a balanced state-of-the-art picture of the foundations. In contrast to Beckerath, we strive to separate clearly relative and absolute chronology, and to provide more weight for the archaeological materials and the factors derived from the physical sciences.

Chronology has always been an arena for radical hypotheses and drastic moves. In antiquity, Christian chronographers manipulated Manetho’s dates in order to achieve a convergence with the Biblical chronology.

---


At that time, the relative chronology was artificially lengthened whereas the 20th century has been marked by efforts at radical shortening, by eliminating dynasties or placing them in parallel with others; Velikovsky aimed at an extremely bold “analysis of events” by means of which similar events or historical constellations were simply slotted together—in this fashion Hitler’s Russian campaign can be viewed as being the same as Napoleon’s, and thus interpreted as the same event.

We will always be exposed to such attempts, but they could only be taken seriously if not only the arbitrary dynasties and rulers, but also their context, could be displaced. Were one to discover that Ramesses II was really Necho II in disguise, and likewise Mernaephath as Apries and Ramesses III as Nectanebo I, one would still have to demonstrate that in each and every case the two allegedly identical rulers were also surrounded by the same officials, and that the religious and artistic contexts were also entirely compatible. In the absence of such proofs, we can hardly be expected to “refute” such claims, or even to respond in any fashion. For Dyn. 20 we have such a fine mesh of dates, virtually day-by-day, that the entire complex can hardly be assigned to another dynasty as it would simply fail. Furthermore, the entire so-called “dark ages” ca. 1200–700 BC are so well documented with archaeological material from Egypt that there is not the slightest ground for justifying a reduction. It is thus neither arrogance nor ill-will that leads the academic community to neglect these efforts which frequently lead to irritation and distrust outside of professional circles (and are often undertaken with the encouragement of the media). These attempts usually require a rather lofty disrespect of the most elementary sources and facts and thus do not merit discussion. We will therefore avoid discussion of such issues in our handbook, restricting ourselves to those hypotheses and discussions which are based on the sources.

It is characteristic that the drastic reductions touching upon the Old Testament play a very important role, as in antiquity. In order to make Hatshepsut the Queen of Sheba and thus the contemporary of Solomon, we are obliged to remove the 500 years which separate these two by aligning a number of dynasties in parallel, rather than sequentially. Here we face those ideological pressures which always have an unsuitably powerful influence on the study of historical data.

We have referred to the typically Egyptian association of the highest conceivable fullness of time with the solar orbit. “The lifetime of Re in heaven” was the absolutely highest conceivable temporal horizon for the ancient Egyptians, as the duration of being, comparable with the
lifetimes of galaxies in modern astronomy. According to the *Litany of Re* (13th appellation) it was “greater than the West and its images”, and thus actually greater than the duration of the Beyond. In the *Book of the Celestial Cow*, this concept is transformed into an image where *neheh* and *djet* “those two old and great gods” appear as the pillars of heaven. As long as time endures, heaven will rest on its pillars and the solar orbit will be maintained daily. Long before the Pythagoreans, the Egyptians had postulated the concept of the eternal return, which was finally given its impressive form by Nietzsche who was in turn drawing on Goethe: “How often ‘tis repeated! will always be/repeated through eternity” (Faustus verses 7012f.). But in Egypt, it was never the return of the same, but rather return in a form transformed: the sun is every day a new sun, reborn each day again by the goddess of heaven.
PART I

EGYPTIAN CHRONOGRAPHERICAL TRADITION
AND METHOD OF DATING
I. 1 ROYAL ANNALS

The Editors

Royal Annals of Memphis

There are several fragments which almost certainly derive from more than one stone slab, inscribed on both sides.\(^1\) The fragment with most text preserved is the so-called Palermo stone; other pieces are in Cairo and London. Nearly all of them were known and had been studied in the first decades of the last century, and some specialists have proposed reconstructions of the original text.\(^2\) The inscriptions which record events in the reigns of Dyn. 1 through part of Dyn. 5 are arranged in a series of rectangular compartments, set out in horizontal rows, reading from right to left. Each compartment in row 1 contains only the name of a mythical or early historical king. In the other rows, the hieroglyph for “year” defines the right side of a compartment. Below the compartments, the height of the annual Nile inundation for that year is recorded.\(^3\)

The inscription of the first incomplete compartment of row 2 cites “following of Horus” and “Birth of Anubis”. The second and third compartments are separated by a dividing line that indicates a change of reign. The second compartment lists “6 months 7 days”, presumably the time elapsed in the last incomplete year of that reign. The third compartment lists “4 months 13 days”, evidently with reference to the new king, but the two intervals do not add up to a full year be it lunar or solar. The compartment also records two rituals associated with accession years, “the Unification of the Two Lands” and the “Circuit of the Wall”.

For nearly all of the first three dynasties, the annals cite only occasions that gave a year its name. Beginning with Dyn. 4, the annals begin to resemble chronicles recounting a multiplicity of memorable events in each year of a reign. The similarity of some so-called year labels of Dyn. 1 to certain entries in the annals suggests that both derive from the same archival institution. Specialists do not agree on when the annals were compiled nor when the slab(s) were inscribed. Palaeography and the rendering of the royal names of the Early Dynastic Period favor an OK date, but it cannot be excluded that the existing fragments come from later copies.

As Wilkinson observed, most scholars who have studied the annals have interpreted the information recorded at face value, instead of considering the cultural context. But even if cited events did not actually occur, the year itself may be accepted as fact. Being a later compilation, the annals are a less valid source for reconstructing regnal years of Early Dynastic kings than contemporaneous data would have been. A definitive reconstruction of the Annals as a whole is not possible, and their value for the Early Dynastic period is problematic. A revision of the most recent attempt at reconstruction is made further below.

South Saqqara Stone and Later Annals

Annals of Dyn. 6 were inscribed on both sides of a slab measuring ca. 226 × 92 cms that was reused as a sarcophagus lid. At that time the

---

text was summarily erased. Baud and Dobrev analyzed the structure of the text and suggested readings of details.\(^9\) Traces can be identified of the titularies of the Dyn. 6 kings Teti, Userkare\(^1\), Pepy I, and Merenre\(^2\) which show that the count was biennial during their reigns.

From later times there is a portion of the annals of Amenemhet II containing chronicle-like entries.\(^10\) The so-called annals of Thutmose III\(^11\) report on a daily basis, whereas the others provide yearly overviews.\(^12\) The annals of Pami list offerings donated to the cult in Heliopolis during his reign.\(^13\)

Proposed Revision of Recent Reconstructions of the Memphite Annals Stone
(Fig. I. 1.2)

The latest reconstruction of the annals proposed by Beckerath,\(^14\) can be improved by taking into account Baud’s corrections.\(^15\) Any attempt at reconstruction must be based on a sound order of succession. This is the case for the kings of Dyn. 1 and for Hetep-sekhemwy, Ra\(^3\)-neb, and Ny-netjer of earlier Dyn. 2, since Kahl established that Weneg is the nsw bjt nb.tj name of Ra\(^4\)-neb.\(^16\) The succession in the second half of Dyn. 2 is unclear. Traces of a serekh with the Seth animal on Cairo 1 suggest that Per-ibsen followed Ny-netjer, but it is also possible that Egypt was divided at that time. If so, the Annals might list the kings in succession although they actually ruled simultaneously. It has recently been confirmed that Kha-sekhemwy’s successor was Netjery-khet (Djoser), not Nebka.\(^17\) The sequence Kha-sekhemwy: Djoser is recorded in row 5 of the Palermo stone. Djoser’s successor Sekhem-khet may be identifiable

---

\(^9\) M. Baud & V. Dobrev, “De nouvelles annales de l’Ancien Empire égyptien. Une <Pierre de Palerme> pour la VI\(^e\) dynastie”, \textit{BIFAO} 95 (1995), 23–92; idem, “Le Verso des annales de la VI\(^e\) dynastie. Pierre de Saqqara-Sud”, \textit{BIFAO} 97 (1997), 35–42; see also below Baud, Chapter II. 5.


\(^11\) Urk. IV 645–673.

\(^12\) W. Helck, \textit{Lf I}, 279.


\(^16\) See below Kahl, Chapter II. 2.

\(^17\) See below Seidlmayer, Chapter II. 3.
on the large Cairo fragment; the succession at the end of the dynasty is unclear.

Maximum and minimum distances between the Palermo stone and Cairo 1 can be determined on the basis of the preserved compartments for [Djoser] in row 5. Beckerath’s change of reign after the first completely preserved compartment on Cairo 1 is spurious. Rather, there are $\frac{1}{2} + 9$ compartments on Cairo 1 that belong to [Djoser]. If the lost titulary was centred and had a width of 7 compartments, then at least $\frac{1}{2} + 9 + 7 + \frac{1}{2} + 9 = 26$ compartments result for Djoser. If the first of the 26 compartments lay to the left of the Palermo stone, then the gap is 17 compartments or more. If the first of these compartments was identical with the first of [Djoser’s] preserved $\frac{1}{2} + 4$ compartments on the Palermo stone, then the gap measures at least 12 compartments in row 5, exceeding the 9 compartments deduced by Wilkinson. A gap of 12 compartments in row 5 is not compatible with a gap of 9 compartments in row 2. According to Kaiser the internal evidence of the Palermo stone and Cairo 1, including the correspondence of rows 2 to 5, favours 9 missing compartments in row 2 as does the regularity of the “followings of Horus” and the six-yearly bark festival in rows 2 to 4. We accept Kaiser’s arguments for the

![Fig. 1.2. Revised reconstruction of the Annals stone (Verso)](image)

---

20 W. Kaiser, *ZÄS* 86 (1961), 44.
size of the gap in row 2 and the corresponding gap of 13 compartments in row 5 in Beckerath’s reconstruction.

The left edge of row 2, and thus of the other rows on the recto (if row 3 begins with “Serpent”) can be determined with reference to the completely preserved titulary of Djer that spans 7 compartments. Taking into account the gap of 9 compartments in row 2 between Cairo 1 and the Palermo stone, there were 20 compartments before and after Djer’s centred titulary, for a total of 47 complete compartments.

The determination of the right edge of the inscribed field is more difficult. Beckerath errs in identifying Kha-sekhemwy on the Palermo stone as Nebka and in construing the right edge of row 5 by adding the TC’s 27 years of Bebti (<Kha-sekhemwy) to the right of **Nebka’s compartments. By contrast, extrema for the right edge can be determined in row 6 by extrapolating the early years of Snofru. The minimum number of compartments is 7 (zp years 1 to 6 and a year zm-‡wy), and the maximum 12 (adding m-ht zp years 1 to 5). Thus at least 16 and at most ca. 27 compartments belonged in row 2 to the right of Djer’s reign. We opt for the maximum 75 compartments, corresponding to 74 years, because the incomplete last year of [‘Aha] and Djer’s first one occupy two compartments. The recent discovery of a year tablet of Nar-mer makes it possible that row 1 recorded not only ‘Aha, but also Nar-mer.21

The reign of Semer-khet is completely preserved in \( \frac{1}{2} + 7 + \frac{1}{2} \) compartments in row 3 on Cairo 1. Towards the left, ca. 24 compartments can be reconstructed for Qa-‡a as the successor of Semer-khet, if the 47th compartment for Djer marks the left edge of the inscribed field. To the right of Semer-khet, half of a compartment and part of the last complete compartment of ‘Adj-ib are preserved without traces of his titulary; Wilkinson postulates at least \( \frac{1}{2} + 7 + \frac{1}{2} \) compartments for him.

Beckerath assumes that Den celebrated the Sed festival which is attested on the Palermo stone in his 30th year. The assumption is unacceptable, if only, because Qa-‡a celebrated two Sed festivals according to contemporaneous sources, whereas he ruled less than 30 years according to Beckerath’s own reconstruction. The end of Den’s titulary is preserved on the Palermo stone and its beginning on Cairo 5.22 If Den’s titulary had a width of 7 compartments, then at least \( \frac{1}{2} + 13 + 7 +

---

21 Wilkinson, Annals, 72.
22 Note, however, that Cairo 5 may be a forgery.
13 + ½ = 34 years are deducible, resulting in ½ + 11 + ½ years for ‘Adj-ib. At most ½ + 17 + 7 + 17 + ½ compartments can be proposed for Den, if ‘Adj-ib reigned a minimum of 8 years.

If the right edge of the inscribed field is defined by 12 reconstructed compartments for Snofru in row 6, then to the right of Den there should be at least 8 and at most 12 compartments for “Serpent”. The reconstruction results in at most ca. 90 compartments in row 3.

Row 4 preserves a series of counts, combined with “followings of Horus” from the reign of Ny-netjer whose titulary is partially preserved. The example of Djoser in row 5 shows that the first count could occur as late as the second year. If so, then ca. ½ + 16 + 7 + 16 + ½ = 40 compartments are possible. If the width of the centred titulary amounted to 8 compartments, then 41 compartments result. The reconstruction yields a gap of 2 compartments at most between the 41st compartment of Ny-netjer and the following reign on Cairo 1. The dilemma cannot be solved by making the distance between the Palermo stone and Cairo 1 smaller, because we already presume the minimum distance.

The position of the titulary of Per-ibsen (?) as Ny-netjer’s successor implies that the former’s reign spanned about 10 compartments. The remainder of row 4 towards the left edge amounts to ca. 22 compartments (with the width of the Cairo 1 compartments), to be distributed among the kings of Dyn. 2.

Between Ny-netjer’s reconstructed first year and the right edge of row 4 as defined by Snofru’s reconstructed first compartment, there remain ca. 29 compartments (width of Palermo stone compartments) for Ra’-neb and Hetep-sekhemwy. A reconstruction along these lines results in a total of at least ca. 104 compartments in row 4.

In row 5 the reconstruction of the preserved counts that are combined with “followings of Horus”, allows the reconstruction of at least 10 lost compartments of [Kha-sekhemwy] and of another 1 + ½, if the first count and “following of Horus” occurred in the second regnal year. The result is 18 compartments for [Kha-sekhemwy], leaving ca. 17 compartments towards the right edge of row 5 for kings of late Dyn. 2. For [Djoser] ½ + 26 + ½ compartments can be reconstructed and 7 compartments for [Sekhem-khet] as his successor. The remaining ca. 16 compartments at the left end of row 5 belong to the last three kings of Dyn. 3. The reconstruction yields altogether 86 or 87 compartments at most.
About 19 compartments should follow after Snofru’s *rmp tp* 8 on the Palermo stone, if Djer’s 47th compartment defines the left edge of the inscribed field. Reconstructed row 6 contains a maximum of ca. 34 compartments for Snofru.

Rows 7 and 8 of the recto of the Annals are mostly destroyed. Cairo fragment 3 shows Djedefre occupying the last third of row 8, whereas the rest of it and all of row 7 must have belonged to [Cheops]. The short reign of Bicheris might have been accommodated at the end of row 8. If rows 7 and 8 amounted to more than 30 years for Cheops and Djedefre, then row *9 would not be long enough for Khephren, and Beckerath is right in postulating a row *10. (Row 1 would yield at least 100, and at most 123 compartments, possibly corresponding to the 115 mythical kings listed in the *TC* before Menes.)

Altogether we estimate ca. 75 compartments (= 74 years) in row 2, ca. 90 compartments in row 3, ca. 104 compartments in row 4, and ca. 87 compartments in row 5, corresponding to ca. 164 years for Dyn. 1, ca. 141 years for Dyn. 2 (if the reigns recorded were successive), and ca. 50 years for Dyn. 3, or a total of ca. 355 years for Dyns. 1 to 3. The result is virtually the same as Kaiser’s figure of 359 years, but markedly less than Beckerath’s 393 years. The reliability of any sum is, however, open to question; whereas the order of succession as preserved in the Annals conforms to contemporaneous data, its relevance for counting regnal years remains conjectural.
I. 2 THE TURIN KING-LIST OR SO-CALLED
TURIN CANON (TC) AS A SOURCE FOR CHRONOLOGY

Kim Ryholt

Introduction

The King-list or “Royal Canon of Turin” is the only true king-list pre-
erved from ancient Egypt before the Ptolemaic period. It is a “true
king-list” in the sense that the compiler of the document aimed at
recording all of the kings of Egypt along with their reign-lengths. This
stands in striking contrast to the other lists, such as the cultic assem-
blages of deceased kings engraved on walls in the temples of Sety I
and Ramesses II at Abydos and in the tomb of the priest Tjuloy at
Saqqara, even if these lists preserve the royal names in forms that are
superior to those of the more or less contemporaneous TC.

Only two studies on the nature of the TC as such have been pub-
lished; the first by Redford in 1986, and the other by myself in 1997. Studies of the chronological implications and attempts at reconstruc-
tions of the list have been more numerous. The most significant advances
in the reconstruction touch the Late OK, FIP and the SIP.

Around 1820 Bernardino Drovetti, French Consul in Egypt, acquired
the TC, which eventually passed to the Turin Museum. The script is
hieratic, written on the reverse of a discarded tax register dating to the
reign of Ramesses II. Thus the king-list could have been written at the
earliest in the time of Ramesses II himself. The TC can be accurately

---

1 For detailed discussion of the Turin king-list, see K. Ryholt, Å&L 14 (2004), 135–155.
2 See Redford, Annals, 18–24.
3 Redford, Annals, 1–18.
4 Ryholt, Situation, 9–33.
none of them whereas several can definitely be rejected, cf. Ryholt, Situation, 21. Note
that Beckerath, Chronologie, 20, follows Helck’s reconstruction.
described as a copy, drawn up in a somewhat careless manner on waste paper, from a damaged and imperfect original. The scribe apparently did not attempt to supplement missing information from other sources which may have been available at the time. Apart from a section cut off in antiquity, the papyrus was presumably intact upon discovery. It has since been reduced to more than 300 fragments, apparently due to rough handling. Since Champollion first saw and described it in 1824, the papyrus has deteriorated considerably. However, thanks to the efforts of several scholars over the past 150 years, most of the larger fragments have now been joined. Yet, many of the very small scraps remain unpublished, and the position of many important fragments remains conjectural.

The papyrus has a large format, measuring 42 cm in height and about 1¾ m in length. There are now 11 columns; one or two were lost in antiquity when the piece of papyrus was cut off. It could have included Dyns. 17, 18 and part of Dyn. 19. What follows refers to a new reconstruction, in progress (Table I. 2.1).

Table I. 2.1. Concordance between Gardiner’s edition and the new reconstruction

| Column 1 | Gardiner col. I |
| Column 2 | Includes Frg. 41–42 (Gardiner col. IX) and Frg. 150–152 and Frg. 22+unnumbered fragment (Gardiner col. X) |
| Column 3 | Gardiner col. II |
| Column 4 | Gardiner col. III |
| Column 5 | Gardiner col. IV |
| Column 6 | Gardiner col. V |
| Column 7 | Gardiner col. VI |
| Column 8 | Gardiner col. VII |
| Column 9 | Gardiner col. VIII |
| Column 10 | Includes Frg. 105+108 (Gardiner, col. IX), Frg. 138 (Gardiner, col. X) and unnumbered fragments (Gardiner, col. X.13–21) |
| Column 11 | Gardiner col. XI |

---

6 Thus, for instance, the names of ten late OK kings are lost from TC and the damaged writings of the names of two following kings are intact in the Abydos List.
7 For the new arrangement of the SIP section (columns 7–11) see Ryholt, *Situation*, 69–75, 94–97, 118–119, 151–159, 163–165.
Groupings of Kings; Headings and Totals

The TC lists three main categories of “rulers”:

1. god and demigod kings (ntr.w): c. 1½ columns Cols. 1-2 (bottom)
2. spirit kings (ph.w): c. ½ column Cols. 2 (bottom)-3 (top half)
3. historical or human kings (~rm.t.w): 8½ columns Cols. 3 (bottom half)-11

Each ruler’s name and the length of reign, either precisely in years, months and days, or in years alone, was recorded. The variations in detail provided for individual kings indicates that the Vorlage made use of a number of sources with different formats (Table I. 2.2). The most information is provided for the archaic kings; their reigns were recorded in years, months and days and their ages at death were also noted. But the royal names in this section are the most severely corrupted. The details are therefore not necessarily indicative of superior source material.

Table I. 2.2. Division of the Turin King-list into sections

<table>
<thead>
<tr>
<th>Section</th>
<th>Period</th>
<th>Details provided about kings</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Archaic Period</td>
<td>Dyns. 1–2 Years, months and days + Age at death</td>
</tr>
<tr>
<td>B</td>
<td>OK</td>
<td>Dyns. 3–6 Years alone 10</td>
</tr>
<tr>
<td>C</td>
<td>Late OK &amp; FIP (Herakleopolis)</td>
<td>Dyns. 7–8 Years, months and days</td>
</tr>
<tr>
<td></td>
<td>FIP (Thebes)</td>
<td>Dyn. 11 Years alone</td>
</tr>
<tr>
<td>D</td>
<td>MK &amp; SIP</td>
<td>Dyn. 12 Years, months and days</td>
</tr>
</tbody>
</table>

Explicit information about the nature of a given group of kings is provided by headings, most damaged. The coherent bits of what remains may be translated as follows:¹¹

---

¹⁸ This division of the kings is based on Manetho’s terminology, cf. Waddel, Manetho, 2–19.

¹⁹ By contrast to Manetho gender goes unremarked. The TC included at least one female ruler, viz. Nofrusobk (7.2). Nitocris of Dyn. 8, who has hitherto been considered a woman on the basis of later tradition, seems to have been male; see K. Ryholt, ΖΑΣ 127 (2000), 92–93, 99–100.

¹⁰ There are two anomalies within this section where both months and days are recorded as well, i.e. TC 4.7 (a difficult royal name, or perhaps rather the record of a lacuna, recorded between Sekhem-khet and Huni) and TC 5.1 (Teti).

¹¹ Redford, Annals, 11–13, and Helck, ΣΑΚ 19 (1992), 151–216, offer different recon-
Table I. 2.3

Heading for Dyns. 1–5 (3.10)
“[Kings of the house of (?)] King Menes.”

Totals for Dyns. 1–5 (4.26)
“Total of kings from Menes until [Wenis: x amounting to 767 (or 768) years.]”

Totals for Dyns. 6–8 (5.14–15)
“[Total of] kings until Neferirkare: x] amounting to 181 years, 6 months, 3 days, and a lacuna of 6 (years). Total: 1[87 years, 6 months, and 3 days].”

Totals for Dyns. 1–8 (5.15–17)
“[Total of] kings; their kingship, their years, and a lacuna thereto]: 9[4]9 years and 15 days, and a lacuna of 6 years. Total: [x kings amounting to] 955 years and 1[5] days.”

Totals for Dyns. 9–10 (6.10)
“Total: 18 kings . . .”—rest lost

Heading for Dyn. 11 (6.11)
“Kings of . . .”—rest lost

Totals for Dyn. 11 (6.18)
“[Total:] 6 kings who ruled 1[36 years] and a lacuna of 7 (years). Total 143 years.”

Heading for Dyn. 12 (6.19)
“[Kings of] the residence ‘It-θw.’”

Totals for Dyn. 12 (7.3)
“Total of kings of the residence [‘It-θw]: 8 who ruled 213 years, 1 month and 17 days.”

Heading for Dyn. 13 (7.4)
“Kings [who were] after the children (?) [of Dual] King [Sehet]epibre.”

Totals for Dyn. 15 (c. 10.29)
“[Total:] 6 [Hyk]sos. They ruled 1[0]8 [years].”


12 There is not space enough for this figure to have included years, months and days; possibly even the years were excluded and simply the number of kings recorded. The number of years is based on the summations for Dyns. 6–8 and 1–8.


14 Reading [hr]-št hrd[w], see Ryholt, Ä&L 14 (2004), 142, n. 38. An alternative reading [hr]-št ms[w], which produces the same sense, was proposed by J. P. Allen at the colloquium The Second Intermediate Period: Current research, future prospects at the British Museum, 2004.
There is no heading for the kings of Dyn. 6, nor for the Herakleopolitan kings or those of Dyn. 14. Chronological details important from a modern perspective go unmentioned, above all, information on overlapping dynasties and coregencies. When two groups of kings overlap, they are simply listed consecutively. For example, the first Theban kings of Dyn. 11 follow the last Herakleopolitan rulers with whom they were contemporaneous.

The reign-lengths of Dyns. 3–6 and 9–10 recorded in full years alone pose a special problem. It remains unclear how these figures were rounded off. The reliability of the totals provided for groups of kings is intimately related to the accuracy with which the individual reigns were recorded. The totals provided for Dyns. 6–8 and 1–8 are subject to the same factors. The former total again includes a lacuna and both include a series of kings whose reigns are expressed only in years while others have reigns recorded in years, months and days. The total for Dyns. 1–8 includes no less than 26 kings recorded by years alone, resulting in a maximum margin of error of a quarter century. The part which appears to have suffered the most is the Late OK section (Dy whole 7–8). As noted above, a group of ten consecutive kings is entirely lost and the names of the next two are only partly preserved. The lost kings are accounted for by the word wsf (“lacuna”) in both the total for Dyns. 6–8 and that covering all of Dyns. 1–8.

The total of Dyn. 11 is recorded in full years only, obviously because the kings reigns were so recorded. Since the fractions of individual reigns are omitted, the total is inevitably approximate, with the margin of error amounting to few years. The error might be more significant if “Mentuhotep I”, who never actually reigned as king, was assigned a fictitious reign-length. Finally, there is the lacuna referring to Mentuhotep IV and the question of the accuracy of the 7 years ascribed to him in the total for Dyn. 11.

There is a certain amount of evidence that several Dyn. 12 kings reigned jointly and that some coregencies could have lasted up to a decade. Yet the scribe who calculated the sums for the individual groups of kings was not aware of (or did not take account of) the overlapping reigns. He simply added the full lengths of individual reigns to calculate the total for the dynasty. The overlapping reigns probably

---

accounted for a bit more than 2 decades. Furthermore the TC’s information about Dyn. 12 is disquietingly incompatible with the ample contemporaneous sources.\textsuperscript{16}

In the sections for Dyns. 13 and 14, the notations of at least two lacunae are preserved. One is recorded after the entry for Sonbef (7.6) and the other after Nebsenre\textsuperscript{e} (9.14). It is not clear how many kings were lost, but at least one king can be identified by name in relation to the first lacuna, viz. Nerikare\textsuperscript{f}.\textsuperscript{17} Further kings may have been lost in the same sections.\textsuperscript{18} There are two instances where reign-lengths are partially damaged. One is \(sw\text{-}lb\text{-}r\) of Dyn. 14 whose reign is recorded as “[x years], lacuna, 18 days” (9.12) and the other is \(sust\text{-}n\text{-}r\) of Dyn. 16 with “12 years, lacuna, [x] days” (11.8).

\textit{Relation to Manetho’s King-list}

It is significant that the five sections A–E in Table I. 2.2 all correspond to the dynastic arrangements Manetho adopted. Section A equates to Manetho’s Dyns. 1–2, Section B to his Dyns. 3–6, Section C to his Dyns. 7–10, Section D to his Dyn. 11, and Section E to his Dyns. 12–16. The correspondence becomes even more striking when the textual division of the kings into groups is taken into account. The TC groups the following kings: Dyns. 1–5, Dyn. 6, Dyns. 7–8, and Dyns. 9–10, followed by Dyns. 11, 12, 13, 14, 15 and 16. The main difference from Manetho’s list is that the TC does not split up Dyns. 1–2 (Archaic Period), Dyns. 3–5 (Memphis), Dyns. 7–8 (Memphis), and Dyns. 9–10 (Herakleopolis).\textsuperscript{19} The few reigns of the OK that were not corrupted beyond recognition in Manetho seem to be either rounded up or down in comparison to the TC. Hence Manetho’s figures seem to be based on a tradition with reigns recorded in years and months if not also in days.

\textsuperscript{16} See below Schneider, Chapter II. 7.
\textsuperscript{17} Ryholt, \textit{Situation}, 318.
\textsuperscript{19} Cf. below Seidlmeyer, Chapter II. 3.
Conclusion

Despite its immense historical value, the TC is in various ways far removed from an ideal source. The incomplete state of preservation and inadequate publication inhibit full access both to the information it once contained and to what remains. There are also several intrinsic features that detract from its value as chronological source. If the scribe’s priorities were historical, he was clearly not primarily concerned with either absolute or relative chronology. This is obviously not an ideal point of departure, and it warns us that there may be errors that we are presently unable to verify lurking in the document. Accordingly, the text should be treated with circumspection.
I. 3 KING-LISTS AND MANETHO’S AIGYPTIACA

The Editors

Comprehensive king-lists are engraved on walls in the temples of Sety I and Ramesses II at Abydos, at Karnak and in the tomb of the priest Tjuloy at Saqqara.\(^1\) They list kings in an apparently correct sequence and render their names in forms superior to those of the more or less contemporaneous TC. In the Abydos list, the names of ten kings lost from the Late OK section of the TC and two damaged names that follow are recorded intact.\(^2\) By contrast, the king-list at Karnak from the time of Thutmose III, though mentioning a number of rulers omitted in other lists, does not give the names in historical sequence. Since all these lists served the cult of the deceased kings, the names sufficed, and further information, such as regnal years, was not necessary. None mentions kings considered to be illegitimate, for example Hatshepsut or the Amarna rulers. The later king-lists of Greek historians seem to derive from the annalistic tradition, rather than from such cultic king-lists.

In Book II of his History, Herodotus reported the names and correct reign lengths for the kings of Dyn. 26, and he stated that there were 330 earlier kings, including 18 Ethiopians and Queen Nitocris, but his information on the period prior to Dyn. 26 is virtually useless for reconstructing Egyptian history and chronology.

A king-list with 38 + 53 names and regnal figures is attributed to Eratosthenes.\(^3\) Apollodoros preserved 38 names that were copied by George the Monk, known as Syncellus. No. 29 is easily recognizable: ΧΩΜΑΕΦΘΑ < Ṣṭy mr.n Pḥ, i.e. Sety I who is given 11 regnal years, as is no. 36 ΣΙΦΘΑΣ < *ΣΙΦΘΑΣ, i.e. Siptah with 5 regnal years.\(^4\) The names are accompanied by their secondary Greek translations, added only after noticeable corruption of the text occurred.

---

\(^1\) For the Abydos and Saqqara lists, see Redford, Annals, 18–24.
\(^2\) Cf. above, Chapter I. 2.
\(^3\) Waddell, Manetho, 213–225.
\(^4\) Krauss, Amarnazeit, 274–276, with additional literature.
Diodorus utilized Herodotus and other sources for the chapters on Egypt in his *Bibliotheca Historica*. As a rule he did not list regnal years, except for Kheops and Khephren where he follows Herodotus. Diodorus mentions five ruling Egyptian queens instead of Herodotus’s single example.

Manetho’s *Aigyptiaka* is purportedly the work of a priest who was a contemporary of Ptolemy II. The *Aigyptiaka* displays remarkable similarity to the Turin King-list: rulers, including illegitimate kings recorded by name with reign length, arranged in groups, and listed in a sequence. But there are two features which are specific to the *Aigyptiaka* and which have no counterpart in pharaonic tradition: glosses and antisemitism. The former reflect primarily Herodotus and Diodorus, which suggests that the list may have been compiled after Diodorus. The antisemitism is manifest in the story of the enemies of king Amenophis, i.e. the lepers of Egyptian origin and the descendants of the Hyksos as common forefathers of the Jews. Antisemitism is not attested before the Maccabees; therefore the story cannot be ascribed to Manetho in the 3rd century BC, but should rather be dated to the 1st century AD. The traditional explanation that Manetho made use not only of authentic records, but also of popular romances devoid of historical value, does not take into account the motive of antisemitism and its history.

It is a fact that the *Aigyptiaka* was cited by none of the great compilers of antiquity like Pliny, Diodor, and Strabo, nor was it used by any known Alexandrian scholar. When Apion cited the destruction of Avaris by ‘Ahmose according to the Egyptian historian Ptolemy of Mendes, he did so without mentioning the differing version in the

---

Aigyptiaka. The first to cite the Aigyptiaka was Flavius Josephus in Contra Apionem; subsequently, the christian chronographers Africanus and Eusebius cited it; still later Syncellos contributed greatly to the transmission. The silence of authors earlier than Josephus and the anachronisms in the text arouse suspicion that it is a pseudepigraphic work, based on the authentic tradition of the annalistic king-list, but compiled after Diodorus.

Gardiner’s comments on the Aigyptiaca can be paraphrased as follows: In Manetho’s work the entire history of Egypt, after the reigns of the gods and demi-gods, was divided into 31 dynasties of royal families, beginning with Menes and ending with Alexander the Great’s conquest in 332 BC. In spite of all the defects this division into dynasties exhibits, it has taken so firm a root in the literature of Egyptology that there is but little chance of its ever being abandoned. In the forms in which the book has reached us there are inaccuracies of the most glaring kind, these finding their climax in Dyn. 18, where the names and true sequence are now known from contemporary sources. Africanus and Eusebius often do not agree; for example Africanus assigns nine kings to Dyn. 22, while Eusebius has only three. Sometimes all that is vouchsafed to us is the number of kings in a dynasty (so in Dyns. 7–10, 20) and their city of origin. The royal names are apt to be so incredibly distorted, that of Senwosret I of Dyn. 12, for instance, being assimilated in the form of Sesonchosis to that of Shoshenk of a thousand years later. The lengths of reigns frequently differ in the versions of Africanus and Eusebius, as well as often showing wide departures from definitely ascertained figures. When textual and other critics have done their best or worst, the reconstructed Manetho remains full of imperfections.

None the less, Manetho did preserve details which have been conceded as historical by Egyptologists if only very late. An example is the name of a king Nephercheres, whom Manetho had placed in Dyn. 21; in the 1930s a small object bearing the name was found among

---

14 See in detail Beckerath, Zwischenzeit, 11–20; idem, Chronologie, 35–38, assuming that the Aigyptiaka is authentic.


16 Gardiner, Egypt, 46–47.
the grave goods of Psusennes I in Tanis.\textsuperscript{17} Another example is the ruling queen Akencheres (<‘Ankhetkheprure’) of Dyn. 18, the daughter of a king, whose historical existence was archaeologically first confirmed in the 1970s.\textsuperscript{18} Manetho’s reign lengths are at times correct to the month, for example in the case of Ramesses Miamun, i.e. Ramesses II, who reigned for 66 years and 2 months according to Josephus’s copy of Manetho. On the other hand, Manetho’s pre-Dyn. 18 regnal figures often seem to be systematically distorted by multiples of ten,\textsuperscript{19} probably in an attempt to bring Egyptian chronology into line with a version of biblical chronology.

\begin{footnotesize}
\begin{enumerate}
\item Cf. below, Chapter II. 9.
\item Cf. below, Chapter II. 8.
\item Helck, \textit{Manetho}, 81–83.
\end{enumerate}
\end{footnotesize}
I. 4 GENEALOGY AND CHRONOLOGY

Morris L. Bierbrier

Genealogy, the study of family pedigrees, can provide a useful fix on proposed chronological schemes for ancient Egypt. Obviously the passage of time can be limited or, in certain instances, can be expanded, by the knowledge that an individual, his family, or a stated number of generations of a family, lived within a set period. It has been calculated that a generation might comprise 25–35 years on average, but, in the surviving ancient Egyptian documentation, we are not necessarily dealing in averages. Thus the possibility remains that in certain cases an elderly father might produce a son who in turn might live to a great age and so throw any calculations off. A complex and interlinked genealogy might overcome this possibility but such genealogies are rare.

The use of genealogies in chronological research is limited by several factors. The most important of these is the lack of documentation. This is especially true of those periods when the chronology is most uncertain. In other periods, abundant documentation can lead to confusion as the same names are used repeatedly and identification of different generations may be uncertain. The documentation normally only refers to the elite families although occasionally at such places as Kahun or Deir el-Medina, information on lower-ranking families is forthcoming. It is now clear that the Egyptians practised some form of ancestor worship and records were certainly kept by some families of their ancestral lines although such information was not necessarily recorded on stone and thus has not survived to posterity. The census records which survive give detailed information of families with both parents’ names. It is of course true that Egyptians, like all other people down to this day, could be tempted to falsify their genealogies or

---

at any rate to attach themselves erroneously to a good family line so particularly illustrious ancestries should be treated with caution. The genealogical information becomes fuller as time progresses and is especially voluminous from the late NK to the LP. Some pedigrees are known extending up to 13 generations, but it is usually difficult to fix these to a certain chronological range. At least two pedigrees claim a genealogical link back to the MK. However, the inscription of Khnumibre jumps abruptly from Dyn. 19 to Imhotep of Dyn. 3 and so cannot be taken as a serious link. Similarly the inscription of ‘Ankhhefensakhmet which names 60 generations, mostly holders of the high priesthood of Ptah, going back to the MK with the contemporary ruler for each, has too many gaps and inconsistencies to be accepted at face value. It seems to have been put together from various lists of high priests (probably unrelated) and other ancillary material. It can only be used when independent information is available from other sources.

Another problem with genealogy is the lack of proper genealogical terms in the Egyptian language. “Father” jt, “Mother” mwt, “Son” z3, “Daughter” z3t, “Brother” sn, and “Sister” sn t are used, but there are no words for other relationships so “uncle” is “brother of my father” or “nephew” is “son of my brother”. To avoid such long circumlocutions, jt / mwt could be used for “father-/mother-in-law”, while sn might also mean “brother-in-law”, “nephew” or even “uncle”, or might conceivably be no relation at all but a good friend and contemporary. The term jt can also be used to specify an ancestor and not just a father. One could disentangle the exact relationships if proper documentation were available for all problems, but it is usually not.

With regard to maternal relationships, it is not always clear that the wife of an official is the mother of his children unless specifically stated.

---

4 Couyat & Montet, Ouâdi Hammâmât, Nos. 91–93; Wildung, Rolle, Doc. XVI.130, 83–84.
5 Borchardt, Mittel, 96–100; C. Maystre, Les grands prêtres de Ptah de Memphis (Freiburg & Göttingen, 1992), 93–97.
7 G. A. Gaballa, The Memphite Tomb-chapel of Mose (Warminster, 1977), 22; Allam, Ostraka, 44.
Such a relationship is usually assumed but may not be correct. The guardian Penbuy of Dyn. 19 is known to have had two wives—Amentetwosret and Iretnefer. A stela shows Penbuy, Iretnefer and his adult son Amenmose, but another shows him with Amentetwosret and an infant Amenmose. In the first stela, Amenmose must be shown with his step-mother, but the stela gives no indication of this. The dissolution of marriages by death or divorce would not have been uncommon, yet plurality of marriages is rarely documented.

For genealogies to have a major impact on chronological problems, it is essential that there must be a clear and uncontroversial link of genealogy to some fixed chronological point, usually the reign of a King. If links can be found with successive generations, the effectiveness of the genealogy with regard to the order of succession and more importantly the maximum passage of time becomes even more crucial. If the genealogy in question is that of the royal family itself, then the fixed links are self-evident. One important genealogy of this nature is that of Pasenhor of Dyn. 22 who traces his ancestry through 16 generations including four kings.

Very little documentation, let alone genealogical information, survives from the development from writing ca. 3400 BC to the end of Dyn. 3. One key document, recently discovered at Abydos, is the dynastic seal of King Den of Dyn. 1 which lists his immediate predecessors: Nar-mer, ‘Aha, Djer, and Wadj. The genealogical content is provided at the end with the name of the King’s mother as Merytneith. In view of her appearance, it is highly probable that not only do we have a dynastic listing but also a genealogical listing—father-to-son. Unfortunately, the length of time per generation can only be estimated. A second seal of the last king of Dyn. 1 lists all his predecessors, but leaves out Merytneith. It would be optimistic to assume a straight father-to-son succession throughout the whole dynasty. No such documentation survives for Dyns. 2–3 and here the order and genealogy of the kings remains uncertain.

---


9 Kitchen, *TIP*, 488, Table 19.

While the amount of information about private families increases from Dyn. 4, the tomb inscriptions do not normally name the parents of the deceased but more usually only his wife and children. Thus it is extremely difficult to put together a lengthy and coherent genealogy apart from those of the royal families of Dyns. 4–6. There too many gaps remain and many of the reconstructions are speculative. What is certain is that the genealogical succession to the throne when known did not run smoothly and did not follow in generation sequence in all cases so the king-lists alone do not reflect generations; for example, Khephren succeeded his brother Ra‘dje·def in Dyn. 4 and Ra‘nefer·ef was probably followed by his brother Neuser·er·e in Dyn. 5, while Nem·tye·mzf·af I was followed by his brother Pe·py·II in Dyn. 6. Chronology here is indicated rather by the careers of these few officials who list the sovereigns that they served and so limit the time which has elapsed. Thus Sekhem·kare‘ son of Khephren lived through the reigns from Khephren of Dyn. 4 to Sahure‘ of Dyn. 5 while Ptahshep·ses was brought up under Men·kaure‘ and lived into the reign of Neuser·er·e. It has been suggested that Dyns. 3–4 and 4–5 were linked by marriages of royal heiresses, but there is no proof of this.\(^{11}\)

Unfortunately, genealogy is not much of an aid in determining the chronology of the FIP. The genealogies of the royal families are uncertain and those of the nomarchs do not extend for enough time or present enough fixed links to prove crucial. The list of previous nomarchs in the tomb of Ukhhotep of Meir is unfortunately not complete or tied to any fixed points. Nor is it clear that the list is in any way genealogical.\(^{12}\)

When adequate documentation occurs in the MK, there is still not enough material to present long coherent genealogies apart from the royal family of Dyn. 12 itself.\(^{13}\) The papyri from Kahun allow a few families to be reconstructed and the succession of office holders, in one case father-to-son, confirms the dating order of some papyri.\(^{14}\) However these fragments are not crucial to the relative chronology of Dyn. 12 which can be fixed by other methods.

\(^{11}\) CAH I/2, 145–189; M. Verner, *Forgotten Pharaohs, lost pyramids: Abusir* (Prague, 1994), 134–155 on Ra‘nefer·ef.
\(^{13}\) Franke, *Personendaten*.
Similarly no consecutive genealogies can be found during the SIP. Some detailed genealogies of short-lived royal families can be put together, but the links between them remain tenuous and open to different interpretations. It is possible that some kings indicated their filiation in their royal names which would provide a genealogical sequence but this view has perhaps been pushed too far. The later genealogies which claim to reach back to the MK cannot be taken seriously and seem merely to look to well-known historical figures without any genealogical consistency.

The advent of the NK led to an increasing amount of genealogical material in the form of statues, stelae, tomb inscriptions and papyri, both official and unofficial. The pedigrees of the royal families of Dyns. 18–19 can be constructed in some detail apart from the confusion which occurs at the end of the dynasties. The regnal years known from other sources fix a chronology which does not conflict with the royal genealogies. The private genealogies and careers of officials again confirm the standard chronology that there are not too many years missing from the known regnal years. For example, ‘Ahmose Penekheb served from ‘Ahmose I to Hatshepsut so guaranteeing that the reigns of Amenhotep I and Thutmose I–II cannot extend over too long a period. Until recently no family could be traced which extended from Dyn. 18 to Dyn. 19 with the slight exception of the parents of Ramesses I who must have lived then but are only fixed in relation to their son and the dubious genealogy of the high priests of Ptah. New research has revealed that the high priest of Amun Wennefer lived at the end of Dyn. 18, certainly during the reign of Haremheb and possibly that of Tut‘ankhamun. His younger son Amenmose is well attested in the reign of Ramesses II, being in charge of the Ramesseum probably from early in the reign when doubtless adult. The career of father and son prove that the contentious reigns of Haremheb and Sety I should not be unduly long but are still too imprecise to determine for certain a long or short reign for Haremheb.

From Dyn. 19 onwards much more genealogical information becomes available concerning the royal court, the officials, and even humbler.

16 *CAH* II/1, 295.
folk such as the workmen of Deir el-Medina. The royal inscriptions now name in detail the king’s sons, daughters and wives, while the tombs of the officials and workmen give the names of the parents, grandparents, in-laws, and other relations. This new information can be crucial in determining the length of uncertain periods or the maximum extent possible of reign lengths. For example, some uncertainty remains at the end of Dyn. 19 and the beginning of Dyn. 20 when it has been speculated in the past that an interregnum took place. The maximum year dates are known: Ramesses II, 66 years, 2 months (his last); Merneptah, 10 years, Sety II 6 years (his last), but it is not clear if the reigns of Amenmesses, 3 years; Siptah 7 years; Twosre 8 years; and Sethnakhte of Dyn. 20, 2 years are consecutive or contemporary with others. However, certain individuals are attested who survive through this period into the reign of Ramesses III such as the vizier Hori, a great-grandson of Ramesses II and the workman Nekhemmut son of Khons who is attested under Ramesses II and was a foreman in year 13 of Ramesses III. The scribe Kenherkhepeshef is apparently attested at Deir el-Medina from year 30 of Ramesses II until the reign of Siptah, and his widow Naunakhete (who must have been a great deal younger than him) remarried, had eight children, and survived until the reign of Ramesses V. In view of this evidence, it seems logical that Merneptah could not have reigned much longer than ten years. It is highly probable that Amenmesse’s years are to be totally contained within those of Sety II and that Twosre backdated her reign to the death of Sety II, thus encompassing that of Siptah and so reigning two years not eight. In view of Sethnakhte’s recently discovered stela, he may well have dated his reign from the death of Siptah or shortly thereafter and so was contemporary and not consecutive with Twosre. More importantly, there can have been no interregnum and so the time elapsed from the death of Sety II to the accession of Ramesses III was probably not much more than ten years if that.

---

18 If the highest known regnal date is the last, then the reign could have been as much as 11 months shorter. For the latest views on Siptah’s reign see R. Drenkhahn, *Die Elephantine-Stele des Sethnachte und ihr historischer Hintergrund* (Wiesbaden, 1980); Jansen, *Village Varia*, 116.


A great deal of documentary evidence is available for the regnal dates of Dyn. 20, and genealogical information confirms that few extra years should be added to those known, certainly not more than a decade. The case of Naunakhete has already been mentioned, but other families from Deir el-Medina can be traced from Dyn. 19 to the beginning of Dyn. 21. The family of Sennedjem runs from Dyn. 19 to the beginning of Dyn. 21, notably Nekhemmut junior who is attested in office from Ramesses IV to Ramesses IX. The family of Kaha can be traced from early Dyn. 19 to Ramesses XI. More importantly, the scribe Amennakhte was appointed to office in year 16 of Ramesses III and survived until Ramesses VI. His son is attested from Ramesses III to Ramesses IX, while his grandson appears from Ramesses VI to Ramesses IX. Three further generations are known through to Smendes of Dyn. 21. The genealogies thus confirm that the extent of Dyn. 20 is most likely correct, and there are no substantial gaps in chronology.

From Dyn. 22 onwards a large body of texts on statuary and coffins record the genealogies of the royal families and the priestly class. Some of these extend back to Dyn. 21 and one even to Dyn. 19 although that genealogy is doubtful. Although these genealogies are not precise enough to solve the various chronological cruxes of the period, they do link Dyn. 21 to Dyn. 26, and even with the provision of a genealogical jump or two, they limit the time period so that it is unlikely that the entire time span can extend further then has been postulated by Kitchen. It may be slightly abbreviated, but again the genealogies make clear that the time span cannot be radically less than the generally accepted chronology of the period. For example, the fourth prophet of Amun Djedkhonsuiuefankh, a contemporary of Osorkon I, has a great-great-grandson the fourth prophet of Amun Nakhtefmut, who was a contemporary of Osorkon III and whose granddaughter married into the Besenmut family which is attested from Dyn. 22 to Dyn. 26.

---

22 Bierbrier, *Kingdom*, 19–44.
23 Bierbrier, *Kingdom*, 51–53, where the line between Ipuy under Merneptah and Ankhenkhou under Osorkon I is doubtful.
From Dyn. 26, the chronology of Egypt becomes firmly fixed to that of Persia, Greece, and ultimately Rome. Genealogy thus becomes for the most part unnecessary to determine chronological conundrums. However, family information can still prove useful in resolving some minor points at issue. Unfortunately, much of the genealogical information is patchy and uncertain with the most information from Thebes which was no longer the centre of major activity. Genealogies and individual careers can be constructed from surviving papyri and have been useful in confirming the dates of some of the obscure rebel pharaohs such as Harwennefer and ‘Ankhwennefer. The survival of coherent genealogical material from the Roman Period is severely limited and is no longer of any practical aid in settling minor matters of chronology which remain.

I. 5 METHODS OF DATING AND THE EGYPTIAN CALENDAR

The Editors

During Dyn. 1 years were not yet counted, but simply named, as exemplified by the so-called year labels of Dyn. 1 that were attached to oil vessels. Since the reign of king “Serpent”, labels were additionally inscribed with the hieroglyph for “year” (ɾnpt).1 Presumably eponymous occasions were selected at the outset of or early in the year, being scheduled or symbolic and only coincidentally historical.2 The labels are the earliest evidence for reckoning time by years,3 but the type of year, that was in any case civil, not regnal, is not known. The annals attest that the “months” and days of [‘Aha’s] last year and [Djer’s] first year, add up to 10 “months” and 20 days, less than either a full lunar or solar year. The figures cannot be explained until further information comes to light; perhaps they are just a scribal error.

Rnpt zm–twy designated an incomplete accession year at least as early as [Djer] down through Dyn. 8. How the following years were expressed changed over time. At least from the penultimate year of [‘Aha] and through the end of Semer-khet’s reign, i.e. for most of Dyn. 1, the annals record the biennial occurrence of “following of Horus”, but there was no successive numbering of them.4 Between Ny-netjer and Khase-khemwy at the end of Dyn. 2 the annals document a dating system that was based upon a regular biennial census (tmw, jpt),5 numbered successively within a reign and coinciding with the biennial “following of Horus”. Whereas the “following of Horus” is still attested for Djoser, the biennial census is not. When it reappears under Snofru, it is not a regular biennial event. According to the annals, the 8th occurrence

---

1 The earliest known “year label” dates from the reign of Narmer, see G. Dreyer, *MDAIK* 54 (1998), 138–139.
3 Helck, *Thinitenzeit*, 144–175.
of the census followed the 7th occurrence without an intervening census-free year. Contemporaneous dates from Snofru’s pyramid at Maidum attest a series of annual counts, recorded as \( mpt zp x \) (year of the xth count),\(^6\) interrupted now and then by a \( mpt m-ht zp \) (year after the xth count).\(^7\) Scholars are at odds about whether there was a regular biennial count thereafter during the OK; the annals of earlier Dyn. 6 indicate a biennial count.\(^8\)

Beginning in Dyn. 11 successive calendar years during each reign were counted. Gardiner presumed that during the MK the kings dated their second regnal year from the New Year’s Day (I Akhet 1) following the actual day of their accession, so that their first year consisted merely of some months and days after the demise of their predecessor.\(^9\) This may have been the case, since pBerlin 10055 from Illahun attests that year 1 of [Amenemhet III] followed directly on year 19 of [Senwosret III],\(^10\) which may reflect the accession of Amenemhat III after Senwosret III had died in the course of year 19 or 20. But it may also signify that a coregency began after year 19.

In Dyn. 18 a new system was adopted which continued until at least ca. 800 BC.\(^11\) Year 1 began on the actual day of accession and the following years were counted, accordingly, from the anniversary in the civil year, so that the civil year now always spanned parts of two regnal years. From Dyn. 26 through the Roman period the antedating system was introduced so that regnal year 2 began on I Akhet 1 after the accession.\(^12\)

During the entire pharaonic period the concept of an “era” was employed only once. The \( w\dot{u}m mswt \) era began in 19 Ramesses XI and lasted at least 10 and perhaps as much as 12 years.\(^13\) The so-called 400 year era of Seth Nubti\(^14\) should also be mentioned, as well as the attribution of the Amarna pharaohs’ reigns to Haremhab.\(^15\) During the

---

\(^6\) For the reading \( mpt zp \), see E. Edel, \( JNES \) 8 (1949), 35–39; Gardiner read \( hi\dot{t} zp \), see his Grammar, Excursus C.

\(^7\) See below, Chapter II. 4.

\(^8\) See below, Chapter II. 5.

\(^9\) Gardiner, “Years”, 21–23, followed by Beckerath, Chronologie, 10.

\(^10\) When Gardiner wrote, the date in pBerlin 10055 was mistakenly associated with Senwosret II and III.

\(^11\) Cf. below Jansen-Winkeln, Chapter II. 10.

\(^12\) A. Leahy, \( JEA \) 74 (1988), 187.

\(^13\) See below, Chapter II. 8.

\(^14\) Cf. Beckerath, \( Zwischenzeit \), 161.

\(^15\) See below, Chapter II. 8.
MK, the nomarchs counted their years of office independently from royal years, and it is quite possible that the Theban HP’s of early Dyn. 21 counted their pontifical years.

The Solar Calendar of 365 Days

There were 12 months of 30 days in the Egyptian calendar, supplemented by five additional days, the so-called epagomenal or “added” days, for a total of 365 days. A tendency to regard the year as amounting to only 360 days is evident, for example when the daily income of a temple is stated to be one 360th of the yearly revenue. The well-known disregard of the epagomenal in calendar schemes seems to be another consequence of this tendency.

Dates within a year were expressed in terms of the three seasons of four months each: Akhet (ḫt), “inundation”; Peret ( prt) “winter”, presumably the season of the “emergence” ( pr) of the fields from the flood; Shemu ( snc) “summer”. Originally months were numbered, not named, but a few month names are known from the MK. Varying series of names are documented for the months in the NK from which the Greek, Aramaic, and Coptic names of the civil months derive; Ptolemy used the Greek names.

The heliacal rising of the fixed star Sirius (Egyptian: Sothis) was the only astronomical event which occurred on a certain day in the 365-day civil calendar (see below, chapters III. 9.10). Because the calendar did not provide for an extra day every 4 years, the date of the rising of Sirius in the civil calendar shifted accordingly. The concept of a “Sothic cycle” for a complete shift of 1460 years (i.e., 365 days × 4) is first documented in the Hellenistic Period. The earliest examples for dating in the civil calendar of 365 days come from Djoser’s reign, or ca. 150 years after its introduction.

16 Cf. for example W. K. Simpson, *JARCE* 38 (2001), 7–8, regnal year 43 of Senwosret I corresponding to year 25 of the nomarch Amenemhet.
17 See below, Chapter II. 9.
20 Gardiner, *Grammar*, Excursus C.
22 See below, Chapter III. 11.
Calendar Adjustment

R. Weill has played with the idea that the SIP was shorter than the standard chronology allows, implying that at a calendar adjustment days had been cut out of the 365-day year. Parker argued against the feasibility of such an adjustment; his arguments were reinforced by Depuydt.

It is indeed correct that Pharaonic sources do not attest an intercalated day. But what if the Egyptians added or lost a calendar day in the course of their history, be it by intercalation or by mistaken day counting? The close agreement between late Egyptian and general chronology precludes such an error or deliberate intercalation after the beginning of the Saite Period. The loss or gain of a calendar day would shift the absolute date of a recorded lunar date by either exactly −11 (−14) years or by exactly +14 (+11) years. Shifts of this size are not compatible with the standard chronology of the NK. Furthermore the supposition of an intercalated day would break the link between the lunar date and a Sothic date implicit in the astronomical dates of the Illahun archive.

It is well known that in 238 BC Ptolemy III attempted to introduce an improvement in the Egyptian calendar by adding a 366th day every four years, anticipating the later Julian calendar reform. But his edict went unheeded. A second attempt under Augustus succeeded in imposing a form of the Julian calendar on Egypt. This so-called Alexandrian calendar remained in use in Egypt until the Arab conquest, and it still survives today as the liturgical calendar of the Coptic and Ethiopian churches.

Alongside the 365 day calendar, a lunar calendar was also used. Specialists are not in accord on how it functioned in detail (see below, chapters III. 6.10).

28 It is left to the reader to figure that out.
Conversion of Dates

Astronomers reckon ancient astronomical events terms of the Julian, not the Gregorian calendar. The correlation between the Egyptian and the Julian calendars is implicit in Ptolemy’s dating of astronomical observations according to the Egyptian calendar and to the 365 day Egyptian year of the so-called Ptolemaic Royal Canon which began with year 1 of the Babylonian king Nabonassar. During the first years of the Era Nabonassar the correlation between the Egyptian and the corresponding Julian calendar dates was:

Royal Canon, year 1: Thoth 1 = February 26, 747 BC

The Julian calendar year 745 BC was a leap year and so it follows that:

Royal Canon, year 4: Thoth 1 = February 25, 744 BC
Royal Canon, year 8: Thoth 1 = February 24, 740 BC

On this basis it is possible to convert any Egyptian date in a given or chosen year into the Julian calendar equivalent, with due consideration that the Julian calendar has a leap year and the Egyptian calendar does not. Tables for conversion have been constructed by Neugebauer.

Egyptian Calendar Day

The word for calendar day used in dates was sw, not hrw (day as opposed to night). Parker presented a circumstantial argument in favor of the beginning of the calendar day at dawn: “It is obvious that, when the [lunar] month begins, the first day of the month also begins.” Most Egyptologists accepted the validity of Parker’s argument. However, in the 1980s Leitz and Luft revived the arguments presented by Sethe in the 1920s that the calendar day began with sunrise. They were

---

29 See below, Chapter III. 11.
30 P. V. Neugebauer, Astronomische Nachrichten, No. 6261 (Kiel, 1937).
31 Edel, Grammatik, 182.
32 Parker, Calendars, 10.
33 The validity of the argument was denied by Grzybek (n. 35), 142–143, who otherwise accepted the beginning of the calendar day at dawn.
countered by scholars like Grzybek, Spalinger and Wells who defended Parker’s standpoint.\textsuperscript{35}

Actually, August Böckh had solved the question in 1863 when he used Ptolemy’s Almagest to demonstrate that the Egyptian calendar day began at dawn before sunrise.\textsuperscript{36} In the Almagest Ptolemy twice recorded observations of Mercury, first with double dates:

\begin{itemize}
  \item Hadrian, year 18, Epiphi 18 to 19, at dawn;\textsuperscript{37}
  \item Antoninus, year 4, Phamenoth 18 to 19, at dawn.\textsuperscript{38}
\end{itemize}

Subsequently, he gave single dates for the same observations:

\begin{itemize}
  \item Mercury as morning star: Hadrian, year 18, Epiphi 19\textsuperscript{39}
  \item Mercury as morning star: Antoninus, year 4, Phamenoth 19\textsuperscript{40}
\end{itemize}

Mercury is only observable at dawn as morning star or at dusk as evening star. Ptolemy could have substituted single dates for double dates only if he reckoned dawn as the beginning of the Egyptian calendar days Epiphi 19 and Phamenoth 19. Accordingly, the Egyptian calendar day began during the observability of Mercury as morning star, i.e. at dawn before sunrise. Hieroglyphic sources also exist that imply the beginning of the calendar day at dawn—notably an entry in the Calendar of Lucky and Unlucky Days, describing the appearance of Seth in the bow of the solar bark which led Malinine to conclude that the calendar day began before sunrise, during $\hat{h}d$-$\beta$\textsuperscript{41}. The time when the god appeared at the bow of the solar bark, according to an entry in the Calendar of Lucky and Unlucky Days.\textsuperscript{42} His argument is supported by the identification of the god Seth with planet Mercury here, rising shortly before the sun and thus visible at dawn.\textsuperscript{43}


\textsuperscript{37} J. G. Toomer, \textit{Ptolemy’s Almagest}, translated and annotated (Princeton, 1984), 449.

\textsuperscript{38} ‘Toomer (n. 37), 450.

\textsuperscript{39} ‘Toomer (n. 37), 456.

\textsuperscript{40} ‘Toomer (n. 37), 455–456.

\textsuperscript{41} For $\hat{h}d$-$\beta$ as dawn, see K. Jansen-Winkeln, \textit{SAK} 23 (1996), 201–202, and D. Kurth, \textit{GM} 108 (1989), 34–35.


\textsuperscript{43} R. Krauss (n. 36), 284–285.—For Seth as planet Mercury see Neugebauer & Parker, \textit{EAT} III, 180.
Because an Egyptian calendar day (D) begins at dawn before sunrise, it overlaps two Julian calendar days (δ) and (δ + 1) that begin at midnight as Fig. I. 5.1 shows.

Neugebauer’s tables yield δ as equivalent of D. The assertion that an Egyptian calendar day D equals the Julian calendar day δ, means that the bright part of D corresponds to the bright part of δ. It is implied that the early hours of δ are not contained in D, and that the last hours of D correspond to the first hours of the Julian calendar day (δ + 1).
PART II

RELATIVE CHRONOLOGY
II. 1 PREDYNASTIC—EARLY DYNASTIC CHRONOLOGY

Stan Hendrickx

Introduction

There exists quite some confusion in the terminology used for the cultural phases and the relative chronology of Egypt during the 4th millennium, generally known as the Predynastic period. Already the term “Predynastic” in itself may cause a problem. Although it evidently refers to all periods previous to the dynastic history of Egypt, its use is in reality reserved for the Naqada culture of (Upper) Egypt which dates to the 4th millennium BC and economically represents a late Neolithic culture with increasing social complexity which is at the origin of the pharaonic civilisation. Most authors also call the preceding Badari culture “Predynastic”, although it has also been considered “Neolithic”, together with the 5th millennium finds from the Fayum, Merimde Beni Salama and el-Omari in LE.2

The terminology for the relative chronology of the Predynastic period is also far from consistent (Table II. 1.1). Originally Petrie distinguished three chronologically distinct cultures which he called respectively Amratian, Gerzean and Semainean, after type sites that he excavated.3 By doing so he stressed the material differences, especially those between the Amratian and Gerzean which according to Petrie were caused by the arrival of a “new race”. This view has already been abandoned for a long time, but the terms Amratian and Gerzean in particular continue to be used by some scholars up to the present day. It is however already a long time since the word “Naqada culture” has been used, divided in two or three phases (cf. below). This has the advantage of indicating the continuous development that took place during the 4th millennium BC.

---

1 I wish to thank Werner Kaiser, Edwin van den Brink, Nathalie Buchez and Christiana Köhler for comments and information on various aspects of the problems concerned with this contribution. Joanne Rowland most kindly perused the English.


3 Petrie, Diospolis Parva; idem, Prehistoric Egypt (London 1920).
In LE the local 4th millennium culture identified at Maadi and Buto, for example has recently been the focus of research. The original name “Maadi culture/Maadian” is still used at present, but it has meanwhile also been termed “Buto-Maadi culture” and “Maadi-Buto culture.” As up to now the site of Maadi has provided the largest amount of material available, it seems obvious that the terminology should stress the importance of that site. On the other hand, the position of “Buto” in the Maadi-Buto terminology indicates that the terminal stage(s) of this culture at Buto (and many other contemporary Delta sites) are no longer present at the key site of Maadi itself. On a more general level, it has been called “predynastic” because it is contemporaneous with part of the Naqada culture in UE, but was also referred to as “chal-

---

Table II. 1.1

<table>
<thead>
<tr>
<th>Period</th>
<th>Equivalent Stage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Semainean</td>
<td>Protodynastic</td>
</tr>
<tr>
<td>Gerzean</td>
<td>Naqada I</td>
</tr>
<tr>
<td>Amratian</td>
<td>Naqada Stufe Ia-c</td>
</tr>
<tr>
<td>Badarian</td>
<td>Badarian</td>
</tr>
<tr>
<td>Petrie 1920</td>
<td>Scharff 1931: 16–30</td>
</tr>
<tr>
<td>Vandier 1953</td>
<td>Baumgartel 1970</td>
</tr>
<tr>
<td>Hassan 1988</td>
<td></td>
</tr>
</tbody>
</table>

---

5 E.g. Midant-Reynes (n. 2).
8 Midant-Reynes (n. 2).
colithic” or “late prehistoric”. More exceptionally it has been termed “Early Bronze”, mainly for comparison with the Levant.

There is no obvious change in the material culture marking the transition between Predynastic and Early Dynastic in UE. Here one should distinguish between cultural chronology based on material evidence and the historical chronology based on written documents. The latter however are very exceptional outside of elite sites such as Abydos and Saqqara. Because of this, the end of the Naqada III culture is, from the archaeological point of view, to be placed within or at the end of Dyn. 2. The term Naqada culture will therefore also be used for the Early Dynastic period.

**Tasian**

A culture preceding the Badarian (cf. below) was originally identified by Brunton at Deir Tasa, and accordingly labelled by him as Tasian. One of the main archaeological characteristics are narrow beakers with flaring rim and incised decoration. Subsequently, the Tasian has been discredited by Baumgartel as a separate cultural entity and was considered part of the Badarian. This view has been accepted for a long time, but more recently Kaiser has considered the Tasian as an entity distinct from the Badarian. For him, the Tasian represents the

---


transmitter of LE elements to UE. However, this seems most unlikely because of the presence of beakers strongly resembling those of the Tasian in Sudanese neolithic contexts, for example at Kadero and Kadada, dated to late 5th–early 4th millennium cal. BC. Most recently, Tasian beakers have also been published for the Eastern Desert. In the Western Desert, Tasian burials have been identified in the Wadi el-Hol, on the desert road between Luxor and Farshut and at Gebel Ramlah, near Nabta Playa. The new evidence, together with a reinterpretation of older information, allows rather for the consideration of the Tasian as a desert phenomenon, which however also had extensive contacts with the Nile valley. The finds from Wadi Attula in the Eastern Desert have been radiocarbon dated between 4940 and 4455 cal BC, a surprisingly early date. These are the only dates available at present and although confirmation from other sites remains desirable, this indicates not only a cultural difference with the Badarian but eventually also a chronological. It is however to be noted that the finds from the Nile valley occurring in a Badarian context, indicate that the Tasian may have started before the Badarian, but was at least also partially contemporaneous with it.

**Badarian**

The Badari culture has originally been identified in the region of Badari (Qaw el-Kebir, Hammamiya, Mostagedda and Matmar), where a number of small cemeteries, containing in total about 600 tombs, and

---

19 Friedman & Hobbs (n. 16), 189.
20 Friedman & Hobbs (n. 16), 178.
22 Brunton (n. 12).
40 poorly documented settlement sites. However, characteristic Badarian finds have also been made much further to the south (Mahgar Dendera, Armant, Elkab, and Hierakonpolis) and also in the Wadi Hammamat. Besides Mahgar Dendera most of these finds are unfortunately limited in extent.

Until recently, most authors tended to consider the Badari culture as a chronologically separated unit, out of which the Naqada culture developed. However, the situation is certainly far more complex. Since more Badarian finds, or Badari related finds, have been made south of Badari, the Badari culture might well have been present between at least the Badari region and Hierakonpolis. Regional differences may have existed, the unit in the Badari region itself being the only well documented one up to now.

The chronological position of the Badari culture is still subject for discussion. Its relative position as being older than the Naqada culture has already for a long time been shown by the stratified site at Hammamia. From TL-dating, the culture might already have existed by 5000 cal BC. However, based on the available radiocarbon dates, only the period around 4400–4000 cal BC can be confirmed for certain.

Additional information on the chronological position of the Badarian may be gained by searching for its origin. Recent investigations have shown strong links between the ceramic industry of the Badarian and the Bashendi B unit from the Dakhleh oasis, and with the Late/Final Neolithic from the Nabta-Kiseiba area. The Bashendi B culture can

---

29 For a more detailed overview of Badarian sites, see S. Hendrickx & E. C. M. van den Brink, “Inventory of Predynastic and Early Dynasty Cemetery and Settlement Sites in the Egyptian Nile Valley”, in: *Interrelations*, 346–399.
31 Hendrickx (n. 7), 19.
33 See especially site E-75–8, K. Nelson, “Ceramic Assemblages of the Nabta-Kiseiba
be dated between 5650/5400 and 3950 cal BC,\textsuperscript{34} and the Late/Final Neolithic at site E-75–8, roughly between 5500 and 4700 cal BC. From these dates a very early start for the Badarian seems distinctly possible, contrarily to the opinion of the present author expressed only a few years ago.\textsuperscript{35} Nevertheless it remains a fact that a duration of a thousand years or even more for the Badarian does not seem to be supported by the limited number of cemeteries and tombs known in the Badari region, where research is supposed to have been as exhaustive as possible. If originally based in its present desert regions, the Badarians might only at a later stage have used the Nile valley for permanent living.

\textit{Naqada Culture—History of Research—Petrie’s Sequence Dating}

In 1895 a huge cemetery of previously unknown type was discovered by W. M. F. Petrie at Naqada.\textsuperscript{36} At first it was thought to date from the FIP, but Jacques de Morgan soon realised the prehistoric nature of the cemetery,\textsuperscript{37} which was later confirmed as “predynastic” by Petrie. A number of important similar cemeteries were excavated in UE during the beginning of the last century. The original study on the relative chronology of the Naqada culture goes back to the early years of the 20th century, when Petrie worked out his Sequence Dating,\textsuperscript{38} the first attempt at what is now known as seriation. The history of this remarkable relative chronology has in recent years already been presented and discussed many times\textsuperscript{39} and will only be presented briefly here.


\textsuperscript{35} Hendrickx (n. 7), 19.


\textsuperscript{38} W. M. F. Petrie, “Sequences in Prehistoric Remains”, \textit{jRAI} 29 (1899), 295–301; idem (n. 3), \textit{Diospolis Parva}, 4–12; idem, \textit{Prehistoric Egypt} (n. 3), 3–4.

\textsuperscript{39} J. C. Payne, “The Chronology of Predynastic Egyptian Decorated Ware”, \textit{Eretz-
The Sequence Dating is based on the grave goods from the cemeteries excavated by Petrie and his assistants at Naqada, Ballas, and Diospolis Parva. As a first step, the pottery was arranged in a corpus of “predynastic” pottery, consisting of nine classes of pottery and over 700 types (Table II. 1.2). Next, all of the objects from each grave were noted on a slip of card. Finally, the cards were arranged in a relative chronological order based on the resemblance of types. In this stage of his work, Petrie used only 900 relatively intact graves containing five or more different pottery types, out of over 4000 excavated graves. The chronological order was defined by two main principles. Firstly, an earlier and a later phase were distinguished through the observation that the classes of White Cross-lined pottery on one hand, and Decorated and Wavy Handled pottery on the other hand, hardly ever occurred together. Secondly, it was accepted that there had been an evolution of the shape of the Wavy Handled types, going from globular to cylindrical shapes, while at the same time the handles had changed from two functional handles to a continuous decorative line.

Table II. 1.2. Pottery Classes Distinguished by W. M. F. Petrie, *Corpus of Prehistoric Pottery and Palettes* (London, 1921) and Their Characteristics

<table>
<thead>
<tr>
<th>Class</th>
<th>Defined by</th>
<th>Class relations</th>
<th>Fabric</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black-Topped</td>
<td>B</td>
<td>Firing technology</td>
<td>Nile silt</td>
</tr>
<tr>
<td>Red-Polished</td>
<td>P</td>
<td>Surface treatment</td>
<td>Nile silt</td>
</tr>
<tr>
<td>Fancy</td>
<td>F</td>
<td>Shape</td>
<td>mainly Red-Polished, mainly Nile silt</td>
</tr>
<tr>
<td>White Cross-Lined</td>
<td>C</td>
<td>Decoration</td>
<td>Red-Polished, Nile silt</td>
</tr>
<tr>
<td>Incised Black</td>
<td>N</td>
<td>Decoration</td>
<td>Nile silt</td>
</tr>
<tr>
<td>Decorated</td>
<td>D</td>
<td>Decoration</td>
<td>mainly Late, Marl clay</td>
</tr>
<tr>
<td>Wavy-Handled</td>
<td>W</td>
<td>Morphological detail</td>
<td>Marl clay</td>
</tr>
<tr>
<td>Rough</td>
<td>R</td>
<td>Fabric/surface treatment</td>
<td>Nile silt, organic temper</td>
</tr>
<tr>
<td>Late</td>
<td>L</td>
<td>Fabric/chronology</td>
<td>some Rough, mainly Marl clay</td>
</tr>
</tbody>
</table>


40 Petrie & Quibell (n. 36).
41 Petrie (n. 3), *Diospolis Parva*.
43 Cf. Petrie (n. 3), *Diospolis Parva*, pl. II; B. Adams, Predynastic Egypt (Aylesbury, 1988), 27; Hendrickx (n. 7), 31, fig. 9.
This evolution was corroborated by the fact that the “early” and “late” Wavy Handled types did not occur in the same tomb. In addition, the “late” Wavy Handled types and an important number of types from the Late class occurred in tombs which could be dated by inscriptions to Dyn. 0 or 1.

When all of the grave cards had been arranged in order, Petrie divided the cards into fifty equal groups, each of them consisting of 18 graves, numbering them as Sequence Dates from thirty to eighty. By choosing to start at SD 30, he left space for earlier cultures, which he thought were still to be discovered. Finally the fifty sequence dates were divided into three groups which he considered to be archaeologically, culturally and chronologically different. The “cultures” were named Amratian (SD 30–37), Gerzean (SD 38–60) and Semainean (SD 60–75), after important predynastic cemetery sites.

The Sequence Dates were continued with a second typological corpus, for the “protodynastic” pottery. This is almost exclusively based on material from the extensive cemeteries at Tarkhan. This time the number of types reached 885 and no classes of pottery were distinguished, which makes the corpus in some cases difficult to use. The “protodynastic” corpus partially overlaps with the most recent types of the “predynastic” corpus, as a result of which the Sequence Dates for the “protodynastic” corpus start already from SD 76 and continue to SD 86, which should mark the beginning of Dyn. 3. However, the SDs 83–86 remained almost completely theoretical because of the lack of Dyn. 2 material at Tarkhan. The distinction between the individual Sequence Dates is not carried out in the way in which it was done for the “predynastic” corpus. This time, however, the transition to a new SD is based on typological breaks which Petrie defined mainly through the development of the Wavy Handled types. Finally, Petrie connected the Sequence Dating with the historically dated pottery types and other objects from the royal tombs of the earliest dynasties at Abydos.

---

41 When he discovered the Badarian, Brunton tried to apply Sequence Dating (Brunton & Caton Thompson (n. 21), 26; Brunton (n. 12), 50–51), but this was from the beginning considered problematic and never found its way into the scientific literature.
45 W. M. F. Petrie, Corpus of Proto-Dynastic Pottery (London, 1953).
46 W. M. F. Petrie, Tarkhan I and Memphis V (London, 1913); idem, Tarkhan II (London, 1914).
47 Petrie (n. 46), Tarkhan I and Memphis V, 3.
The development of the Sequence Dates certainly represents one of the major intellectual performances in the study of predynastic Egypt, and most of the basic observations by Petrie, such as the evolution of the Wavy Handled types, were never contradicted. Nevertheless, a number of methodological shortcuts and possible errors concerning the practical elaboration of the Sequence Dates were subsequently pointed out by several authors. Petrie makes no clear distinction between typology and chronology. This, for example, is obvious from the heterogeneous manner by which his pottery classes have been defined (cf. Table II. 1.2). Furthermore, the definition of the individual types within these classes is not bound by strict rules. Even more important is the fact that Petrie only included tombs with five or more objects, resulting in the under-representation of the earlier period. The lack of attention to eventual regional differences is also to be noted.

The most striking omission in Petrie’s manner of working remains that he never took the horizontal distribution of the graves into consideration. This, despite the fact that he noted for instance that none of the cemeteries from Diospolis Parva covered the whole of the SDs, but that “early” and “late” cemeteries could be distinguished. Strangely enough, Petrie does not mention spatial distribution within the cemeteries of Naqada, Ballas or Diospolis Parva, although it is hardly imaginable that he did not notice any clustering of tombs with similar funerary equipment. On the occasion of later excavations, by former assistants of Petrie, the existence of groups of chronologically related graves, and therefore the differences in the spatial distribution of objects, were noticed several times and at different sites, but no attempts were made to use these observations for chronological purposes.

---

49 Petrie (n. 42), 5.
50 Hendrickx (n. 39), 37.
51 Petrie (n. 3), Diospolis Parva, 31–32.
Finally, Petrie’s wish for a very detailed relative chronology in 50 Sequence Dates causes a fundamental problem. As a basic principle, the definition of the original Sequence Dates was made in a manner so as to minimise the chronological dispersion of each type of pottery. This results in a compromise between the competing claims of all pottery types for closer proximity. However, the “perfect balance” obtained by Petrie is purely artificial, since, whenever new graves will be added to the system, the range of Sequence Dates for a number of types will have to be expanded, and the accuracy suggested by the Sequence Dating system becomes purely hypothetical. The integration of new cemeteries over time made the whole system more and more problematic.

Kaiser’s Stufen Chronology

W. Kaiser was the first to reinvestigate the relative chronology of the predynastic period in a fundamental manner. He used the horizontal distribution of pottery classes and types of objects within cemetery 1400–1500 at Armant as point of departure. Three spatial zones were distinguished by the relative percentages of Black-Topped, Rough and Late Wares, each of them dominating one zone. These zones are considered to represent chronological stages. Within these three periods, subdivisions, called Stufen, were recognised according to the clustering of types of objects, these being almost exclusively pottery. The results of the analysis of the Armant cemetery are completed with a limited investigation of cemeteries for which the publication was less detailed, but where pottery types occur which are not represented at Armant. In this manner Kaiser distinguished three main stages of the development of the Naqada culture, each with their subdivisions. All in all, 11 Stufen are identified, the two earliest and the two most recent of which are not represented at Armant. The archaeological description of the Stufen is based on types of objects, according to the Petrie typology, which Kaiser accepts as characteristic for a particular Stufe. Material from cemeteries other than Armant is also included. The characteristics of the Stufen are also used by Kaiser to study the geographical distribution of the Naqada culture. The chronological expansion which can

be observed from UE both towards the north and the south, is considered further proof of the validity of the *Stufen* chronology.

The *Stufen* have also been compared with the Sequence Dating. Although Kaiser defined three main periods, the SD’s attributed to them show that they are largely, but not completely, identical to the Amratian, Gerzean and Semainean distinguished by Petrie (Table II. 1.3). When compared to the Sequence Dating, Kaiser’s system has the advantage of including not only information from the typological apparatus, but also from the spatial distribution of the objects. Furthermore it does not give the idea of extreme accuracy, but by defining periods, it escapes largely, although not completely, the problem of becoming increasingly meaningless when new data are added.

However, this does not mean that the *Stufen* system is without its problems. Although Kaiser included data from a number of cemeteries besides the one at Armant, it remains a basic fact that data from only a single cemetery are used for the description of the Naqada culture throughout UE. Nevertheless, Kaiser is well aware of the possibilities for regional differentiation, and has noticed regional phenomenon at Mahasna for instance. The problem caused by using the cemetery at Armant becomes even more complicated because the earliest phase of the Naqada culture is not present at Armant, and even the most recent phases are very sparsely documented or absent. Therefore, the definition of the *Stufen* Ia and Ib is merely based on hypothesis, although examples from other cemeteries besides Armant are given. The description of *Stufe* IIIb, though less hypothetical than *Stufen* Ia and Ib, is also based on information from other cemeteries. In most cases it was not possible to study the spatial development of these cemeteries, and therefore Kaiser’s description of the *Stufen* Ia–b and IIIb depends largely on

---

55 Kaiser (n. 48), 109.
56 Kaiser (n. 53), 74.
the theoretical evolution of pottery types, especially from the Wavy-Handled class as already accepted by Petrie.

A very practical problem is that Kaiser’s study was only published in abridged version as an article. Because of spatial considerations within the publication, Kaiser was unable to provide details on his analytical method. The plates illustrating the article visualise the description of the Stufen by presenting for each of them the most important and characteristic types of objects. Unfortunately these plates have been used by some as absolute guidelines, despite the fact that the plates are only intended to be considered as an idealised outline of the development of the Stufen. This created a false idea of secure dating, especially for the Stufen IIIa–b. More recently Kaiser mentioned in an article the extension of his Stufen chronology into Dyn.1. However, the manner in which this was done remains until now unpublished. The extension was nevertheless used by several authors.

Kaiser’s distinction of three phases within the Naqada culture reflects Petrie’s original division. At first view there seems to be no problem because several cemeteries belonging to the Naqada culture bear evidence for the presence of three groups of graves, dominated respectively by the presence of Black-Topped, Rough and Late/Wavy Handled pottery. The moment at which the transitions are placed is however not beyond dispute. This and other more specific problems concerning the Stufen chronology will be discussed when the individual subdivisions of the Naqada culture are presented.

**Computer Seriation**

Computer seriation has also been applied on predynastic cemeteries to study their relative chronology. A pioneer attempt made by E. M. Wilkinson is at present only of historical interest. Far more important is Kemp’s seriation by multi-dimensional scaling of the graves within cemetery B at el-Amrah and the cemetery of el-Mahasna. However,
this seriation is not used for the evaluation of Kaiser’s *Stufen* chronology, but for Petrie’s Sequence Dating.

A far more elaborate study of the relative chronology using seriation has been made by T. A. H. Wilkinson.\(^{61}\) Eight Predynastic—Early Dynastic cemeteries were seriated.\(^{62}\) For this purpose, 1420 out of 1542 types from Petrie’s corpus which occurred in the eight cemeteries were condensed into 141 groups.\(^{63}\) This approach, of course, carries the risk of producing strongly heterogeneous types, and as Wilkinson himself notes, some of his groups “bring together types with broad similarities but some significant differences”.\(^{64}\) There are indeed problems with the majority of the newly defined groups, especially for the plates, cups and bowls (P 001, P 004, P 033, P 034 etc.). Among the most notable difficulties is the grouping of Nile silt and marl clay bowls and even the very characteristic Nile silt bread moulds in the groups P 094, P 095 and P 103. Several groups of jars are also very heterogeneous (e.g. P 013, P 019, P 029, P 128, P131, P138). One can also question the validity of distinguishing two groups of wine jars (P 107 and P 108) by the broadness of their shoulders, while very distinctive elements such as the applied ridges and the wavy decorations are completely ignored. Furthermore, it is difficult to understand why in group P 052 cylindrical jars both with and without incised decoration have been grouped. This is all the more disturbing because this element has been used as a chronological indicator by Kaiser for the development of his *Stufen* chronology. It is obvious that the manner in which Petrie’s types have been grouped, makes it impossible to arrive at the same results as those which Kaiser obtained for his *Stufen* chronology.

The inevitable conclusion is that when Petrie’s types are grouped into only 141 new groups, these become heterogeneous to a degree no longer consistent with the concept “type”. While this does not render Wilkinson’s seriations totally meaningless, the many anomalies involved introduce a disturbing element of uncertainty in the results.\(^{65}\) Whenever

---


\(^{63}\) Wilkinson (n. 39), 25.

\(^{64}\) Wilkinson (n. 39), 23.

\(^{65}\) For a more extensive discussion of Wilkinson, *State Formation in Egypt* (n. 39), see the review by S. Hendrickx in *JEA* 85 (1999), 241–245.
possible, the result of the seriations has also been plotted on a plan of the cemetery, to facilitate discussion of the chronological development of the cemeteries involved. The horizontal distribution of graves and pottery types is, however, only used as a method of control and not as a primary source of information. The use of a general typology for all eight cemeteries allowed Wilkinson direct comparison of the seriation results. Each sequence distinguished was compared against Kaiser’s Stufen chronology. Significant differences emerged, most notably in Kaiser’s demarcation of the three major Naqada culture phases.

Distribution Studies

A number of studies on the relative chronology of the Naqada period have started from the spatial distribution of objects within the cemeteries rather than from seriation. Once more, the problem of grouping types, which was the main problem for seriation, will occur, albeit to a lesser extent. The first study of this kind concerns an unpublished M.A. thesis by R. Friedman on the spatial distribution and relative chronology at Naqa ed-Deir cemetery 7000.66 Comparison is made with Kaiser’s Stufen chronology. Spatially distinguished groups of graves with objects characteristic for the Stufen Ic–IId are also represented at Naqa ed-Deir, but some differences in the characteristic pottery types for the individual Stufen have also been observed.

J. C. Payne applied Kaiser’s chronology to the available information for the Main Cemetery at Naqada.67 She concludes that the same Stufen can be distinguished both at Armant and at Naqada and also that the differences in the archaeological description of the Stufen remain very limited, the most important being situated in Stufe IIb.68


68 Payne (n. 39), 81.
The most extensive study based on spatial distribution is a still incompletely published Ph.D. dissertation by the present author. The limited number of “Predynastic” cemeteries for which both a map and a grave register, be it eventually incomplete, are available served as a starting point. For the Early Dynastic period information came from a number of “Protodynastic” and “Archaic” cemeteries in LE. Methodologically, there is not much difference to the method already developed by Kaiser. This implies that the distinction of related groups of graves is not only based on their contents but at the same time on their spatial distribution within the cemetery. As a result, a conflict of interests will arise between the search for closer chronological proximity of all examples of one pottery type on one hand, and the definition of spatially well defined groups of graves on the other hand. Neither one of these two

---

69 S. Hendrickx, *De grafvelden der Naqada-cultuur in Zuid-Egypte, met bijzondere aandacht voor het Naqada III grafveld te Elkab. Interne chronologie en sociale differentiatie* (unpubl. PhD. diss., Leuven, 1989); idem (n. 39); idem (n. 7).


elements can be accepted as prevailing over the other. Thus, most unfortunately, it seems impossible to establish clearly defined, “objective” rules for the definition of archaeological complexes representing relative chronological periods within the Naqada culture. This implies that although a relative chronology defined in this manner is of course based on the seriation principle, it nevertheless depends considerably on the personal interpretation of the researcher.

Most cemeteries of the Naqada culture were used over several centuries, during which they expanded horizontally, but not in a premeditated manner. For the Naqada I–II period in particular this results in cemeteries consisting of “patches” of simultaneous tombs, as can be shown for the cemetery at Adaïma for example.72 During the Naqada III period, the cemeteries tend to develop in a more linear manner, as can be seen at Elkab73 and Tura.74 By comparing the cemeteries that were analysed, it becomes clear that similar groups exist for different cemeteries. In this manner, 11 groups of graves, an equal number to Kaiser’s *Stufen*, are distinguished and their relative chronological order defined through their mutual position in the cemeteries, and through the evolution of the pottery classes and types of objects. However, comparing groups of related objects from geographically different cemeteries does not have to imply that they are also contemporaneous in absolute chronological terms. Unfortunately, this question cannot be answered because of the limited number of C14 dates available for the Naqada cemeteries from UE. For this reason, and since related groups of archaeological objects can be distinguished at several sites, until proven otherwise, we may as well accept the simultaneity of archaeological groups with a strong resemblance, suggesting that the same chronological periods may well have existed for the different cemeteries.

In a further stage, the data from cemeteries without published maps were integrated and the possibilities of regional variability investigated. This eventually allows for an archaeological description of each of the relative chronological periods. The general observations made by Kaiser for cemetery 1400–1500 at Armant are not fundamentally contradicted,

73 Hendrickx (n. 70, Elkab V), 205–216.
74 Hendrickx (n. 39), 57–59.
and therefore the number of relative chronological periods is equal to the number of *Stufen* distinguished by Kaiser, although in some cases important differences occur in their archaeological description (cf. below). It was therefore decided to follow Kaiser’s work as closely as possible, but to replace the word “*Stufe*” by “Naqada” and at the same time change the letter indication into capital letters, which results in “Naqada IA” etc.\textsuperscript{75}

**Description of Naqada Periods—Naqada I**

The descriptions presented here are mainly based on the distribution studies made for a number of cemeteries for which both a map and tomb inventory are available.\textsuperscript{76} Only the main developments and most characteristic types of objects are mentioned (cf. Table II. 1. 4a–b). Although the archaeological characteristics of the Badarian are strongly related to those of the early Naqada I period, it is nevertheless to be noted that at present no cemeteries are known which show a continuous use from the Badarian into the Naqada period. The burials are however of the same type and organised in the same manner. The differences are mainly to be found in the material culture, for which the pottery presents the most obvious evidence. Not only will the characteristic rippled surface of the Badarian only occur most exceptionally during Naqada IA, but more importantly, the three principal pottery fabrics of the Badarian differ from those of the Naqada culture.\textsuperscript{77} Naqada I sites occur only in UE, from the Badarian region in the north to a few sites south of Aswan, in Lower Nubia. All of the Naqada I period is dominated by Black-Topped pottery, which makes up over 50% of the assemblage. Red-Polished and White Cross-Lined are the second most important categories.

\textsuperscript{75} Cf. Levy & van den Brink, in: *Interrelations*, 9.
\textsuperscript{76} Hendrickx (n. 69); see notes 70–71. For a more detailed overview of the relative chronological periods represented at individual Naqada sites, see Hendrickx & van den Brink, in: *Interrelations*, 346–399.
Table II. 1.4a. Chronological evolution of Predynastic—Early Dynastic types of objects (Hendrickx, n. 69). Included are: Predynastic typology: Abydos cem. E., U, X, Φ, Frankfort; el-Ahaiwa; el-Amrah cem. A, B; el-Badari cem. 3600, 3700, 3800, 3900, 4000, 4600; Elkab; Hammamiya cem. 1500–1800, 1900–2000; el-Mahasna; Matmar cem. 200, 2600–2700, 3000–3100, 3100; Mesaid; Mustagedda cem. 200, 300, 400, 1200, 1600–1800, 4000, 5200, 10000, 11700; Qaw cem. 0, 100, 200; Salmany.Protodynastic typology: Badari cem. 3100, 3200, 5500, 6000; Hammamiya cem. 1600–1800, 2000; Matmar cem. 200, 600, 900–1000, 2000; Mustagedda cem. 1600–1800; Qaw cem. 400–500, 600, 700, 800; Tarkhan Hill and Valley Cemeteries; Turah. The cemeteries from Naqada have been excluded because of the incomplete data set that would distort the general overview.

<table>
<thead>
<tr>
<th>IA</th>
<th>IB</th>
<th>IC</th>
<th>IIA</th>
<th>IIB</th>
<th>IIC</th>
<th>IID1</th>
<th>IID2</th>
<th>IIIA1</th>
<th>IIIA2</th>
<th>IIIB</th>
<th>IIIC1</th>
<th>IIIC2</th>
<th>IID</th>
<th>?</th>
<th>total</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>16</td>
<td>68</td>
<td>224</td>
<td>217</td>
<td>256</td>
<td>159</td>
<td>38</td>
<td>30</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>38</td>
<td>1047</td>
</tr>
<tr>
<td>C</td>
<td>4</td>
<td>7</td>
<td>30</td>
<td>6</td>
<td></td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>49</td>
</tr>
<tr>
<td>N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>1</td>
<td>2</td>
<td>22</td>
<td>20</td>
<td>24</td>
<td>30</td>
<td>5</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>10</td>
<td>119</td>
</tr>
<tr>
<td>P</td>
<td>2</td>
<td>18</td>
<td>73</td>
<td>55</td>
<td>69</td>
<td>231</td>
<td>119</td>
<td>107</td>
<td>15</td>
<td>3</td>
<td>2</td>
<td></td>
<td></td>
<td>35</td>
<td>727</td>
</tr>
<tr>
<td>D</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td>15</td>
<td>104</td>
<td>58</td>
<td>21</td>
<td>16</td>
<td>9</td>
<td>5</td>
<td></td>
<td>11</td>
<td>241</td>
</tr>
<tr>
<td>R</td>
<td></td>
<td>1</td>
<td>16</td>
<td></td>
<td>56</td>
<td>252</td>
<td>715</td>
<td>385</td>
<td>432</td>
<td>218</td>
<td>352</td>
<td>232</td>
<td>50</td>
<td>77</td>
<td>3012</td>
</tr>
<tr>
<td>L</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>1</td>
<td>12</td>
<td>55</td>
<td>50</td>
<td>99</td>
<td>141</td>
<td>873</td>
<td>798</td>
<td>221</td>
<td>905</td>
<td>177</td>
</tr>
<tr>
<td>W</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>49</td>
<td>29</td>
<td>112</td>
<td></td>
<td>66</td>
<td>1096</td>
<td>872</td>
<td>146</td>
<td>71</td>
<td>6</td>
</tr>
<tr>
<td>stone</td>
<td>1</td>
<td>2</td>
<td>10</td>
<td>12</td>
<td>3</td>
<td>20</td>
<td>16</td>
<td>12</td>
<td>3</td>
<td>124</td>
<td>190</td>
<td>37</td>
<td>442</td>
<td>45</td>
<td>27</td>
</tr>
<tr>
<td>palet</td>
<td>1</td>
<td>37</td>
<td>21</td>
<td>27</td>
<td>41</td>
<td>25</td>
<td>19</td>
<td>13</td>
<td>158</td>
<td>105</td>
<td>22</td>
<td>4</td>
<td></td>
<td>52</td>
<td>525</td>
</tr>
<tr>
<td>flint</td>
<td>1</td>
<td>9</td>
<td>2</td>
<td>10</td>
<td>18</td>
<td>1</td>
<td>8</td>
<td>1</td>
<td>5</td>
<td>2</td>
<td></td>
<td>5</td>
<td>1</td>
<td>20</td>
<td>83</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>total</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>24</td>
<td>100</td>
<td>423</td>
<td>390</td>
<td>669</td>
<td>1422</td>
<td>727</td>
<td>341</td>
<td>476</td>
<td>2621</td>
<td>2207</td>
<td>476</td>
<td>1504</td>
<td>253</td>
<td>388</td>
<td>12521</td>
</tr>
<tr>
<td># tombs</td>
<td>11</td>
<td>45</td>
<td>121</td>
<td>115</td>
<td>170</td>
<td>264</td>
<td>118</td>
<td>145</td>
<td>81</td>
<td>608</td>
<td>448</td>
<td>109</td>
<td>267</td>
<td>73</td>
<td>225</td>
<td>2761</td>
</tr>
<tr>
<td>average</td>
<td>2,18</td>
<td>2,22</td>
<td>3,49</td>
<td>3,39</td>
<td>3,93</td>
<td>5,38</td>
<td>6,16</td>
<td>5,80</td>
<td>5,88</td>
<td>4,31</td>
<td>4,93</td>
<td>4,36</td>
<td>5,63</td>
<td>3,46</td>
<td>1,72</td>
<td>4,53</td>
</tr>
<tr>
<td></td>
<td>IA</td>
<td>IB</td>
<td>IC</td>
<td>IIA</td>
<td>IIB</td>
<td>IIC</td>
<td>IID1</td>
<td>IID2</td>
<td>IIIA1</td>
<td>IIIA2</td>
<td>IIIB</td>
<td>IIIC1</td>
<td>IIIC2</td>
<td>IIIID</td>
<td>total</td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>-----</td>
<td>------</td>
<td>------</td>
<td>-------</td>
<td>-------</td>
<td>------</td>
<td>-------</td>
<td>-------</td>
<td>-------</td>
<td>--------</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>66.7</td>
<td>68.0</td>
<td>53.0</td>
<td>55.6</td>
<td>38.3</td>
<td>11.2</td>
<td>5.2</td>
<td>3.6</td>
<td>–</td>
<td>–</td>
<td>0.0</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>9.8</td>
<td>8.4</td>
</tr>
<tr>
<td>C</td>
<td>16.7</td>
<td>7.0</td>
<td>7.1</td>
<td>1.5</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>0.5</td>
<td>0.4</td>
</tr>
<tr>
<td>N</td>
<td>–</td>
<td>–</td>
<td>0.3</td>
<td>0.1</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>0.1</td>
<td>–</td>
<td>–</td>
<td>0.1</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>F</td>
<td>4.2</td>
<td>2.0</td>
<td>5.2</td>
<td>5.1</td>
<td>6.6</td>
<td>2.1</td>
<td>0.7</td>
<td>0.1</td>
<td>0.6</td>
<td>0.0</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>2.6</td>
<td>1.0</td>
</tr>
<tr>
<td>P</td>
<td>8.3</td>
<td>18.0</td>
<td>17.3</td>
<td>13.6</td>
<td>10.3</td>
<td>16.2</td>
<td>16.4</td>
<td>12.7</td>
<td>3.2</td>
<td>0.1</td>
<td>0.1</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>9.0</td>
<td>5.8</td>
</tr>
<tr>
<td>D</td>
<td>–</td>
<td>–</td>
<td>0.2</td>
<td>0.1</td>
<td>2.2</td>
<td>7.3</td>
<td>8.0</td>
<td>2.5</td>
<td>3.4</td>
<td>0.3</td>
<td>0.2</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>2.8</td>
<td>1.9</td>
</tr>
<tr>
<td>R</td>
<td>–</td>
<td>1.0</td>
<td>3.8</td>
<td>14.4</td>
<td>37.7</td>
<td>50.3</td>
<td>53.0</td>
<td>51.4</td>
<td>45.8</td>
<td>13.4</td>
<td>10.5</td>
<td>10.5</td>
<td>5.1</td>
<td>11.9</td>
<td>31.2</td>
<td>23.5</td>
</tr>
<tr>
<td>L</td>
<td>–</td>
<td>–</td>
<td>0.2</td>
<td>0.3</td>
<td>1.8</td>
<td>3.9</td>
<td>6.9</td>
<td>11.8</td>
<td>29.6</td>
<td>93.3</td>
<td>36.2</td>
<td>46.4</td>
<td>60.2</td>
<td>70.0</td>
<td>17.0</td>
<td>27.1</td>
</tr>
<tr>
<td>W</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>3.4</td>
<td>4.0</td>
<td>13.9</td>
<td>13.9</td>
<td>41.8</td>
<td>39.5</td>
<td>30.7</td>
<td>4.7</td>
<td>–</td>
<td>1.5</td>
<td>19.5</td>
</tr>
<tr>
<td>stone</td>
<td>4.2</td>
<td>2.0</td>
<td>2.4</td>
<td>3.1</td>
<td>0.4</td>
<td>1.4</td>
<td>2.2</td>
<td>1.4</td>
<td>0.6</td>
<td>4.7</td>
<td>8.6</td>
<td>7.8</td>
<td>29.4</td>
<td>17.8</td>
<td>7.0</td>
<td>7.5</td>
</tr>
<tr>
<td>palet</td>
<td>–</td>
<td>1.0</td>
<td>8.7</td>
<td>5.4</td>
<td>4.0</td>
<td>2.9</td>
<td>3.4</td>
<td>2.3</td>
<td>2.7</td>
<td>6.0</td>
<td>4.8</td>
<td>4.6</td>
<td>0.3</td>
<td>–</td>
<td>7.5</td>
<td>4.2</td>
</tr>
<tr>
<td>flint</td>
<td>–</td>
<td>1.0</td>
<td>2.1</td>
<td>0.5</td>
<td>1.5</td>
<td>1.3</td>
<td>0.1</td>
<td>1.0</td>
<td>0.2</td>
<td>0.2</td>
<td>0.1</td>
<td>0.3</td>
<td>0.4</td>
<td>5.2</td>
<td>0.7</td>
<td></td>
</tr>
<tr>
<td>total</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>
Naqada IA

The distinction made by Kaiser between Stufe Ia and Ib cannot be confirmed beyond doubt for the cemeteries for which a map is available.78 This was also noted by Friedman for cemetery 7000 at Naqa ed-Deir, where tombs predating Stufe Ic are present, but could not be distinguished in groups matching Kaiser’s Stufe Ia and Ib.79 Only in the eastern part of the Naqada Main Cemetery was it possible to distinguish spatially a number of Naqada IA–B tombs, but a clear distinction between IA and IB could not be made, although this may be due to the incomplete data available. A number of individual tombs from the cemeteries E and U at Abydos, as well as tombs from el-Amrah, can be attributed to Naqada IA because of the presence of simple Black-Topped cups and beakers belonging to Petrie’s types B 18 d, B 21 b and B 22 b/d/f. Also frequently occurring in tombs attributed to Naqada IA is White Cross-Lined pottery, the types of which are mainly simple convex round based bowls and plates (C 10 e/l/n), although restricted cups (C 64 b/n) and slender restricted jars (C 76 h) are also represented. Restricted shapes and lip rims are however very exceptional.

Naqada IB

Besides the tombs already mentioned from Naqada Main Cemetery, a small group of Naqada IB tombs occurs south of the centre of cemetery 2600–2700 at Matmar. In the ceramic assemblage, there is a noted increase of Red-Polished pottery. The type variation increases both for the Black-Topped and White Cross-Lined class. Besides the simple Black-Topped cups and beakers with straight wall already mentioned for Naqada IA, types with inflected wall, some of them large in size (B 18 b/c, B 21 c/d2, B 22 j, B 25 b/c, B 26 b), become characteristic. Additional types for the White Cross-Lined are oval plates (C 4 h, C 5 d/m, F 11 a) and exceptionally flat based bowls with concave wall (C 35). The frequency of slender restricted jars increases. The Red-Polished types consist mainly of small bowls and plates (P 1 a, P 11 a, P 17), as well as slender jars (C 75 b, C 76 d, C 76 w), the

78 Hendrickx (n. 39), 41.
79 Friedman (n. 66).
shapes of which also occur among the Black-Topped and White Cross-Lined pottery.

*Naqada IC*

Groups of Naqada IC tombs can be spatially identified at several cemeteries (Matmar, Salmany, Naqada and Armant). Both cups and beakers with straight and flaring walls occur, but the latter group shows increasing variability. Among the tall beakers, the importance of high, slender types increases (B 27 a, B 27 f, B 35 a) and types with explicit concave upper part (B 26 a–c). Hardly ever attested before are restricted regularly curved jars with large aperture (B 55 b, B 57 a/b, B 58 b/c, B 62 b/d, B 77 a), or similar shouldered jars (B 71 b, B 74 a/b, B 79 a). Also new are flat based bottles (B 92 a/b), which also occur among the Red-Polished pottery (P 56 a/b). As before, the majority of the Red-Polished pottery however reflects shapes known for the Black-Topped.

The majority of the White-Cross lined bowls and plates have, by this stage, concave walls and a flat base (C 24, C 26 l, C 27 n, C 30 h) or inflected walls with concave upper part (C 53–54). Although the decoration still primarily consists of geometric motifs (probably imitation of basketry), figurative representations become more frequent. The limited amount of Rough pottery which occurs from now on consists mainly of small bowls and plates. Footed stone vessels, almost exclusively from basalt, and rhomboidal or fishtail flint knives remain exceptional and are of the same types as during Naqada IA-B. There is, on the other hand a marked increase in palettes, mainly rhomboidal in shape.

*Naqada II*

The definition of the transition between Naqada I and II is most problematic. According to Kaiser’s general principles, *Stufe I* should be dominated by Black-Topped pottery, which is indeed a fact, and *Stufe II*

---

by Rough pottery. This however, is not so for Stufe IIa at the Armant cemetery, where Black-Topped pottery remains dominant and even for Stufe IIb the prevalence of Rough over Black-Topped pottery remains limited. The differences between Stufe IIa and IIb, when the dominant class of pottery changes from Black-Topped to Rough, and especially between Stufe Ib and IIc, with the introduction of Wavy Handled pottery and a number of new Decorated types, are much more important than the difference between Stufe Ic and IIa. It is to be noted, however, that the Rough pottery does not appear out of the blue at a certain moment in the evolution of the Naqada culture. It is more than obvious from settlement excavations that the Rough pottery makes up the vast majority of pottery since the beginning of the Naqada culture and even already during the Badarian, but the Rough ware finds its way only slowly to the cemeteries.

There are certainly enough reasons to make a distinction between a first and a second period within the development of the Naqada culture, but it seems more logical to draw the line between Stufe IIa and IIb or perhaps even between Stufe IIb and IIc. However, for the revision of Kaiser’s Stufen chronology presented here, the division between Stufe I and II has been maintained between Naqada IC and IIA, the archaeological characteristics of which are largely identical with Kaiser’s Stufen Ic and IIa. This is in order not to introduce yet another completely different system which would render the use of older literature difficult.

Naqada IIA

As for the Naqada IC period, spatially distinguished groups of tombs can be identified at the cemeteries of Matmar, Salmany, Naqada and Armant. The expansion into Nubia has continued and A-group cemeteries contemporaneous with Naqada IIA–B can be found south of those already identified for Naqada I. Black-Topped pottery remains dominant but White Cross-Lined ware disappears largely while Rough pottery for the first time makes up a relevant part of the ceramic assemblage. The distinction between Naqada IC and IIA does not only

81 Hendrickx (n. 39), 39–40.
82 E.g. Brunton (n. 12); Hendrickx et al. (n. 24).
depend on the representation of the wares. Of great importance is the appearance, during Naqada IIA, of a number of pottery types, especially small bag-shaped Rough types with pointed base (R 65 b/c, R 66 a/p, R 69 c/d), which were not yet present during Naqada IC. With regards to the Black-Topped pottery, the very early cups and beakers with straight wall disappear almost completely. For the remaining Black-Topped types there is little difference from Naqada IC, although the occurrence of modelled rims is new (e.g. B 35 b, B 37 b, B 38 c, B 50) as well as large flat based, regularly curved jars with strongly marked rim (B 53 a/b). Once again, the shapes of the Red-Polished pottery are related to those of the Black-Topped class. Rhomboidal palettes still occur regularly but the number of fish shaped palettes increases.

**Naqada IIB**

Spatially distinguished groups of tombs can once again be recognised at the cemeteries of Matmar, Salmany, Naqada and Armant, already in use from at least the Naqada IC period. The quantitative importance of Black-Topped pottery starts to diminish, although it is still the best represented class. Beakers now occur only with inflected walls and mainly exclusively with slender shapes (groups B 25, B 27, B 35) and often with modelled rim. The majority of the Black-Topped types consists of regularly curved jars, a limited number of which has pointed bases (groups B 41, B 44) but the majority is flat based (groups B 56–58, B 60–68). The diversity of Red-Polished types increases and is not as closely linked to the Black-Topped types as was previously the case.

The presence of Rough pottery has more than doubled. This is reflected in a more important diversity of cups and bowls (R 1–36), the previously occurring small bag shaped jars (R 62–69) with pointed base and also large storage jars (R 80–86) which will become very characteristic for the Naqada IIC–IID2 period. White Cross-Lined pottery has disappeared completely and is replaced (?) by a limited number of Decorated types, the decoration of which is limited to spirals, undulating lines and “scales”. That the limited number of Late types is indeed made from marl clay cannot be confirmed beyond doubt given the confusion within this class of pottery, where no clear distinction has been made between Nile silt and marl clay pottery.
There are some indications for regional diversity during Naqada IIB. Friedman observed a strong presence of Black-Topped ware for Stufe IIb at Naqa ed-Deir, and a similar phenomenon was also noted by Kaiser for el-Mahasna. For Naqada, Payne noted differences with Stufe IIb as described by Kaiser. All of this seems to indicate that the transition between Naqada IIA/B and Naqada IIC did not happen in the same manner and/or at the same moment for the whole of UE.

**Naqada IIC**

Cemeteries and settlements of this period are to be found over a larger area than those of the previous period. Besides at the cemeteries already mentioned for the previous periods, Naqada IIC was also spatially identified at Badari, Hammamiya, Naqa ed-Deir and the Hierakonpolis Fort Cemetery. Furthermore, Naqada IIC occurs at cemeteries in the neighbourhood of the Fayum (Gerza, Haraga, and Abusir el-Meleq), and in the eastern Nile delta the important cemetery at Minshat Abu Omar may have started towards the end of Naqada IIC but probably rather during Naqada IID. In Nubia, A-group cemeteries with strong Egyptian influences can be found.

With the Naqada IIC period, major changes occur in the pottery assemblage. The importance of the Black-Topped class drops dramatically and at the same time there is a marked increase of Rough pottery. The appearance of Wavy-Handled pottery is also very important. Although a limited number of the already known types still occurs, Black-Topped pottery is now dominated by shouldered jars with a small base and modelled rim (B 38 a/c, B 53 a–c) and similar shapes with pointed base (B 39 a–b). The Red-Polished pottery already in use during the previous period continues to be used. The most important difference is a strong increase of regularly curved jars with a small base (P 40 group). The diversity within the Rough class increases, mainly

---

83 Friedman (n. 66), 74–5.
84 Kaiser (n. 53), 74.
85 Payne (n. 39), 81.
88 Scharff (n. 48).
because of the differentiation within previously occurring groups. The large jars (R 81–86), which are a very important part of the Rough class, are totally dominated by the type R 81.

The new Wavy-Handled class is dominated by W 19, but the earliest examples of this class (W 1–3) also belong to this period although their provenance and position is sometimes unclear. The Decorated pottery is dominated by relatively small flat based regularly curved jars (e.g. D 43) and broad round based vessels (e.g. D 61), both with lug handles. Besides the decorative patterns already present, there a now very characteristic figurative representations (D 40–48). Marl clay pottery is certainly represented from Naqada IIC onwards. Both the Wavy-Handled and the Decorated class are made from this fabric, as is the large majority of the Late pottery. The latter is primarily used for cups and bowls, as well as a number of medium sized shouldered jars (L 53 a–b). The types of stone vessels that had occurred up until now have disappeared and are replaced by shapes inspired by the Decorated pottery. Rhomboidal palettes become rare, and in their place we find fish shapes and palettes with antithetic bird’s head.

**Naqada IID1**

Cemeteries and settlements are now probably also found in the delta (Minshat Abu Omar, Kafî Hassan Daoud) and the gradual replacement of the Maadi-Buto culture can be observed at Buto (cf. below). Black-Topped pottery becomes rare and only a number of regularly curved and shouldered jars occur (B 38 c, B 39 a–b, B 53 a–b), all of them with modelled rim. For the Red-Polished pottery there is hardly any difference from Naqada IIC, both in frequency and typology. A similar observation can be made for the Late class, despite its slowly increasing importance. Rough pottery continues to represent over half of the assemblage. The most important changes are to be found in the group of large storage jars where type R 81 is gradually replaced by the types R 84 and especially R 85 h and R 86 d, meaning that vessels with a small or pointed base are preferred to round based examples. The Wavy-Handled types become smaller and more slender (W 25, W 44) compared to the types characteristic for Naqada IIC. The two

---

90 Kaiser (n. 48), 87–109.
Decorated types characteristic for Naqada IIC (D 43, D 61) continue to be used but figurative representations occur less frequently. The stone vessel types remain identical to those of Naqada IIC, while rhombic palettes have almost completely disappeared.

**Naqada IID2**

The definition of Kaiser’s *Stufen* IID2 and IIIa1 causes a problem because they share the same Wavy-Handled types and differ mainly through the presence or absence of Black-Topped types, the number of which is at any rate minimal, and through their Decorated types, which also only account for a very small part of the assemblage. Another characteristic should be the transition from R 84–86 to L 30 b,c but the latter types are in reality very similar to R 84 and R 84 c and the difference consists mainly of a less well cared for product. It is therefore to be feared that the attribution of a vessel to one of these types by excavators other than Petrie may have been rather arbitrary. Also the spatial distribution at Armant Cemetery 1400–1500 easily allows for a different clustering of graves, by which the group defined by Kaiser as *Stufe* IID2, no longer exists.91 Furthermore, the Wavy Handled types always seem to display the fastest evolution of shape, and it would be very strange if this would not have been so during *Stufe* IID2–IIIa1. For all these reasons the archaeological description of the *Stufen* IID2 and IIIa1 cannot be maintained in the way in which it was defined by Kaiser and the description given here for Naqada IID2 therefore differs to some extent from Kaiser’s *Stufe* IID2. The distribution of cemeteries and settlements remains the same as for Naqada IID1.

Wavy-Handled and Late pottery increases in importance while all other classes decrease (lightly). The types represented for Black-Topped and Red-Polished pottery nevertheless remain almost identical. This is not the case for Late pottery, where not only the previously known cups, bowls and jars (L 53 group) show a greater diversity but furthermore a new type of large, round based shouldered jars (especially L 36 n) occurs. The latter will become increasingly popular from Naqada IIIA1 onwards. The large majority of the Rough types present during Naqada IID1 remains so, but with less diversity. A few new types occur,

---

91 Hendrickx (n. 69), 274–276, pl. 87–89.
which are mainly imitations of Late types (e.g. R 57 b-c). Among the large storage jars, the decline of type R 81 already noted for Naqada IID1 continues, for the benefit of R 84 (= L 30 b) and R 86 p (= L 30 –). There is a marked change for the Decorated ware. Of the two shapes typical from Naqada IIC onwards, the small flat based regularly curved jars (e.g. D 43) hardly ever occur any more, while the broad round based vessels (e.g. D 61) still do. Figurative representations are almost completely missing. For the Wavy-Handle class, the tendency towards smaller vessels and narrow shapes continues (groups W 43 and W 47), while the handles loose their functionality.

Naqada III

The transition from Kaiser’s Stufe II to Stufe III is not without problems. The difference between them is made up by the Late class, which takes over from the Rough class as numerically the most important group. However, Kaiser’s view of the spatial distribution of the Rough and Late pottery at Armant\(^92\) does not take into account the fact that an important number of the Late types are in reality made in the Rough fabric (especially the types belonging to the L 30 series), although he is well aware of the problem.\(^93\) Counting these with the Rough class, shows that at Armant no part of the cemetery is dominated by marl clay pottery. However, this does not mean that groups of graves dominated by marl clay pottery do not occur during the Naqada culture. On the contrary, large groups of graves at Elkab and Hierakonpolis for instance, and even entire cemeteries such as those of Tarkhan, Tura and Abu Roash are completely dominated by marl clay pottery. Only the transition in dominance from Rough to Late pottery should be placed more recently than suggested by Kaiser. This raises the question of whether a transition from Naqada II to III should be situated at this moment. As we are dealing with a gradual evolution and not with sudden changes, this question is only of limited importance. A change of main period is not supported by the characteristics of the funerary equipment of the tombs. However, as it is certain that at least from the beginning of the Naqada III period that the Naqada culture

\(^92\) Kaiser (n. 53), Pl. 15 B–C.
\(^93\) Kaiser (n. 53), 76, note 9.
has spread over the whole of Egypt and as the earliest writing and historical documents occur during the Naqada IIIA1 period (cf. below), it seems possible nevertheless to maintain the division between Naqada II and III, albeit not for the original reasons. Naqada III sites occur throughout Egypt and Nubia and their distribution can no longer be used as a possible element for chronological information.

Naqada IIIA1

The definition of Kaiser’s Stufen IIIa1 causes a particular problem. The number of tombs at Armant for Stufe IIIa1 is very limited, and the Wavy-Handled types found in them are very similar to those of Stufe IId2. As mentioned already there is no domination by marl fabric pottery that would make a difference from Stufe IId2. It therefore seems impossible to retain Stufe IIIa1 in the way defined by Kaiser and the description given here for Naqada IIIA1 will differ strongly. The majority of Stufe IIIa1 tombs is included in Naqada IID2, while part of Stufe IIIa2 is considered a separate entity and redefined as Naqada IIIA1 (cf. below).

Black-Topped pottery no longer occurs and the importance of Red-Polished pottery has strongly diminished. For most types of the latter class, parallels can be found among the Late pottery and it is very possible that confusion has occurred. Unfortunately it has not yet been possible to check whether the vessels identified as Red-Polished are indeed made from Nile silt and not from the marl fabric characteristic of the Late class. The large Rough storage jars are now dominated by slender types (L 30 g/k, L 31 a) which are, however, taller than the Naqada IID types. Among the round based shouldered marl clay storage jars the types L 36 n/s are particularly well represented. There are no important changes in the remaining part of the Late pottery, although the diversity and quantity increases. The Decorated pottery characteristic of Naqada IIC–IID2 no longer occurs. The types of vessels, which are now decorated also, occur without decoration among the Late class. The decoration is largely reduced to series of undulating lines (groups D 20–21, D 24–25). The Wavy-Handled types again become more slender (W 49–50) and the handles that had already lost

94 Only 4 tombs. It is to be noted that on the distribution plan (Kaiser (n. 53), Pl. 20 C), the symbols for Stufe IIIa1 and IIIa2 have been confused.
their functionality are, in a number of cases, changed into a continuous ornamental band (W 51 a, W 56 a, W 56 g). Finally it is to be noted that palettes show less diversity in shape and are dominated by simple rectangular types.

Naqada IIIA2

Kaiser’s definition of Stufe IIIa2 at Armant is based on a very limited number of graves and the majority of the types of objects presented as characteristic for Stufe IIIa2, are not represented at the Armant cemetery. The description of Stufe IIIa2 is therefore largely theoretical. When studying the spatial distribution of the Naqada III cemetery of Elkab two groups could be distinguished within material characteristic for Kaiser’s Stufe IIIa2. A similar observation could be made for the Hierakonpolis Fort Cemetery, which was also not yet published at the time when Kaiser made his study of the relative chronology. Because of this and the above mentioned problems with the Stufen IIId2–IIIA1, the earliest group distinguished within Kaiser’s Stufe IIIa2 was readjusted to Naqada IIIA1. The validity of this was later confirmed by the horizontal development of the elite tombs at cemetery U at Abydos and especially the position of tomb U-j and the types of objects found in it (cf. below).

The Naqada IIIA2 period is characterised by a spectacular decrease of the Rough class in favour of Wavy-Handled pottery. It is to be noted however, that this picture is strongly influenced by the Tarkhan Valley cemetery from which the majority of the Naqada IIIA2 tombs known comes. The possibility for regional variation, especially between UE and LE, can therefore not be excluded. The Nile silt Red-Polished pottery has now been completely replaced by marl clay Late ware, the variety and quantity of which once again increases. The large round based shouldered storage jars are now dominated by somewhat broader types (L 36 a/g2/k). The large Rough jars consist mainly of very slender pointed jars (L 31 a), while the series R 84–86 no longer occurs.

95 Kaiser (n. 53), Pl. 24 B.
96 Hendrickx (n. 70, Elkab V), 205–16.
97 See the review by S. Hendrickx, BiOr 47 (1990), col. 643–646.
98 Naqada IIIA2 tombs have been published both according to Petrie’s predynastic and protodynastic typology (Petrie (n. 42), 1921, (n. 45), 1953). The most important
Decorated pottery diminishes in quantity, but for the remaining examples both the vessel types and the decoration are identical to Naqada IIIA1. It is however to be noted that the amount of Decorated vessels would be much higher if the Wavy-Handled jars of type W 62 with net pattern decoration would be included. These are most characteristic for Naqada IIIA2 and are part of the Wavy-Handled jars with their maximum diameter located at the rim, relatively broad base and continuous decorative band (W 55, W 58, W 61, W 62). The stone vessels consist mainly of calcite bowls and plates. Animal shaped palettes have almost completely disappeared. The vast majority are rectangular with incised lines around the edges.

**Naqada IIIIB**

Kaiser’s *Stufe IIIb* does not occur at the Armant cemetery, on which his chronological framework is based, and is therefore mainly an interpretation of the theoretical evolution of the Wavy-Handled types. More recently, Kaiser divided *Stufe IIIb* in two subdivisions, IIIb1 and IIIb2 and added three *Stufen*, IIIc1, IIIc2 and IIIc3. With the late types of the Wavy-Handled class as main characteristics, the chronological stages distinguished by Kaiser are summarised in Table II. 1.5. The distinction made between *Stufe IIIb1* and IIIb2 does not seem justified, since at Tarkhan, for instance, pottery types characteristic of the *Stufen* concordances for the marl fabric storage jars are: 60 g = L 36 n, 60 j = L 36 k, L 60 m = L 36 a.

99 For the Naqada IIIA2 Wavy-Handled jars, the most important concordances between Petrie’s predynastic and protodynastic typologies are: 46 b = W 62 –, 46 d = W 58, 46 f = W 58 –.


101 Kaiser (n. 58) gives no archaeological description for these new *Stufen*, neither does he discuss the way in which they have been distinguished. Therefore, Table II. 1.5 is based on personal information kindly supplied by W. Kaiser (Poznan symposium 1992, letter 30 Oct. 1993). The following correlation with the early kings of Egypt can be made: *Stufe IIIb2* = Iry-Hor and earlier; *Stufe IIIc1* = Ka—Narmer; *Stufe IIIc2* = Hor Aha—Djer; *Stufe IIIc3* = Djet/Den until the end of Dyn. 1.
IIIb1 and IIIb2 are very often present together in the same tomb. Furthermore, the spatial distribution of the two groups of types shows no obvious patterning at Tarkhan. Also, the very obvious spatial distribution of the Turah cemetery does not support the idea of a chronological difference between the above mentioned types. Therefore, the description of Naqada IIIB as presented here is more or less equivalent to both Stufe IIIb1 and IIIb2.

In terms of percentages, the distribution of the pottery classes remains almost identical to Naqada IIIA2. There are however a number of important changes in the types of vessels. The slender Rough jars with pointed base have almost completely disappeared. The other Rough types hardly change. For the marl clay storage jars, two size classes can be distinguished. The smaller types (L 36 b, L 38 a) occur more frequently than the large ones (L 36 a, L 36 k). A rare but notable new type is large jars with applied rope decoration, generally considered to be wine jars (protodynastic 76). On the one hand, the few Decorated vessels remaining are identical to those of the Naqada IIIA1
period. Net paintings on Wavy Handled jars, on the other, have almost completely disappeared. The Wavy Handled class is now represented by cylindrical jars with a small band of incisions instead of an applied decorative band (W 71 a, W 80 = 47 r-t, 48 s, 49 d/g). A remarkable change is the strong increase in stone vessels. Among them are imitations of the cylindrical jars and a large amount of bowls and plates.

_Naqada IIIc1_

Kaiser’s _Stufe IIIc1_ consists of types which are partially characteristic for _Stufe IIIb2_ and partially for _Stufe IIIc2_. The existence of this kind of “transitional period” can of course not be denied, but it is not appropriate to distinguish a period, which has no types of objects characteristic for that period only. This is especially so since the archaeological description of the _Stufen_ is often used for dating individual graves or even objects. It therefore seems better to distinguish less periods, and admittedly have eventually a slightly less detailed idea of the chronological evolution of a cemetery. A limited amount of the types mentioned for _Stufe IIIc1_ is therefore in the present description integrated in Naqada IIIB, but the large amount is joined with Kaiser’s _Stufe IIIc2_ types into Naqada IIIc1.

The Late class now becomes more important than the Wavy-Handled. The marl fabric storage jars still consist of large (protodynastic 60 b/d) and smaller types (59 group), but there is also a new group of still smaller jars (65 group).105 Very large jars with decorative band (76 group) already occurred occasionally during Naqada IIIB, but now become more frequent. Large Rough jars with pointed base on the other hand no longer occur and the same applies to Decorated vessels. The Wavy-Handled jars have now evolved into cylindrical jars with slightly curved wall and without decorative band (W 90 = 50 d–g). The previously occurring stone vessel types continue to be used but an increase in squat jars and restricted cups can be observed.

---

Naqada IIIC2

Naqada IIIC2 largely coincides with Kaiser’s Stufe IIIc3. The amount of Wavy-Handed cylindrical jars diminishes drastically, but the amount of stone vessels shows an almost identical increase. As the latter group consists for a considerable part of cylindrical jars, it is obvious that this is merely a change of material and not of vessel type. The pottery cylindrical jars without decorative band have straight walls and are narrow (protodynastic 50 b–c/h–t) compared to those of Naqada IIIC1. The large marl fabric storage jars become far less frequent than previously, but the occurrence of the small (protodynastic group 59) and even smaller types (group 65) strongly increases. The large wine jars with applied band decoration continue to be present. Palettes have almost completely disappeared from the tomb equipment.

Naqada IIID

Naqada IIID is less well defined than the other phases of the Naqada culture which have been described. This is due to the limited number of tombs identified as Naqada IIID, the majority of which come from Qaw and Abu Roash.106 This could however be improved as the recent excavations at Adaïma and Helwan have yielded tombs apparently dating to Naqada IIID. In future, it should be possible to distinguish subdivisions within Naqada IIID and probably also regional differences. The link with the early Dyn. 3 pottery is probably closer than has been suspected before, but this also needs further investigation. It is also problematic that an important characteristic of Naqada IIID is defined in a negative manner, that is to say the absence of cylindrical jars. Both of the smaller types of marl fabric storage jars continue to be important. The large wine jars with applied band decoration have developed into “torpedo” shapes with almost vertical walls and high rims (protodynastic 76 s/u/y). In addition, the vessels are made with less care. This tendency apparently becomes more explicit as Naqada IIID advances. Most important is the appearance of new types of vessels, which will develop further during the OK. Among them bowls with

106 The Abu Roash tombs are not integrated in Table II. 1.4a–b because they are not published according to Petrie’s typologies.
internal rim,\textsuperscript{107} early Maidum bowls and beer jars.\textsuperscript{108} Among the stone cylindrical jars, nearly all of them in calcite, types without decorative band are now more frequent than those with. New is the frequent occurrence of dummy calcite cylindrical jars.

\textit{Correlation between Naqada III and Dyns. 0–2}

Before discussing the actual correlation between Naqada III and Dyns. 0–2, the use of the concepts “Dyn. 0” and “Dyn. 00” should be discussed. The first notion was already used on occasion by Petrie and Quibell but has only far more recently gained wide acceptance after its reintroduction by Kaiser.\textsuperscript{109} Dyn. 0 has however been used with different meanings and the only consistency is the inclusion of Iry-Hor and Ka. Perhaps its use can be defended for referring to the line of kings from Abydos identified through inscriptions and tombs at the cemeteries U and B. Dyn. 00 on the other hand has only occasionally been used, partially overlapping the meaning of Dyn. 0. Unless its significance would be clearly defined and generally accepted, it seems better to avoid the use of Dyn. 00. A number of elite tombs can be connected by inscriptions or seal impressions with the Late Predynastic—Early Dynastic kings.\textsuperscript{110} The relative chronological position of these tombs was in some cases defined when studying the spatial distribution within the Naqada III cemeteries of LE (Tarkhan, Turah). However, the royal tombs from Abydos and the elite mastabas from Saqqara are mainly attributed to a particular Naqada period by the characteristic objects they contained (Table II. 1.6). It is furthermore possible to integrate the spatial distribution of the elite tombs from cemetery U at Abydos, which can be linked to the local late predynastic kings.\textsuperscript{111}

\textsuperscript{108} Hendrickx et al. (n. 105).
\textsuperscript{109} Kaiser (n. 14), 71.
\textsuperscript{110} Hendrickx (n. 39), 59–61.
In the southern part of cemetery U at Abydos, a group of mud brick lined tombs clearly dates to Naqada IIIA1. It is even possible within this group to recognise a west-east evolution from older tombs (U-a, U-o, U-qq) to more recent tombs (U-r, U-k, U-j, U-i). The latter are continued further to the east by Naqada IIIA2 tombs (U-f (?), U-g, U-h). Starting from tomb U-s, which still dates to Naqada IIIA2, a series of tombs sets of, linking cemetery U to cemetery B, where the tombs of Iry-Hor up to Hor-Aha are located. Unfortunately the evidence published for these tombs in the preliminary reports is limited. Eventually tombs U-u and U-v still date to Naqada IIIA2. U-t probably dates to Naqada IIIB, and because of their position in the cemetery, this would also have been the case for U-y, U-z and U-x. The earliest tombs of cemetery B, those of Iry-Hor (B1–2) and Ka (B7/9) can be dated to Naqada IIIIB on more reliable basis.

Table II. 1.6. Correlation between Naqada IIIA1–IIID and Dyns. 0–1

<table>
<thead>
<tr>
<th>King</th>
<th>Naqada</th>
<th>Abydos</th>
<th>Saqqara</th>
<th>Tarkhan</th>
<th>Turah</th>
</tr>
</thead>
<tbody>
<tr>
<td>Qa-a</td>
<td>IIIID</td>
<td>Q</td>
<td>S 3120, S 3121, S 3500, S 3505</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Semerkhet</td>
<td>IIIIC2/D</td>
<td>U</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Adjib</td>
<td>IIIIC2</td>
<td>X</td>
<td>S 3038, S 3111, S 3338</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Den</td>
<td>IIIIC2</td>
<td>T</td>
<td>S 3035, S 3506, S 3507, S X</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Djet</td>
<td>IIIIC1/O</td>
<td>Z</td>
<td>S 3504 1060</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Djer</td>
<td>IIIIC1/2</td>
<td>–</td>
<td>S 3036 235</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Hor-Aha / Djer</td>
<td>IIIIC1/2</td>
<td>–</td>
<td>– 300</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Hor-Aha</td>
<td>IIIIC1</td>
<td>B 10/15/19</td>
<td>S 3357</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Narmer</td>
<td>IIIIC2</td>
<td>–</td>
<td>– 1982</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>IIIIC1</td>
<td>B 17/18 (?)</td>
<td>414, 415, 1100</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Ka</td>
<td>IIIIC1</td>
<td>–</td>
<td>261</td>
<td>1627, 1651</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IIIIC1/B</td>
<td>–</td>
<td>–</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iry-Hor</td>
<td>IIIIB</td>
<td>B 7/9</td>
<td>–</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IIIIB</td>
<td>B 1/2</td>
<td>–</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IIIIB</td>
<td>U-z, U-x, U-y, U-g, U-h, U-s, U-u, U-v</td>
<td>–</td>
<td>54, 64, 89</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IIIA2</td>
<td>U-z, U-h, U-s, U-u, U-v</td>
<td>–</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>Scorpion I</td>
<td>IIIA1</td>
<td>U-z, U-y</td>
<td>–</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td></td>
<td>IIIA1</td>
<td>U-a, U-k, U-o, U-r, U-qq</td>
<td>–</td>
<td>–</td>
<td></td>
</tr>
</tbody>
</table>

In the southern part of cemetery U at Abydos, a group of mud brick lined tombs clearly dates to Naqada IIIA1. It is even possible within this group to recognise a west-east evolution from older tombs (U-a, U-o, U-qq) to more recent tombs (U-r, U-k, U-j, U-i). The latter are continued further to the east by Naqada IIIA2 tombs (U-f (?), U-g, U-h). Starting from tomb U-s, which still dates to Naqada IIIA2, a series of tombs sets of, linking cemetery U to cemetery B, where the tombs of Iry-Hor up to Hor-Aha are located. Unfortunately the evidence published for these tombs in the preliminary reports is limited. Eventually tombs U-u and U-v still date to Naqada IIIA2. U-t probably dates to Naqada IIIB, and because of their position in the cemetery, this would also have been the case for U-y, U-z and U-x. The earliest tombs of cemetery B, those of Iry-Hor (B1–2) and Ka (B7/9) can be dated to Naqada IIIIB on more reliable basis.


The pottery found in the tombs of Narmer (B 17–18), Hor-Aha and Djer is characteristic for Naqada IIIC1, making this apparently a relatively short period. This seems to be confirmed by the limited number of Naqada IIIC1 tombs at Tarkhan compared to those of Naqada IIIB and also IIIC2. The tombs dating to the reigns of “Serpent”, Den and ‘Adj-ib can be attributed to Naqada IIIC2. The position of the tomb of Semer-khet, who apparently only reigned for a short period, remains uncertain because hardly any objects from his tomb are known, and no mastabas dating to his reign have been identified at Saqqara. The tombs dating to the time of Qa’a fit well within Naqada IIID as described above, but although there are certainly similarities with the tombs of late Dyn. 2, there are also differences with the limited amount of pottery known for the tombs of Per-ibsen and Kha-sekhemwy at Abydos. As mentioned before, it is at present impossible to make well defined subdivisions within Naqada IIID but this will certainly be possible in the future.

Radiocarbon Chronology

Radiocarbon dates for Naqada cemeteries are limited in number, and the majority of them have been made a long time ago, resulting in questionable dates and important deviations. Furthermore, the calibration curves for the (second half of the) 4th millennium BC show important fluctuations with long possible data ranges as a consequence. It is generally considered a “bad period” for radiocarbon dating. It is therefore impossible to link the phases of the Naqada culture distinguished to an absolute chronology. The limited number of dates available, at any rate, does not allow for the distinguishing of chronological

113 Naqada IIIA2: 488 tombs; IIIB: 306 tombs; IIIC1: 73 tombs; IIIC2: 206 tombs.
phases. By also integrating the dates from settlement sites it is nevertheless possible to confirm the outline defined by Fekri Hassan. 119

Radiocarbon dates from historically dated royal and elite tombs at Abydos and Saqqara have been used in an attempt to date the reigns of individual kings accurately. 120 This however is not without problems as is shown by the more recently published dates from Abydos, 121 indicating that Scorpion I (tomb U-j) and Hor-‘Aha would be more or less contemporaneous. Because of the characteristics of the funerary equipment and the location within the cemetery, this is however to be excluded. Eventually the use of old wood could account for this type of aberration, something which might quite easily have occurred in the well-organised elite cemeteries. The correlation presented here (Table II. 1.7) between the Naqada periods, the Dyns. 0–2 kings and the available radiocarbon dates is therefore to be considered preliminary and approximate only. A major problem concerning the interpretation of radiocarbon dates is the discrepancy between the historical chronology and the radiocarbon chronology. The radiocarbon dates are consistently older with at least 100 years, 122 resulting in a very long time span for Dyn. 2. As this dynasty is unfortunately poorly known, this question has to remain open for the time being. Also, the correlation


The importance of this culture has only been realised during the last decade. The Maadi-Buto culture, dating mainly to the 4th millennium BC, is no longer regarded as a regional culture in the neighbourhood between radiocarbon dates from the southern Levant and Egypt is equally problematic.123

Maadi-Buto Culture124

The importance of this culture has only been realised during the last decade. The Maadi-Buto culture, dating mainly to the 4th millennium BC, is no longer regarded as a regional culture in the neighbourhood


124 Only a short overview is presented here. More detailed archaeological descriptions can be found in the literature mentioned.
of Maadi, today a modern suburb of Cairo, because it was apparently present over a large part or perhaps even the whole of LE, especially during Naqada IIC/D. This, however, does not necessarily implicate a political unity of LE. The connection between the different chronological phases, early, middle and late Maadi-Buto, recognised at Maadi and Buto between themselves and in relation with the relative chronology of the Naqada culture, poses considerable problems and the earlier phases in particular have been revised several times over recent years. At present they can nevertheless be summarised with some precision.

Of great importance is the presence in the lowest layer of occupation at Buto, Stratum Ia/b, of a large quantity of locally made south Levantine Chalcolithic-style pottery, known from the Beersheba culture in the southern Levant. Stratum Ia, containing about one-third of locally made Chalcolithic pottery, is to be dated before 3700 cal BC, contemporaneous with Naqada IA/B. The remaining part consists of LE Neolithic pottery. The amount of south Levantine Chalcolithic-style pottery diminishes in Stratum Ib, which could be contemporaneous with Naqada IC, although this is mainly based on the intermediate position of this stratum between Buto Ia and IIa for which more reliable links with the Naqada culture are available. Buto II represents the "classical" stage of the Maadi-Buto culture and the two layers distinguished, Buto IIa and b, can be dated to respectively Naqada IIA–B and Naqada IIC–IID1. Buto Stratum IIIa, corresponding mainly to Naqada IID2, represents a transitional phase between the LE Maadi-Buto culture and the Naqada culture which by that time has started spreading northward. The influence of the Naqada culture in the Delta becomes far more important during Buto Stratum IIIb–c, corresponding roughly to Naqada IIIA1. During Buto Stratum IIId–f hardly any elements of the Maadi-Buto culture remain. (See also page 487, first footnote).

---

126 See however Levy & van den Brink, in: Interrelations, 8.
127 Levy & van den Brink, in: Interrelations, 13, Table I.4.
130 Faltings, in: Interrelations, 168.
II. 2 INSCRIPTIONAL EVIDENCE FOR THE RELATIVE CHRONOLOGY OF DYNS. 0–2

Jochem Kahl

Sources

Contemporaneous king-lists intended as historical records are not at our disposal for reconstructing the chronology of the earliest dynasties nor for establishing the order of the kings. That such lists existed is shown by the Royal Annals. The only contemporaneous sources are of a different nature, viz. a) kings’ names inscribed on ritual or festival vessels or on administrative seals (and in one case, on a non-royal statue), useful in reconstructing the succession of kings; b) administrative labels citing eponymous events of specific years and stone vessels inscribed with festival notes which aid in determining the length of reigns. Later sources used for this study are restricted to the OK. It must be borne in mind that all sources, whether contemporaneous or later, may contain scribal errors, and that some, such as the Royal Annals, were subject to ideological influence.

Kings before Nar-mer

The earliest writing from Egypt preserves the names of several rulers who preceded Nar-mer, here considered the first king of Dyn. 1. Two

---

1 I would like to thank Eva-Maria Engel and Barbara Kneißler for information and for help in preparing the documents.
3 E.g. the labels Petrie, RT I, pl. 15: 16–17 where the meaning of the eponymous event was misunderstood—see G. Dreyer et al., “Umm el-Qaab, Nachuntersuchungen im frühzeitlichen Königsfriedhof, 11./12. Vorbericht,” MDAIK 56 (2000), 116 n. b; or, for the reign of Den, an entry in the Annals (Cairo Fragment 5, recto, lower part, 5) mentioning the planning (?) of a building which must have been erected under Djer, cf. Wilkinson, Annals, 246–247.
4 Recent scholarship favours Narmer over ‘Aha for the role of Menes, first king of
of them are documented in the necropolis of This at Umm el-Qaab, Abydos: Iry-Hor and Sekhen/Ka. The archaeological evidence makes Sekhen/Ka the predecessor of Nar-mer and thus a successor of Iry-Hor. The presence of the element Hor in the name Iry-Hor can be cited in support of this interpretation, since the names of some other "kings" attested before Nar-mer also include the god’s name: Ny-Hor, Hat-Hor, and Pe-Hor. These “kings,” as well as some others, are presumed to have been local rulers or rulers who opposed the Thinite elite. Information for determining the chronological relationship of these rulers is provided solely by archaeological evidence. The following names are attested:

Ny-Hor, at Tura
Hat-Hor, at Tarkhan
“Trio” (three circles surmounting vertical strokes), from the eastern Delta, and perhaps also at Tura
Pe-Hor (alternatively read Iry-Hor and thus assignable to him), at Qustul
Ny-Neit(?), at Helwan
“Crocodile”, at Tarkhan
“Bird and vertical sign”, at Tarkhan


5 Both readings are possible; see Kahl, System, 38–40.
8 Junker, Turah, 147, fig. 57; Kaiser and Dreyer (n. 6), 260–69.
9 Kaiser & Dreyer (n. 6), 260–69.
11 Junker, Turah, 46–47, fig. 57; cf. Fischer (n. 10); von der Way (n. 7), 101.
15 W. M. F. Petrie, Tarkhan I and Memphis V (1913), pl. 31:71; Dreyer (n. 14), 260.
“Scorpion”, at Hierakonpolis\textsuperscript{16} a ruler with an obscure name, at Buto\textsuperscript{17}

Not included in this list is a group of signs consisting of two falcons on a \textit{serekh} (“Double Falcon”), known from Abydos, Tura, Beda, and the Sinai.\textsuperscript{18} Whether it represents a king’s name or is symbolic of royal authority per se, remains open. Several groups of signs on labels and in inscriptions on vessels from Tomb U-j at Umm el-Qaab, as well as signs on the Min colossi from Coptos, on the Libya Palette and on some other small finds, have been understood as kings’ names.\textsuperscript{19} But this interpretation is problematic.\textsuperscript{20} The groups may be place names and/or the names of gods instead.\textsuperscript{21}

\textit{Nar-mer to Qa-\textsuperscript{a}: The Succession}

Inscriptions preserved in seal impressions and on stone vessels have established a highly reliable model for the succession during Dyn. 1. Impressions of two different seals associated with the administration of the necropolis were found in the royal cemetery of Umm el-Qaab, Abydos. Both seals listed kings who were buried there. One dates from the time of Den or ‘Adj-ib (Doc. 1); the other is temp. Qa-\textsuperscript{a} or Hetepsekhemwy (Doc. 2). According to Werner Kaiser, whose interpretation


\textsuperscript{17} Von der Way (n. 7), 99, fig. 22: 6.


is followed here, the metal cylinder seal used to make the impressions subsumed under Doc. 1 was cut during the reign of Den and altered after his death. This accounts for the unsymmetrical sequence of kings’ Horus names (written without serekhs) and the name of the god Khent-imenti. The royal names are arranged from left to right: Nar-mer—‘Aha—Djer—“Serpent”—Den—Meret-neit. (The sequence Djer—“Serpent”—is confirmed by Doc. 3, see infra.). Social, rather than chronological reasons dictated that Meret-neit follows Den; as king’s mother, her status was lower than her son’s. 24 This interpretation is supported by the material (limestone) of the stelae for her tomb at Umm el-Qaab and by seal impressions found there which are closer to those from the time of “Serpent” than to those temp. ‘Adj-ib. That Meret-neit is presumed to have served as regent for her son accounts for her burial among the kings at Umm el-Qaab. 27 Accordingly, the chronological order should be Nar-mer—‘Aha—Djer—“Serpent”—Meret-neit—Den.

Several impressions from sealings of leather bags facilitated the reconstruction of a second cylinder seal, Doc. 2. Its design is similar to that of Doc. 1. Again, there are no serekhs. The sequence of kings’ names from Nar-mer to Qa’-a is reversed, with mention of Khent-imenti, perhaps as tutelary deity of the necropolis. 28 Meret-neit is omitted, probably because of her lower status. The royal names, arranged from left to right, are: Qa’-a—Semer-khet—‘Adj-ib—Den—“Serpent”—Djer—‘Aha—Nar-mer.

Inscriptions on stone vessels corroborate the succession Den—‘Adj-ib—Semer-khet—Qa’-a (Docs. 4–8) or segments of it (Docs. 9–13, 15–17). Paleographical analysis shows that kings’ names were added from reign to reign. Sometimes ‘Adj-ib’s name was erased (Docs. 10–11;
cf. Doc. 15). Only a few of the inscriptions on these vessels use Horus names; in most cases they mention instead the nsw bjt nb.tj title + name. Because other contemporaneous inscriptions give both names of a king, it is possible to equate Horus Den with nsw-bjt Khasty, Horus ‘Adj-ib with nsw bjt nb.tj Mer-pi-bia, Horus Semerkhet with nsw bjt nb.tj Iry-netjer and also with a second unreadable nsw bjt nb.tj name, and, finally, Horus Qa-’a with nsw bjt nb.tj Sen, nsw bjt nb.tj Sehetep and nsw bjt nb.tj Qa-’a.

The three nsw bjt nb.tj names of Qa-’a can be interpreted as indicative of chronologically different periods of his reign. According to this proposal, Sen is the oldest of the three. On year labels of Qa-’a, Sen is associated with the official Henu-ka who is documented under Qa-’a’s predecessor Semer-khet. The nsw bjt nb.tj name Sen and the official Henu-ka are both mentioned in connection with a “Sixth Occasion of Inspection”; another document citing the same event mentions the nsw bjt nb.tj Sehetep. Therefore, Sehetep will have replaced

---

30 For the controversy about whether the element nb.tj belongs to the name or to the title, cf. Wilkinson, *Egypt*, 206–207.


32 Seal impression, Umm el-Qaab, Tomb X: Kaplony, *Inschriften III*, fig. 245.

33 Seal impression, Umm el-Qaab, Tomb U: Kaplony, *Inschriften III*, fig. 229.

34 Label, Umm el-Qaab, Tomb Q: E.-M. Engel, *Das Grab des Qa’a in Umm el-Qaab: Architektur und Inventar* (Diss., microfiche, Göttingen 1997), 437, fig. 217: 5; label, Umm el-Qaab, Tomb Q: Dreyer (n. 28), 73–74, pl. 14d.


36 Label, Umm el-Qaab, Tomb Q: Dreyer (n. 28), 74–75, pl. 14e.


38 Labels from Umm el-Qaab, Tomb Q: Engel (n. 34), 455, figs. 221: 1 and 4.


40 Cf. labels from his reign: Engel, (n. 34), 437, fig. 217: 1; Petrie, *RT II*, pl. 8: 5.

41 Two labels, Umm el-Qaab, Tomb Q: Engel (n. 34), 455, figs. 221: 1 and 4 (Sen); label, Umm el-Qaab, Tomb Q: Dreyer (n. 28), 74–75, pl. 14e (Sehetep).
Sen in that year. The “Sixth Occasion of Inspection” could not have taken place before the king’s sixth year.\textsuperscript{42} The new \textit{nsw bjt nb.tj} name Qa-\textsuperscript{a} for the king is the youngest because it is associated with his \textit{sed}-festivals.\textsuperscript{43}

The style and content of inscriptions attesting two enigmatic kings (Horus Senefer-ka\textsuperscript{44} and Horus “Bird”\textsuperscript{45}) date them to the time of Qa-\textsuperscript{a} or slightly later.\textsuperscript{46} Three explanations are possible: (a) Senefer-ka and “Bird” were rivals of Qa-\textsuperscript{a}. At the beginning of his reign, Qa-\textsuperscript{a} had the “peaceful” name Sen, “the one who fraternizes.” The change to Schetep, “the one who pacifies” and to Qa-\textsuperscript{a} “the one with raised arm” reflect political developments, viz. Qa-\textsuperscript{a} opposition to and eventual victory over two opponents. This alternative is favoured here. (b) The names Senefer-ka and “Bird” are also names of Qa-\textsuperscript{a}; i.e., he also changed his Horus name in the course of his reign.\textsuperscript{47} (c) The names belong to rulers who reigned after Qa-\textsuperscript{a} died. The brevity of their reigns did not permit either to arrange for Qa-\textsuperscript{a}’s burial nor were any seals cut. Seal impressions found in Tomb Q at Umm el-Qaab leave no doubt that Hetep-sekhemwy buried Qa-\textsuperscript{a} there.\textsuperscript{48}

\textit{Evidence for the Lengths of Reigns during Dyn. 1}

During the Early Dynastic Period a regnal year was not numbered but identified by one or more specific significant events occurring in its course.\textsuperscript{49} This is inferred from the existence of different names for the same year in contemporaneous sources (labels and stone vessels) and confirmed by the information provided by the Royal Annals. Perhaps the use of more than one event resulted from the necessity to “name” a year when it began, at a time when only scheduled festivals and

\textsuperscript{42} Presuming that there was only one “occasion” in any given year.

\textsuperscript{43} Stone vessel, Umm el-Qaab, Tomb Q; Petrie, \textit{RT I}, pl. 9: 8; stone vessel, private collection: Kaplony, \textit{Steingefässe}, 26–32, pls. 4, 20 (12).

\textsuperscript{44} Lauer, \textit{Pyramide IV.1}, pl. 17: 86; Emery, \textit{Tombs III}, pl. 38: 1; Kaplony, \textit{Steingefässe}, 33 (13).


\textsuperscript{46} For the sake of completeness, mention should be made of a seal impression from Tomb S 3505 at Saqqara which preserves traces of an otherwise unknown Horus name; see Kaplony, \textit{Inschriften I}, 147, 149; \textit{III}, fig. 742.

\textsuperscript{47} Cf. Lauer, \textit{Pyramide IV.1}, 15 (86), with reference to the name Senefer-ka.

\textsuperscript{48} Dreyer (n. 28), 71.

ritual or cultic events could be selected to identify the year. At year’s end, events unforeseen at its beginning, such as expeditions or campaigns, could have been chosen and cited retrospectively. In general, isolated eponymous events are unsuitable for determining the sequence of regnal years, by contrast to sed festivals and other recurring events. Even if sed festivals were celebrated for the first time before regnal year 30, mention of one suggests a point later, rather than earlier in a given reign. A sed festival is documented for Den and ‘Adj-ib; Qa-a celebrated a second. Other eponymous events which took place repeatedly are also suggestive of a long reign. Examples are the “Sixth Inspection” mentioned above and a “Second Running of Apis” during the reign of Qa-a. However, it is not known whether these events occurred at regular intervals. Thus they provide only a vague idea of reign length at best.

The Royal Annals, which survive on fragments in Palermo, Cairo and London, list entries for every year of Semer-khet’s reign (cf. infra). For other kings, only some years are preserved.

50 Similarly, Dreyer, MDAIK 56 (2000), 116 n. a.
51 Hornung & Staehelin, Sedfest, 62–63.
52 Label, Umm el-Qaab, Tomb T: Petrie RT, I, 21–22, 40–41, pls. 11; 5, 14: 12; Helck, Thinitenzeit, 71, 123, 160, 169–70, 215; label, Umm el-Qaab, Tomb T: G. Dreyer, MDAIK 46 (1990), 80, pl. 26a. The mention of a second sed festival without a king’s name on the fragment of a stone vessel from Umm el-Qaab, Tomb T (Dreyer, MDAIK 46 (1990), 80, fig. 9 and pl. 26d) may refer to Den; alternatively, the fragment may be an intrusive find from the tomb of ‘Adj-ib, of Semer-khet or—most probably—of Qa-a.
54 sed festival: stone vessel from Umm el-Qaab, Tomb Q: Petrie, RT I, 20–21, 40, pl. 8: 7–7a; second stone vessel from Tomb Q: Petrie, RT I, pl. 9: 8; stone vessel from the Step Pyramid, outside Galleries H and B: Lauer, Pyramide IV.1, pl. IV: 4; IV.2, 24–25 (42); stone vessel in a Swiss private collection: Kaplony, Steingefässe, 34–38 (16), pl. 5: 22.

Second sed-festival: stone vessel from Saqqara, Step Pyramid, outside Galleries H and B: Lauer, Pyramide IV.1, pl. IV: 5; IV.2, 25 (43); another stone vessel from the Step Pyramid, Gallery B: Lauer, Pyramide IV.1, pl. 8: 41; IV.2, 24 (41); stone vessel in a Swiss private collection: Kaplony, Steingefässe, 26–32, pls. 4, 20 (12).
55 Label, Umm el-Qaab, Tomb Q: Engel (n. 34), 464, fig. 224.
56 See note 2, above.
‘Aha: highly probable x+2 years (end of his reign)\(^{57}\) and probably x+5+y years (later years of his reign)\(^{58}\)
Djer: highly probable 10+y years (beginning of his reign)\(^{59}\) and x+9+y years (middle of his reign)\(^{60}\)
Den: x+6+y years (middle of his reign)\(^{61}\) and highly probably x+14+y years (later years of his reign)\(^{62}\)
‘Adj-ib: x+2 years (end of his reign)\(^{63}\)
Semer-khet: 9 years (his complete reign)\(^{64}\)
Qa-‘a: 2+y years (beginning of his reign)\(^{65}\)

Reconstructions of the Annals differ widely and must be considered highly speculative. Here statements about hypothetical reign lengths are disregarded.\(^{66}\) The possibility cannot be ignored that Nar-mer’s reign was also recorded in the annals, especially now following on the discovery of a label at Umm el-Qaab citing one of his years.\(^{67}\)

Table II. 2.1. The kings from Nar-mer to Qa-‘a

<table>
<thead>
<tr>
<th>Horus Names</th>
<th>nsw bjt nb.tj Names</th>
<th>Sed Festivals</th>
<th>Other Rulers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nar-mer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>‘Aha</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Djer</td>
<td>« Serpent »</td>
<td></td>
<td>Meret-neit</td>
</tr>
<tr>
<td>Den</td>
<td>Kasti</td>
<td>one</td>
<td></td>
</tr>
<tr>
<td>‘Adj-ib</td>
<td>Mer-pi-bia</td>
<td>one</td>
<td></td>
</tr>
<tr>
<td>Semer-khet</td>
<td>Iry-netjer and an unreadable name</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Qa-‘a</td>
<td>Sen</td>
<td></td>
<td>Senefer-ka, “Bird”</td>
</tr>
<tr>
<td></td>
<td>Sehetep</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Qa-‘a</td>
<td></td>
<td>two</td>
<td></td>
</tr>
</tbody>
</table>

\(^{58}\) Cairo fragment 5, recto, upper register; cf. Wilkinson, *Annals*, 238–40, fig. 10.
\(^{60}\) Cairo fragment 1, recto, II; cf. Wilkinson, *Annals*, 186–93, fig. 4.
\(^{63}\) Cairo fragment 5, recto, upper register; cf. Wilkinson, *Annals*, 238–40, fig. 10.
\(^{65}\) Cairo fragment 1, recto, II; cf. Wilkinson, *Annals*, 186–93, fig. 4.
\(^{67}\) Dreyer, *MDAIK* 54 (1998), 139, fig. 29 and pl. 5c.
Hetep-sekhemwy to Netjery-khet.\textsuperscript{68} The Succession

The sequence of three Dyn. 2 kings is secure: Hetep-sekhemwy, who buried Qa'-a at Umm el-Qaab\textsuperscript{69}—Ra'-neb—Ny-netjer. The inscription on the shoulder of CG 1 (Doc. 18), a statue depicting a kneeling man (presumably a priest), lists these Horus names in that order. Additional support for the sequence is provided by inscriptions on stone vessels in different hands mentioning Hetep-sekhemwy and Ra'-neb (Docs. 19, 20).\textsuperscript{70} In an inscription mentioning the \textit{ka}-house of Hetep-sekhemwy on another stone vessel from the Step Pyramid (Doc. 21), the name Ny-netjer is written over an erased name. This document, along with the inscribed fragment of a stone vessel from the tomb of Per-ibsen (Doc. 22), substantiates the sequence on the statue Doc. 18. (During Ny-netjer’s reign, Ra'-neb’s name was erased several times; see Doc. 20, 21 (?), 22.)\textsuperscript{71}

\textit{nsw bjt nb.tj} Weneg\textsuperscript{72} is attested only by inscriptions on stone vessels found in the Step Pyramid and in Tomb S 3014.\textsuperscript{73} Weneg’s exact position, as well as the identification of his Horus name among those known, has remained open until now.\textsuperscript{74} A long-known inscription from Tomb P at Umm el-Qaab (Doc. 22) provides the key to solving some of the problems associated with Weneg.\textsuperscript{75} In the inscription the \textit{nsw bjt nb.tj} name Ny-netjer faces the opposite direction from the name of Ra'-neb and that of his palace (Fig. II. 2.1). Ra'-neb’s name is partially erased.

\textsuperscript{68} Here and below the Horus name Netjery-khet is used to identify the first king of Dynasty 3, in preference to Djoser, since the latter is not documented in contemporaneous texts.

\textsuperscript{69} See n. 48, above.

\textsuperscript{70} For the sequence Hetep-sekhemwy—Ra'-neb, cf. the arguments of H. G. Fischer, “An Egyptian Royal Stela of the Second Dynasty,” \textit{Artibus Asiae} 24 (1961), 47–48 with n. 11.

\textsuperscript{71} A stone vessel inscribed with the names of Qa'-a and Ra'-neb (Kaplony, \textit{Steingefässe}, 34–38 [16], pl. 5: 22) does not help to reconstruct the order of these kings.

\textsuperscript{72} For the reading, cf. B. Grdseloff, “Notes d’épigraphie archaïque,” \textit{ÅSÆ} 44 (1944), 288–291.


\textsuperscript{74} Helck, \textit{Thinitenzeit}, 103, proposed to identify him with the enigmatic Horus Sa, known from the mention of his \textit{ka}-house in inscriptions on stone vessels from the Step Pyramid; cf. Lauer, \textit{Pyramide V}, 7–8, pls. 6–7; Helck, “Die Datierung der Gefässaufschriften aus der Djoserpyramide,” \textit{ZÄS} 106 (1979), 124.

\textsuperscript{75} See the excellent photo published in the exhibition catalogue \textit{Kemet alle sorgenti del tempo}, A. M. Donadoni Roveri & F. Tiradritti, eds. (Milan, 1998), 251.
Scrutiny of the inscription reveals that the name Ny-netjer is written over Weneg. Traces of the plant sign used to write Weneg are discernible, as are the enigmatic strokes to the upper left and right of it (Fig. II. 2.2) which are also attested in another of his inscriptions. Thus Ny-netjer must have been Weneg’s successor, and the original inscription referred to the palace of Horus Ra-neb and to nsw bjt nb.tj Weneg. Therefore the Horus name of nsw bjt nb.tj Weneg should be Ra-neb.

nsw bjt nb.tj Nub-nefer is attested only on two stone vessels from the Step Pyramid (Docs. 23, 24). Both inscriptions mention him in connection with a building called Hwt-mn.t-‘nh. Another stone-vessel inscription associates this structure with the Gold name Ren. The Palermo

---

76 Lauer, *Pyramide IV.1*, pl. 20: 104; IV.2, 50.
Stone gives Ren as Ny-netjer’s Gold name. Nub-nefer’s reign should therefore be in proximity to Ny-netjer’s. Currently there are two options for his dynastic position. Either Nub-nefer was Ra-‘neb’s nsw bjt nb.tj name or he was an ephemeral ruler who occupied the throne briefly after Ny-netjer’s death. The evidence just presented for identifying Weneg as Ra-‘neb’s nsw bjt nb.tj name shows that the second alternative is correct. Kaiser’s suggestion that nsw bjt Sened was the last king to reign over UE and LE before Kha-sekhemwy is very plausible. Circumstantial evidence for this sequence is the survival of the funerary cult of Sened into Dyn. 4. nsw bjt Sened or nsw bjt nb.tj

---

79 Recto, IV.
80 So Gunn, “Inscriptions from the Step Pyramid site III. Fragments of inscribed Vessels,” ASAE 28 (1928), 156 n. 2; idem, ASAE 44 (1944), 292; cf. Beckerath, Handbuch, 48.
81 Helck (n. 74, Datierung), 131–32; Wilkinson, Egypt, 89.
might be identical with Horus Sa, who is known from the mention of his ka-house in inscriptions on stone vessels from the Step Pyramid.84

It is not clear whether the next two names—Horus Sekhem-ib and Seth Per-ibsen—belonged to a single ruler or to two different kings. Per-ibsen certainly claimed to rule over all of Egypt,85 but the sources do not confirm this. Contemporaneous evidence for Seth Per-ibsen is restricted to UE between Elephantine and Beit Khallaf, just north of Abydos,86 except for his funerary cult in association with nsw hjt Sened at Saqqara.87 Sekhem-ib is attested at Abydos and Saqqara. Seal impressions mentioning Sekhem-ib come from the tomb of Per-ibsen, while at Saqqara, stone vessels with Sekhem-ib’s name were found in the Step Pyramid. But this does not prove that Sekhem-ib exercised influence in the Memphite region, since these vessels could have been brought to Saqqara from Abydos after Sekhem-ib’s death. Theories about the relationship between the names Sekhem-ib and Per-ibsen88 suggest that (a) Sekhem-ib and Per-ibsen were names borne simultaneously by a single king;89 (b) Horus Sekhem-ib was the older name of Seth Per-ibsen;90 (c) Horus Sekhem-ib buried Seth Per-ibsen and was thus his successor.91 Down to the present there is no compelling argument favouring one alternative over the others.

The last king of Dyn. 2 was Horus-Seth Kha-sekhemwy. His power base seems to have been Hierakonpolis where he is attested as victor over northern enemies under the name Horus Kha-sekhem.92 Presumably

87 In the tomb of Shery, see note 83, above. Kaiser considers dynastic and political reasons that might have led to the institution of Per-ibsen’s cult under Kha-sekhemwy.
89 E.g., Grdseloﬀ, *ASAE* 44 (1944), 295.
91 E.g., Helck, *Thinitenzeit*, 103–104.
later in his reign, Kha-sekhem took the Horus-Seth name Kha-sekhemwy to demonstrate that peace and harmony had been restored through his actions. Considerable circumstantial evidence exists for Horus Netjery-khet as the successor of Kha-sekhemwy: (a) a seal with the names of officials used once together with a seal of Kha-sekhemwy and then with a seal of Netjery-khet (Doc. 25); (b) Ny-maat-Hep, mother of the royal children and king’s mother (of Netjery-khet) is attested on seal impressions in Kha-sekhemwy’s tomb at Umm el-Qaab as well as in Tomb K1 at Beit Khallaf (Doc. 26a–b); (c) many seal impressions naming Netjery-khet which come from Kha-sekhemwy’s tomb.

The following Horus names of Dyn. 2 can be associated with *nsbw nbjt nb.tj* names or *nsbw*-names:

- **Horus Hetep-sekhemwy:** *nsbw nbjt nb.tj* Hetep
- **Horus Ra’-neb:** *nsbw nbjt nb.tj* Weneg (see P. 102–103, above)
- **Horus Ny-netjer:** *nsbw nbjt nb.tj* Ny-netjer
- **Horus Sekhem-ib(-Per-en-maat):** *nsbw nbjt nb.tj* Sekhem-ib-Per-en-maat
- **Seth Per-ibsen:** *nsbw nbjt/nsw bjt nb.tj* Per-ibsen
- **Horus-Seth Kha-sekhemwy(-Hetep-netjerwy-imef):** *nsbw nbjt nb.tj* Kha-sekhemwy-Hetep-netjerwy-imef
- **Seth Per-ibsen:** *nsbw nbjt nb.tj* Per-ibsen
- **Horus-Seth Kha-sekhemwy(-Hetep-netjerwy-imef):** *nsbw nbjt nb.tj* Kha-sekhemwy-Hetep-netjerwy-imef
- **Seth Per-ibsen:** *nsbw nbjt nb.tj* Per-ibsen

---


93 Cf., e.g., Wilkinson, *Egypt*, 91–92.


97 Presuming identical Horus and *nsbw nbjt* names imply identity; for the latter, see Lauer, *Pyramide IV.1*, pl. 15: 73.

98 Palermo Stone, recto, IV.

99 Again, presuming identical Horus and *nsbw nbjt* names imply identity; for the latter, see Lauer, *Pyramide IV.1*, pl. 18: 87–94.


101 As the preceeding. For *nsbw nbjt* Hetep-netjerwy-imef, cf. Kaplony, *Inscriptions III*, fig. 214

102 As the preceeding. For this *nsbw nbjt* name, cf. W. M. F. Petrie, *Tombs of the Courtiers and Oxyrhynchos* (London, 1925), pl. 8: 18.
The Lengths of the Reigns of Dyn. 2-kings

Contemporaneous sources yield comparatively little information about the duration of reigns during Dyn. 2. Some stone vessels from the Step Pyramid bear inscriptions citing specific events.\(^{103}\) One of them mentions the “Fourth Occasion of the Sokar Festival” (probably year 24);\(^ {104}\) another, the “Seventeenth Occasion (of the cattle count)” (probably year 34).\(^ {105}\) These dates have been ascribed to Ny-netjer, since he seems to have been the only ruler of the dynasty to have reigned more than 30 years.\(^ {106}\) For the same reason, inscriptions mentioning a sed festival are thought to refer to him.\(^ {107}\) The Annals preserve information about three kings of Dyn. 2: Ny-netjer, years 6–21\(^ {108}\) and perhaps x + 9 years at the end of his reign;\(^ {109}\) Per-ibsen, 6 + y years from the beginning of his reign;\(^ {110}\) Kha-sekhemwy, perhaps years 3–6\(^ {111}\) and most probably years 12–18 towards the end of his reign.\(^ {112}\)

Chronologically Significant Inscriptions, Dyns 1–3

Doc. 1 5 clay impressions of a cylinder seal
Dyn. 1, reign of Den—‘Adj-ib
a–c: Abydos, find nos. Ab.K 300, 301a–b
d: Abydos
e: London, UC 188 (provisional no., assigned by Kaplony)

\(^{104}\) Lauer, *Pyramide V*, 88 (no. 273), fig. 172; Helck (n. 74, Datierung), 128; Wilkinson, *Egypt*, 85–86.
\(^{105}\) Lauer, *Pyramide V*, 88–89 (no. 274), fig. 173; Helck (n. 74, Datierung), 128; Wilkinson, *Egypt*, 86.
Table. II. 2.2. The kings from Hetep-sekhemwy to Netjery-khet

<table>
<thead>
<tr>
<th>Name</th>
<th>nsw hḥt nb.tj Name</th>
<th>Gold Name</th>
<th>Sed Festivals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hetep-sekhemwy</td>
<td>Hetep</td>
<td>Ren</td>
<td>one(?)</td>
</tr>
<tr>
<td>Ra‘-neb</td>
<td>Weneg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ny-netjer</td>
<td>Ny-netjer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sa (?)</td>
<td>Nub-nefer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sekhem-ib</td>
<td>Sekhem-ib</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Per-en-maat) /</td>
<td>(Per-en-maat) /</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Per-ibsen (one ruler?)</td>
<td>Per-ibsen (one ruler?)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kha-sekhemwy</td>
<td>Kha-sekhemwy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Hetep-netjerwy-imef)</td>
<td>Nub-khetser</td>
<td>Nub(?)</td>
<td></td>
</tr>
<tr>
<td>Netjery-khet</td>
<td>Netjery-khet</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Prov.: a-d, Umm el-Qaab, Tomb T; e, not known but probably also Tomb T.

Comment: See Pp. 96–97, above

Doc. 2 several clay impressions of a cylinder seal
Dyn. 2, reign of Hetep-sekhemwy
Prov.: Umm el-Qaab, Tomb Q

Comment: See Pp. 96–97, above
Bibliography: Dreyer, *MDAIK* 52 (1996), 72–73, fig. 26, pl. 14b–c

Doc. 3 2 fragments of a serpentine bowl
Dyn. 1, reign of Djer—“Serpent”
Berlin, Egyptian Mus. 15453 and Abydos, find no. Ab.K 5089
Prov.: Umm el-Qaab Tomb Z and Tomb T, respectively

Comment: These fragments bear incised Horus names attesting the segment Djer—“Serpent” of the sequence established by Doc. 1.
Bibliography: Petrie, *RT II*, 25, pl. 7: 1; V. Müller et al., “Umm el-
Doc. 4  
**Schist bowl**

Dyn. 1, reign of Den, with inscriptions added under ‘Adj-ib—Qa-’a

Cairo, Egyptian Museum JE 88345

Prov.: Saqqara, Step Pyramid, Gallery B

Comment: The bowl bears four incised nsw bjt/nsw bjt nb.tj names: Khasty, <Mer>-pi-bia, Iry-netjer, and Qa-’a.


Doc. 5  
**6 fragments of a schist plate**

Dyn. 1, reign of Den, with inscriptions added under ‘Adj-ib—Qa-’a

Prov.: Saqqara, Step Pyramid, Gallery H

Comment: The inscriptions record the nsw bjt/nsw bjt nb.tj names Khasty, [Mer-pi-]bia, Iry-netjer and <Qa-’a.


Doc. 6  
**2 fragments of a schist bowl**

Dyn. 1, reign of Den, with inscriptions added under ‘Adj-ib—Qa-’a

Cairo, Egyptian Museum JE 55254–55255

Prov.: Saqqara, Step Pyramid, outside Galleries H and B

Comment: The adjoining fragments bear four incised nsw bjt/nsw bjt nb.tj names, Khasty, Mer-pi-bia, Iry-netjer and Qa-’a.


Doc. 7  
**Calcite bowl**

Dyn. 1, reign of Den, with inscriptions added under ‘Adj-ib—Qa-’a

Michailidis collection

Prov.: not known
Comment: The bowl bears the *nsw bjt/nsw bjt nb.tj* names Khasty, Mer-pi-bia, Iry-netjer and Qa-‘a.


Doc. 8 “pyroxen-syenit” bowl
Dyn. 1, reign of Den, with inscriptions added under ‘Adj-ib—Qa-‘a
Swiss private collection
Prov.: not known

Comment: The bowl shows four incised *nsw bjt/nsw bjt nb.tj* names: Khasty, Mer-pi-bia, Iry-netjer and Qa-‘a.

Bibliography: Kaplony, *Steingefässe*, 20–24 (9), pls. 2, 17, 18

Doc. 9 “black stone” (diorite?) bowl
Dyn. 1, reign of Den, with added inscriptions of ‘Adj-ib and Semer-khet
New York, MMA 58.125.2
Prov.: not known (ex. Michailidis collection)

Comment: The bowl shows three incised *nsw bjt/nsw bjt nb.tj* names: Khasty, Mer-pi-bia and Iry-netjer.


Doc. 10 fragment of a rock crystal bowl
Dyn. 1, reign of Den, with added inscriptions of ‘Adj-ib and Semer-khet
London, BM EA 49278
Prov.: Umm el-Qaab, Tomb T

Comment: Mer-pi-bia, originally incised near the name Khasty (untouched), was erased and replaced by Iry-netjer, documenting the sequence Khasty, Mer-pi-bia, Iry-netjer.


Doc. 11 fragment of a stone vessel
Dyn. 1, reign of Den, with added inscriptions of ‘Adj-ib and Semer-khet
Paris, Louvre E. 11035
Prov.: Umm el-Qaab, Tomb T

Comment: As Doc. 10.

Doc. 12 fragment of a quartz-crystal bowl
Dyn. 1, reign of Den, with added inscription of ‘Adj-ib
Philadelphia, Univ. Mus. E 06847
Prov.: Umm el-Qaab, Tomb U

Comment: The names Khasty and Mer[-pi]-bia are incised on the fragment.

Doc. 13 fragment of a red limestone bowl
Dyn. 1, reign of Den, with added inscription of ‘Adj-ib
Cairo, Egyptian Museum JE 34378
Prov.: Umm el-Qaab, Tomb T

Comment: The vessel may have originally shown more names than Khasty and Mer-pi-bia.

Doc. 14 three adjoining fragments of a calcite vessel
Dyn. 1, reign of Den with added inscription of ‘Adj-ib
London, BM EA 32659
Prov: Umm el-Qaab, Tomb X or Z

Comment: ‘Adj-ib’s Horus name is written in front of the *nsw bj†* name Khasty.

Doc. 15 three adjoining fragments of a schist bowl
Dyn. 1, prior to the reign of Semer-khet, with inscriptions added naming Semer-khet and Qa-a

Cairo, Egyptian Museum JE 55268 (one fragment only)
Prov.: Saqqara, Step Pyramid, outside Galleries H and B

Comment: The field in the serekh has been cut down, i.e. the name Semer-khet has been substituted for another.
Bibliography: Gunn, ASAE 28 (1928), 158, pl. 1: 5; Lauer, Pyramide IV.1, pls. IV: 3, 8: 38; IV.2, 22, (38); Helck, Thinitenzeit, 101–102.

Doc. 16 part of a schist bowl
Dyn. 1, reign of ‘Adj-ib, with added inscription of Qa-‘a
Prov.: Saqqara, Step Pyramid, Great South Court

Comment: The two nsw bjt nb.tj names incised on the vessel are Mer-pi-bia and Qa-‘a; Iry-netjer was not mentioned.
Bibliography: Lauer, Pyramide IV.1, pl. 8: 36; IV.2, 21 (36).

Doc. 17 schist bowl
Dyn. 1, reign of Semer-khet with added inscription of Qa-‘a
Cairo, Egyptian Museum JE 88344
Prov.: Saqqara, Step Pyramid, Gallery B

Comment: The treatment of the serekhs shows very well that different hands inscribed the two Horus names Semer-khet and Qa-‘a.
Bibliography: Lauer, Pyramide IV.1, pl. 8: 39; IV.2, 22; Kaplony, Inschriften I, 593.

Doc. 18 granite statue of a kneeling man
Dyn. 2 or 3
Cairo, Egyptian Museum CG 1
Prov.: Mit Rahineh

Comment: The sign preceding the names Hetep-sekhemwy, Ra-‘a-neb and Ny-netjer incised in that order on the right shoulder blade of the figure has been interpreted to read divine ancestor (Helck), falcon (Fischer), or phoenix (Moret).
Doc. 19  diorite bowl  
Dyn. 2, reign of Hetep-sekhemwy, with added inscription of Ra’-neb  
Cairo, Egyptian Museum JE 65413  
Prov.: Saqqara, Step Pyramid, Gallery H  
Comment: The Horus names of Hetep-sekhemwy and Ra’-neb, incised by different hands, face the goddess Bastet.  

Doc. 20  flint bowl  
Dyn. 2, reign of Hetep-sekhemwy (or earlier) with inscriptions naming Hetep-sekhemwy and Ra’-neb  
Cairo, Egyptian Museum JE 41981  
Prov.: Giza, Valley Temple of Mycerinus  
Comment: Both Horus names, incised by different hands, face the goddess Bastet. Hetep-sekhemwy is incised over an erasure, while Ra’-neb, partially erased, is written behind Hetep-sekhemwy. Reisner argued that Ra’-neb was succeeded by Hetep-sekhemwy on the basis of the partial erasure of Ra’-neb’s name, but Docs. 21 and 22 show that Ra’-neb was Hetep-sekhemwy’s successor.  

Doc. 21  footed schist bowl  
Dyn. 2, reign of Hetep-sekhemwy or Ra’-neb, with added inscription of Ny-netjer.  
Prov.: Saqqara, Step Pyramid, Gallery B  
Comment: The bowl provides evidence for the reign of Ny-netjer being later than that of Hetep-sekhemwy. A reference to the “ka-house of Horus Hetep-sekhemwy” follows the name Ny-netjer. As Lacau and Lauer noted, Ny-netjer could have been substituted for the name of another king (Hetep-sekhemwy or Ra’-neb).  
Bibliography: Lauer, Pyramide IV.1, pl. 15: 74; IV.2, 36 (74); Helck, Thinitenzeit 195–196.
Doc. 22  fragment from the rim of a bowl of volcanic ash
Dyn. 2, reign of Ra‘-neb, with added inscription of Ny-netjer
London, BM EA 35556
Prov.: Umm el-Qaab, Tomb P

Comment: See Pp. 102–103, above

Doc. 23  fragment of a schist bowl
Dyn. 2, reign of Ny-netjer or slightly later
Cairo, Egyptian Museum JE 55268
Prov.: Saqqara, Step Pyramid, outside Galleries H and B

Comment: *nsw bjt* Nub-nefer is mentioned in connection with the building Ḥwt-mn.t-nḫ, also attested from the reign of Ny-netjer.
Bibliography: Lauer, *Pyramide IV.1*, 6, pl. VI: 3; IV.2, 48–49.

Doc. 24  fragment from the rim of a schist bowl
Dyn. 2, reign of Ny-netjer or slightly later
Cairo, Egyptian Museum JE 55294
Prov.: Saqqara, Step Pyramid, outside Galleries H and B

Comment: *nsw bjt* Nub-nefer is mentioned in connection with the building Ḥwt-mn.t-nḫ; cf. Doc. 23.
Bibliography: Lauer, *Pyramide IV.1*, 6, pl. VI: 3; IV.2, 48–49.

Doc. 25  clay seal impressions
Dyn. 2, reign of Kha-sekhemwy
Prov.: Abydos, Shunet ez-Zebib

Comment: The seal (Kaplony, *Inschriften III*, fig. 346) with names of officials, which made these impressions was used in tandem with a seal of Kha-sekhemwy as well as with another naming Netjery-khet; cf. P. 106, above.
Doc. 26a clay seal impressions
Dyn. 2 or 3, reign of Kha-sekhemwy or Netjery-khet
Cairo, Egyptian Museum CG 11106–112, 11143, 11145; Châteaudun 38(2) (no. assigned by Kaplony); Paris, Louvre no no.; Toronto, ROM B 2324; London, UC 92(2), 95, 96 (nos. assigned by Kaplony); Abydos (cf. Dreyer, infra)
Prov.: Umm el-Qaab; Tomb V

Comment: These impressions from the tomb of Kha-sekhemwy mention Queen Ny-maat-Hep as mother of the royal children.
Bibliography: Kaplony, *Inschriften I*, 161; II, 855 (983), 1137 (325); III, fig. 325; Dreyer, *Stationen* (see n. 95 above), 33.

Doc. 26b clay seal impressions
Dyn. 3, reign of Netjery-khet
London, UC 149–52 (nos. assigned by Kaplony)
Prov.: Beit Khallaf, Tomb K1

Comment: These impressions from a tomb dating to the reign of Netjery-khet name Queen Ny-maat-Hep as king’s mother. Therefore one can conclude for a sequence Kha-sekhemwy—Netjery-khet.
Bibliography: Kaplony, *Inschriften I*, 167; II, 873 (1070), 1137 (326); III, fig. 326.
To reconstruct the chronology of Dyn. 3, the number, names and sequence of its kings must first be established. Very little information can be gleaned from the Manethonian tradition since the surviving epitomes are unfortunately marred by erratic repetitions and inflated reign lengths. But the kinglists of the NK do provide crucial evidence, while Westcar preserves the names and sequence of two Dyn. 3 rulers. The data from these sources, summarized in the table below, must be correlated with each other, and with OK evidence:

<table>
<thead>
<tr>
<th>Westcar</th>
<th>TC</th>
<th>Saqqara list</th>
<th>Abydos list</th>
<th>Manetho (Africanus)</th>
<th>Manetho (Eusebius)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Šsrjt</td>
<td>Nb-k3 (19 yrs.)</td>
<td>Nb-k3 (28 yrs.)</td>
<td>Necherôphês</td>
<td>Necherôchis</td>
<td></td>
</tr>
<tr>
<td>Šsrjt</td>
<td>Šsrjt (19 yrs.)</td>
<td>Šsrjt (29 yrs.)</td>
<td>Tosorthros</td>
<td>Sesorthos</td>
<td></td>
</tr>
<tr>
<td>Šsrjt</td>
<td>Nb-k3 (6 yrs.)</td>
<td>Nb-k3 (6 yrs.)</td>
<td>Tyreis (var. Tyris; 7 yrs.)</td>
<td>six more kings</td>
<td></td>
</tr>
<tr>
<td>Šsrzt</td>
<td>Nb-k3 (17 yrs.)</td>
<td>Nb-k3-Rt</td>
<td>Sôyphis (16 yrs.)</td>
<td>Tosertasis (19 yrs.)</td>
<td></td>
</tr>
</tbody>
</table>

(continued on next page)

---


2 Waddell, Manetho, 40–45. For the relationship between Manetho and the kinglists of the NK, see Helck, Manetho, 19–24 and Beckerath, Chronologie, 160.

3 TC, col III, lines 4–8; Saqqara list, nos. 12–15; Abydos list, nos. 15–19.

Associating names from the lists with contemporaneous monuments—above all, with royal mortuary complexes—provides additional information about the number and sequence of kings. In OK sources, the names of only two Dyn. 3 kings were written in cartouches: Nebka and Huni. Normally, the kings of the dynasty were identified in contemporaneous sources by their Horus names, not by their personal names. Therefore, the problem of correlating Dyn. 3 attestations with the names of the later lists arises.

Five Horus names are known with certainty from Dyn. 3 contexts: Netjery-khet, Sekhem-khet, Kha’ba, Zanakht and Qahedjet. Two other names were considered by Swelim.5 Ink inscriptions on some stone vessels from the galleries below the Step Pyramid,6 i.e., in a Dyn. 2 context,7 attest the ka-house of za. Equating za with Horus Zanakht and identifying him as Djoser’s predecessor and the owner of the original mastaba below the Step Pyramid8 seems unfounded.9 Za and Zanakht

---

6 Lacau & Lauer, Pyramide V, 7; B. Gunn, “Inscriptions from the Step Pyramid Site”, ASAE 28 (1928), 168.
9 Doubts were expressed by: Beckerath, Handbuch, 177; Kaplony, Steingefässe, 7 n. 8, and Wildung, Rolle, 55; Helck rejected these ideas, initially in “Datierung” (n. 7), 130, and subsequently in Thinitenzeit, 108.
are clearly different; the common phonetic element za is written with a different sign in each name. Since za never occurs alone or in a serekh, it is doubtful that it represents a king’s name.\textsuperscript{10} Reports on an alleged Horus B\textsuperscript{3}, mentioned by Swelim, cannot be verified; even if he could be shown to exist, there are no grounds for assigning him to Dyn. 3.

Reviewing the available documentation, a number of problems are evident which are taken up in turn below. Both TC and the Abydos List name Nebka as the first ruler of the dynasty. But in pWestcar, a king Nebka is a successor of Djoser, while a basically similar name occurs in the Saqqara List as the penultimate entry and as the last in the Abydos List. It was always suspected that there was only a single king Nebka whose name was duplicated (in the Abydos List) or shifted from its correct position. Since all attestations for Nebka from the OK can be shown to refer to a king who reigned near the end of Dyn. 3, the existence of a like-named king at the beginning of the dynasty was always doubtful. Recent excavations at Abydos revealed unequivocal evidence that Horus Netjery-khet buried Kha\textsuperscript{6}-sekhemwy, the last king of Dyn. 2,\textsuperscript{11} there, making it certain that no reign (and especially, a chronologically significant one as shown in TC) could have intervened between them.

Djoser, the second name in the list and, in fact, the first king of Dyn. 3, is well attested. Later inscriptions confirm his identity with Horus Netjery-khet, the owner of the Step Pyramid complex at Saqqara.\textsuperscript{12} His successor Djoserti/Djoser-teti is certainly Horus Sekhem-khet, the owner of the second, smaller step pyramid complex at Saqqara. Evidence for the equation includes the morphological similarity of the two architectural complexes, their geographic proximity and the fact that the Nebti-Name of Sekhem-khet is attested as Djosert(i)-\textsuperscript{5}-ankh on an ivory plaque from his pyramid.\textsuperscript{13}

Data for the three remaining kings are less easily brought into line. The so-called Layer Pyramid of Zawyet el-Aryan is the only other pyra-

\textsuperscript{11} Dreyer, in: Stationen, 31–33.
\textsuperscript{12} The relevant sources are the Famine stela at Sehel, temp. Ptolemy V (P. Barguet, La stèle de la famine à Séhel, Cairo: BdE 24, 1953), a statue dedicated by Ahmose (Berlin 14765; Wildung, Rolle, 79–83) and numerous graffiti left by NK visitors to the Step Pyramid complex (Wildung, Rolle, 65–72).
\textsuperscript{13} M. Baud, Djéser (n. 1), 67–68. Doubts expressed by Helck, “Das Kleidertäfelchen aus der Pyramide des S\textsuperscript{5}m-h\textsuperscript{2}t”, WZKM 54 (1957), 72–76, do not seem justified.
mid complex datable to Dyn. 3. The “great excavation” at the same site is not contemporaneous with the Layer Pyramid, but belongs instead to later Dyn. 4. The brickwork-complex of el-Dêr, discussed by Swelim, is probably not a pyramid at all (although it is difficult to judge this monument on the basis of available documentation). If it were a pyramid, its comparatively small size would associate it with the series of small step pyramids in UE. Finally, evidence currently available supports the assignment of the initial building phase of the pyramid at Maidum to Snofru (and Dyn. 4), not to Huni.

Architecturally, the Layer Pyramid of Zawyet el-Aryan is very close to the step pyramids at Saqqara—for example, the extensive subterranean magazines are a common feature—and quite different from the earlier phase of the Maidum pyramid. Accordingly, the structure is most likely assignable to the successor of Horus Sekhem-khet/Djoserti; in any case, it should not belong to Huni. The archaeological record preserves no evidence of mortuary complexes for two later Dyn. 3 kings, a fact which may not be due simply to accident of preservation. Their absence may reflect instead a temporary restructuring of arrangements for the royal mortuary cult related to the appearance at the end of the dynasty of the series of small step pyramids in UE associated with the names of kings Nebka, Huni and Snofru. This line of reasoning supports an early date for the Layer Pyramid.

The name of the Layer Pyramid’s owner, Djoser’s second successor, is listed as missing (Sdq, Hw-dfs) in TC. Several stone vessels from

---

14 PM III, 313.
15 Convincingly established by J.-P. Lauer, “Sur l’âge et l’attribution de l’excavation monumentale à Zaouiét el-Aryân”, RdÉ 14 (1962), 21–36. Thus the much-discussed royal name which appears in the masons’ graffiti from this monument (e.g. J. Cerny, “Name of the King of the Unfinished Pyramid at Zawjet el-Aryan”, MDAIK 16 (1958), 25–29, and A. M. Dodson, “King [Bjk-ks]”, ZÄS 108 (1981), 171) is irrelevant for the history and chronology of Dyn. 3.
16 Swelim, Problems, 337.
17 Cf. the archaeological situation as presented in the original publication, M.R. Macramallah, “Une forteresse du moyen empire (?) à Abou Rawâch”, ASIE 32 (1932), 161–173. Macramallah’s opinion on the dating of the site is very tentative.
The mastaba Z500 in the cemetery of Zawyet el-Aryan\textsuperscript{20} bear the Horus name Kha'ba who might well be the owner of the pyramid. But, theoretically, Kha'ba could also be a successor of the Layer Pyramid's owner. As the next ruler, the NK lists name Nebka-Re\textsuperscript{5} or Nefer-ka-Re\textsuperscript{5}; both corrupted from Nebka, the name attested in pWestcar and twice in the OK. The earlier OK attestation occurs in inscriptions from the mastaba of Akhet'a who held a priestly title in the king's cult.\textsuperscript{21} Helck identified Akhet'a with a person whose titles (but neither the title relating to the cult of Nebka nor the name) appear among the inscriptions on stone vessels from the Step Pyramid, to conclude that both the person and King Nebka date to early Dyn. 3.\textsuperscript{22} But this equation is neither obvious nor convincing. Even if Helck were correct, Akhet'a could have nevertheless outlived Djoser and his immediate successors to serve in the cult of a later king Nebka. The style of the reliefs from Akhet'a's tomb and the overall similarity of its plan to the tomb chapel of Metjen clearly point to a late Dyn. 3/early Dyn. 4 date for the owner. The fact that the king's name in Akhet'a's title is written in a cartouche clearly precludes the possibility that the tomb could have been decorated under Djoser.

The second OK attestation of King Nebka occurs in the name of a funerary domain associated with the cult of Neuserre\textsuperscript{6}.\textsuperscript{23} The context links Nebka to late Dyn. 3/early Dyn. 4 when the system of funerary domains is first attested, under Huni and Snofru.\textsuperscript{24} Thus the pre-NK sources substantiate the presence of a king Nebka towards the end of Dyn. 3, a conclusion quite in keeping with the fact that the existence of a like-named ruler at the very beginning of Dyn. 3 can be excluded.

Significantly, Nebka can be identified with Horus Zanakht on the basis of a seal impression from mastaba K2 at Beit Khallaf where the names occur in parallel.\textsuperscript{25} The king is attested as Horus Zanakht at a


\textsuperscript{21} Ziegler, \textit{Catalogue}, 96–103.

\textsuperscript{22} W. Helck, “Datierung” (n. 7), 129; idem, \textit{Thinitenzeit}, 107.

\textsuperscript{23} Borchart, \textit{Ne-user-Re}, 79 Fig. 54.


\textsuperscript{25} Seidlmayer, in “Town” (n. 19), 121, and Pl. 23.
number of other sites, in the rock inscriptions of Wadi Maghara, and by seal impressions from the mortuary temple of the Step Pyramid and from Elephantine. One sealing from Elephantine derives from layers of refuse in the royal complex attached to the small step pyramid at the site establishing a connection between Nebka and the series of small step pyramids in UE. Unfortunately, the stratigraphic position of the sealing is too equivocal to allow the relationship to be defined more precisely.

As the last ruler of Dyn. 3, the TC and the Saqqara List cite Huni, a corrupted form of nswt ḫw. Huni was apparently the first king regularly identified in contemporaneous sources by his personal name, prefixed nswt (by contrast to the later usage of nswt-bjt), written in a cartouche. To date, no document gives Huni’s Horus name in association with his personal name. There is, however, one monument which needs to be discussed in this context: a relief slab of Horus Qahedjet depicting him embraced by Horus of Heliopolis. Allegedly from Dahshur, it should derive from a Dyn. 3 royal mortuary complex at the site. In fact, two alabaster sarcophagi from a shaft tomb in the vicinity of the mortuary precinct of Senwosret III provide evidence for the presence of a Dyn. 3 royal complex at Dahshur. Accordingly, Qahedjet is an ideal candidate for Huni’s Horus name. It should not be overlooked, however, that the correlation is not absolutely certain. If Kha’ba is not the name of the owner of the Layer Pyramid at Zawyet el-Aryan, but rather of one of his successors, then Kha’ba could qualify as Huni’s Horus name. (Because of its early architectural type, it is

28 This reading was established by L. Borchardt, “König Huni?”, *ZÄS* 46 (1909), 12–13, and corroborated by H. Schäfer, “König Huni”, *ZÄS* 52 (1914), 98–100. The discussion triggered by H. Goedicke’s article “The Pharaoh Ny-swt”, *ZÄS* 81 (1956), 18–24, and continued by E. Meltzer, “A reconsideration of [nswt ḫw]”, *JEAI* 57 (1971), 202–203, W. Barta, “Zum altägyptischen Namen des Königs Aches”, *MDAIK* 29 (1973), 1–4, and W. Helck, “Der Name des letzten Königs der 3. Dyn. und die Stadt Ehnas”, *ÄÄK* 4 (1976), 125–134, remains unconvincing. Why should not the first king who regularly had his personal name inscribed in a cartouche include the title nswt inside the ring, in contrast to what became convention only subsequently? Actually this would parallel the usage attested much more frequently with the epithet zi-R which was sometimes included within the cartouche.
30 *PM III*, 885. I am grateful to Dieter Arnold for pointing this out to me.
unlikely that the pyramid is Huni’s tomb). If so, the name Qahedjet could be the Horus name of Djoser’s second successor whose personal name is lost from the NK lists. Since Qahedjet probably owned a mortuary complex at Dahshur, the Layer Pyramid would necessarily belong to Horus Zanakht/Nebka. This reconstruction is not in itself impossible, but it seems to suit the available evidence less well. The results of these deliberations may be summarized as follows:

<table>
<thead>
<tr>
<th>Name in cartouche</th>
<th>Horus name</th>
<th>Mortuary complex</th>
</tr>
</thead>
<tbody>
<tr>
<td>Djoser</td>
<td>Ntrj-h.t</td>
<td>great step pyramid, Saqqara</td>
</tr>
<tr>
<td>Djorj</td>
<td>Slim-h.t</td>
<td>lesser step pyramid, Saqqara</td>
</tr>
<tr>
<td>(unknown)</td>
<td>Hr-bt</td>
<td>layer pyramid, Zawyet el-Aryan</td>
</tr>
<tr>
<td>Nh-k²</td>
<td>Jt-nht</td>
<td>(unknown)</td>
</tr>
<tr>
<td>nswt Hwjt</td>
<td>Qt-hd.t</td>
<td>mortuary cult place of unknown type at Dahshur</td>
</tr>
</tbody>
</table>

Data currently available are sufficient neither for determining the length of reigns for each king nor the length of the dynasty as a whole. Nor does contemporaneous evidence exist for estimating a minimum length of reign for any king. Only TC provides more or less useful data. However, King Nebka was displaced in this document to the beginning of the dynasty; perhaps the 19-year reign accorded him does not represent original information but simply duplicates the figure given for Djoser. The lengths of reigns in the Manethonian tradition are arbitrarily inflated; it would be guesswork to attempt to reduce them just as arbitrarily.

The Old Kingdom Annals unfortunately can provide little assistance. The Palermo fragment preserves the end of Kha’-sekhemwy’s reign and the beginning of Djoser’s in line 5. In addition, Kaiser noticed that, taking all the available criteria into account, the distance between Cairo 1 and the Palermo fragment can be reconstructed so that the distance between the two changes of reign preserved on both fragments matches the combined reign lengths of Djoser and Djoserti as recorded in the TC. While the line separating the two reigns is not actually visible on

---

such a reconstruction would still seem possible, in view of the worn state of the surface at this place. Therefore, the evidence of the Annals at least does not necessarily contradict the testimony of the TC.

Any reconstruction of the lengths of the reigns for later Dyn. 3 rulers depends on estimating the distance between Cairo fragment 1 and the left edge of the original stone slab. Beckerath’s recent calculation allows only 24 years for all three remaining kings, in clear contradiction of TC which gives 24 years to Huni alone plus six more for “Hu-djefa”. In addition, an unknown number of years has to be taken into account for Nebka. In view of the extremely fragmentary state of the evidence, it would be hasardous to put excessive trust into any attempt to reconstruct the original slab. Given the current state of knowledge, it is wiser to regard the total of 50 years for the entire dynasty, which emerges from Beckerath’s reconstruction, only as a minum figure. However, even if the 19 years for Nebka of the TC be considered reliable, the total length of the dynasty would not exceed 75 years.

---

33 Wilkinson, Annals, 53.
II. 4 CONTEMPORANEOUS EVIDENCE FOR THE
RELATIVE CHRONOLOGY OF DYNS. 4 AND 5

Miroslav Verner

The crucial problem for reconstructing the relative chronology of Dyns. 4 and 5 is our ignorance of how the system of dating according to the “year/occasion of the [cattle] count” (rpt zp) was employed. Ever since Gardiner’s paper,¹ specialists have acknowledged that this census formed the basis for counting regnal years during the OK. The existence and use of the term rpt m-ḥt zp (“year after the count”) was taken as clear-cut evidence for a biennial census. However, the preponderance of rpt zp over rpt m-ḥt zp years among the burgeoning number of dates recovered in recent years from excavations, taken in conjunction with an entry on the Palermo Stone attesting the cattle count in two successive years of Snofru, indicates that the situation is much more complex. Nowadays, some Egyptologists maintain that the census was biennial during Snofru’s reign with the sole exception of the seventh and eighth counts which were conducted in successive years.² Others are of the opinion that a biennial system was not employed under Snofru,³ while yet others equivocate.⁴ For subsequent reigns, opinions fluctuate from the presumption of a biennial system⁵ to the assumption that on certain occasions an “odd” count could have been ignored.⁶ Finally, there is also the theory that annual cattle counts became more and more frequent during the OK until they became the rule by the end of Dyn. 6.⁷

Obviously the existence of the census per se is not at issue, but rather its regularity during the OK. However, a statistical review of documented

⁶ Beckerath, Chronologie, 147.
dates, even if the list is incomplete and the attribution of some contested, allows some conclusions. For example, from the beginning of Dyn. 4 to the end of Dyn. 5, the years of the count and those following the count occurred in succession, and mpt zp years were consistently more frequently documented than mpt m-ht zp years. Moreover, no clear-cut tendency can be observed towards a marked decrease in the number of years following the count throughout the period. On the contrary, the evidence for mpt zp and mpt m-ht zp from Snofru’s reign at the beginning of Dyn. 4 to Djedkare’s at the end of Dyn. 5 supports the opposite conclusion.

Could a cattle count take place in the year of a king’s accession to the throne? Until quite recently, the opinion prevailed that the first cattle count of any given king’s reign occurred during the first full year after his accession. But an entry among the annals inscribed on the stone recently discovered at South Saqqara casts doubt on this assumption, since the text explicitly mentions a (cattle) count of the year of the “Unification of the Two Lands” at the beginning of the reign of Merenre.

The potential usefulness of the series, though incomplete, of mpt zp and mpt m-ht zp dates for Dyns. 4 and 5 is demonstrated by analysis of the data for both Snofru and Djedkare. Down to the present, the highest recorded number of mpt zp years for Snofru is 24; only half of them (viz., mpt zp 2, 7, 8, 12, 13, 14, 15, 16, 18, 23 and 24) are documented among the preserved dates. Can we assume that about the same proportion—i.e., ca. half of the evidence for the intervening mpt m-ht zp years—remains to date unattested? If so, the number (three) of such currently documented dates—mpt m-ht zp 10, 13 and 18—should be doubled. An estimate for the length of Snofru’s reign based on these data would be 24 + 6 = 30 years. Using other arguments, Krauss and, independently, Barta arrived at nearly the same length for the king’s reign.

Djedkare’s highest documented census is the 21st (or possibly the 22nd). Thirteen other “occasions” are known: 1, 3, 4(?), 5, 6, 8, 9, 10, 11, 14, 15, 16, 17, and 18. In this series, seven (and possibly eight)

---

8 Contra Beckerath, Chronologie.
9 Baud & Dobrev, “Annales”, 47.
\textit{rnpt zp} or about one-third of the total is still unattested. There are seven \textit{rnpt m-\textasciitilde t} \textit{zp} dates preserved: 1, 3, 4, 7(?), 10, 14, and 17. Adding a third of this amount, or about two years, to the number of \textit{rnpt zp} (21 or 22?) and \textit{rnpt m-\textasciitilde t} \textit{zp} (7) years actually attested yields 30 (or possibly 31) years for the reign. It must be emphasized, however, that for the present these calculations, since speculative, must be treated with reserve.

No matter how cautiously conclusions be drawn, the available data indicate that the dating system was irregular during Dyns. 4 and 5, and not principally biennial with few exceptions. In practice, annual cattle counts apparently prevailed. The theory that intervening years were omitted from the record under certain circumstances\textsuperscript{12} is contradicted by the so-called masons’ inscriptions which consistently refer only to \textit{rnpt zp} years. These short texts associated with the construction projects of the state are the most frequently preserved dated documents from Dyn. 4 and 5. Why should these inscriptions regularly omit every second year from the administrative record?

If an irregular dating system pertained during Dyns. 4 and 5, what economic and/or administrative necessity determined its irregularity? It is possible, for instance, that during the formative period of the bureaucracy the frequency of the census was linked to the financing of large projects—buildings, reclamation of land from the marshes, etc. Were consecutive census years occasioned by funding shortfalls? Were factors influencing the decision to organize the census annually or biennially always the same or did they differ?

A special problem is the discrepancy between the available contemporaneous evidence and the reign lengths recorded of Dyns. 4 and 5 rulers in the \textit{TC}. By contrast to the Manethonian tradition, the \textit{TC} was long considered by specialists to be the standard against which contemporaneous data should be measured. Reign lengths given in the papyrus were sometimes used as evidence for annual cattle counts and at other times, for a biennial census. The compiler was presumed to have omitted one or more signs from some figures and to have mistakenly duplicated entries. Obviously, comparison of data from the very damaged papyrus with contemporaneous evidence can hardly be expected to provide a definitive version of OK chronology. The names of only three Dyn. 4 and 5 kings survive in the papyrus out of a presumed 17; three more partially-preserved names can be reconstructed. The

\textsuperscript{12} Posener-Kriéger, “Graffiti”; see also Spalinger, “Texts”, 318.
remaining eleven are lost. Furthermore, the sequences at the end of Dyn. 4 and in mid-Dyn. 5 are by no means certain. Nor does evidence from contemporaneous documents always inspire confidence. For example, there is only a single case where the precise date of a king’s death and the accession of his successor are known, viz. for Sahure’s followed by Neferirkare’s. Regardless, the exact length of Sahure’s tenure still cannot be established, since we do not know how regularly the census was taken during his reign.

Disappointing as this may be, analysis of contemporaneous dates, both $mpt\ zp$ and $mpt\ m\-ht\ zp$, offers some stimulating insights. Assuming that the census was irregular throughout Dyns. 4 and 5, the minimum length of a given king’s reign should equal the total of the highest attested census year ($mpt\ zp$) and the number of attested intervening years ($mpt\ m\-ht\ zp$). A comparison of the results of such calculations with the data recorded in the $TC$ is represented in the table that follows:

<table>
<thead>
<tr>
<th></th>
<th>Contemporaneous Evidence</th>
<th>$TC$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dyn. 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Snofru</td>
<td>27 + x years</td>
<td>24 years</td>
</tr>
<tr>
<td>Cheops (Khufu)</td>
<td>13 + x</td>
<td>23</td>
</tr>
<tr>
<td>Ra’djedef</td>
<td>11 (10?) + x</td>
<td>8</td>
</tr>
<tr>
<td>Khephren (Ra’kha’ef)</td>
<td>15 + x</td>
<td>?</td>
</tr>
<tr>
<td>Bicheris</td>
<td>not attested</td>
<td>?</td>
</tr>
<tr>
<td>Mycerinus (Menkaure’s)</td>
<td>14 (?) + x</td>
<td>18</td>
</tr>
<tr>
<td>Shepseskaf</td>
<td>2 + x</td>
<td>4</td>
</tr>
<tr>
<td>Thanthphis</td>
<td>not attested</td>
<td>2</td>
</tr>
<tr>
<td>Dyn. 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Userkaf</td>
<td>4 + x</td>
<td>7</td>
</tr>
<tr>
<td>Sahure’s</td>
<td>8 + x</td>
<td>12</td>
</tr>
<tr>
<td>Neferirkare’s</td>
<td>5 + x</td>
<td>?</td>
</tr>
<tr>
<td>Shepseskare’s</td>
<td>not attested</td>
<td>7</td>
</tr>
<tr>
<td>Ra’neferef</td>
<td>1 + x</td>
<td>1</td>
</tr>
<tr>
<td>Neuserre’s</td>
<td>8(?) + x</td>
<td>11 + x</td>
</tr>
<tr>
<td>Menkauhor</td>
<td>not attested</td>
<td>8</td>
</tr>
<tr>
<td>Djedkare’s</td>
<td>28 (29 ?) + x</td>
<td>28</td>
</tr>
<tr>
<td>Wenis</td>
<td>9 + x</td>
<td>30</td>
</tr>
</tbody>
</table>

As can be seen, the estimate for the length of Snofru’s reign exceeds the figure provided by the papyrus; the same is probably true for the reigns of Ra’djedef and Djedkare’s. On the other hand, the entry in
the TC for Shepseskare, if correctly associated with that king, does not reflect the contemporaneous record, since virtually no clear-cut evidence for this mysterious ruler has yet surfaced. Such discrepancies call into question the credibility of the papyrus for Dyns. 4 and 5.

List of Contemporaneously Documented Dates, Dyns. 4–5

SNOFRU

TC III.9: 24 years
Manetho: Sóris—29 years
Beckerath, Chronologie, 159: 35 years (?)

\( \text{rnt} zp \)
- 2 (n) \( \text{tmwt} \); Cairo frg no. 4
- 7 (n) \( \text{tmwt} \); Palermo Stone, recto 6
- 7, \( \text{bd III} \); Maidum pyramid
- 8 (18 ?), \( \text{bd III} \) \( \text{šnw}, \text{sw} \) 2; Maidum pyramid
- 8 (n) \( \text{tmwt} \); Palermo Stone, recto 7
- 12, \( \text{bd IV} \) \( \text{šnw}, \text{sw} \) 1 (?); Maidum pyramid
- 13, . . . \( \text{prt} (?), \text{sw} \) 10; Maidum pyramid
- 13 (16 ?), \( \text{bd I} \) \( \text{šnw}, \text{sw} \) . . .; Maidum pyramid
- 13, . . . \( \text{šnw}, \text{sw} \) . . .; Maidum pyramid
- 13; Maidum pyramid

---

14 Verner, “Remarks”.
15 H. Gauthier, “Quatre nouveaux fragments de la pierre de Palerme”, in: G. Maspero, Le Musée égyptien III (Cairo, 1915), 50–52.
18 Posener-Kriéger, “Graffiti”, pl. 8, A.27.
• 13; Maidum pyramid

• 14 (17 ?), šbd II šm(w), sw . . .; Maidum pyramid

• 14 (17 ?), . . . prt; Maidum pyramid

• 14 (17 ?), šbd I + x; Maidum pyramid

• 15, šbd II prt, sw 14; Dahshur, Red Pyramid

• 15 (?), šbd III prt; Maidum pyramid

• 15, šbd III šm(w), sw 10 + x; Maidum pyramid

• 15 (?), šbd IV šm(w) (?), sw 10; Maidum pyramid

• 15 (?), . . . šm(w) (?), sw . . .; Maidum pyramid

• 15; Dahshur, Red Pyramid

• 16, šbd I šht, sw 13; Dahshur, quarry mark

• 16, šbd III šht; Dahshur, Red Pyramid

• 16, šbd IV šht, sw 14; Maidum pyramid

• 16, šbd II (?) šm(w), sw 12; Maidum pyramid

• 16 (?), šbd . . . prt, sw 2; Dahshur, Red Pyramid

• 16 (?), šbd I prt; Maidum pyramid

• 16 (?), šbd III prt; Maidum pyramid

• 16; Maidum pyramid

• 17, šbd II prt, sw 10 + x; Maidum pyramid

• 17, šbd I prt, sw 20; Maidum pyramid

---

30 R. Stadelmann (n. 2), 234–235, fig. 2.
35 Stadelmann (n. 2), 233–5, fig. 1.
36 LD II, I g.
37 Stadelman (n. 2), 234–235, fig. 2.
38 A. Rowe, The Museum Journal 22 (1931), 26, pl. 38, fig. 2.
40 H. Sourouzian, MDAIK 38 (1982), 389–390, fig. 5.
41 Rowe (n. 38), 26.
44 Petrie et al. (n. 32), 9, pl. 5, 2 left.
• 17, zbd I prt, sw 22; Maidum pyramid46
• 17, zbd III prt, sw ṣrq; Maidum pyramid47
• 17, zbd III prt, sw . . . ; Maidum pyramid48
• 17, zbd III ṣḥt, . . . ; Maidum pyramid49
• 17, . . . prt; Maidum pyramid50
• 17, (zbd) I + x prt; Maidum pyramid51
• 17, (zbd) I + x; Maidum pyramid52
• 17, zbd . . . ; Maidum pyramid53
• 17; Maidum pyramid54
• 18, zbd I prt, sw 21; Maidum pyramid55
• 23, zbd II ʿsmw; Maidum pyramid56
• 24, zbd II ṣḥt, . . . (?); Dahshur, Red Pyramid57
• 24, zbd . . . prt, . . . ; Dahshur, Red Pyramid58

Damage evidence of ṣmpt ḫp
• 10 + x, zbd IV ʿsmw; Maidum pyramid59
• 10 + x; Maidum pyramid60
• (1)6 (?), zbd I + x, sw 12; Maidum pyramid61
• (1)6 (?), zbd I + x, ʿsmw (?), sw 2; Maidum pyramid62
• (1)7 (?), IV ʿsmw, sw 21; Maidum pyramid63
• . . . , zbd IV . . . ; Maidum pyramid64

---

47 Petrie et al. (n. 32), 9, pl. 5,4.
48 Petrie et al. (n. 32), 9, pl. 5, 3.
56 Posener-Kriéger, “Graffiti”, pl. 9, A.42.
57 Reconstruction of a mason’s mark in LD Text I, 206 by Stadelmann (n. 2), 234–236, fig. 3.
58 Stadelmann (n. 2), 239–240, fig. 4.
59 Posener-Kriéger, “Graffiti”, pl. 8, A.34.
60 Posener-Kriéger, “Graffiti”, pl. 8, A.35.
64 Posener-Kriéger, “Graffiti”, pl. 9, A.36.
• ...; bd III 3\textit{smw}, sw ...; Maidum pyramid\textsuperscript{65}
• ...; bd III 3\textit{smw}, ... 10 + x; Maidum pyramid\textsuperscript{66}
\textit{rnpt} (m)- xt \textit{zt}\textsuperscript{67}
• 10, bd I + x; Maidum pyramid\textsuperscript{68}
• 13, ...; Maidum pyramid\textsuperscript{69}
• 18, bd IV \textit{smw}, sw (?) 5; Maidum pyramid\textsuperscript{70}
damaged evidence of \textit{rnpt} (m-)\textit{ht} \textit{zp}
• ...; Maidum pyramid\textsuperscript{71}

attested \textit{rnpt} \textit{zp}: 2; 7; 8; 12; 13; 14; 15; 16; 17; 18; 23; 24
attested \textit{rnpt} (m-)\textit{ht} \textit{zp}: 10; 13; 18
\textit{rnpt} \textit{zp}: \textit{rnpt} (m-)\textit{ht} \textit{zp}—12: 3

\textbf{CHEOPS (KHUFU)}
\textit{TC} III.10 (?): 23 years
Manetho: Súphis (I)—63 years
Beckerath, \textit{Chronologie}, 159: 23 years

\textit{rnpt} \textit{zp}
• 4 (?), bd ...; G 2130, Khentika\textsuperscript{72}
• 5, ... \textit{smw} (?), sw 5; G 1203\textsuperscript{73}
• 8, bd \textit{I prt}, ... (?); a loose (?) block found at the upper end of the causeway, near the entrance to the king’s mortuary temple\textsuperscript{74}
• 8, bd III \textit{smw}, sw 20; G 4000, Hemiunu\textsuperscript{75}
• 10, bd IV \textit{prt}, sw 23 (or 24); G 4000, Hemiunu\textsuperscript{76}

\textsuperscript{65} Posener-Kriéger, “Graffiin”, pl. 9, A.37.
\textsuperscript{66} Posener-Kriéger, “Graffiin”, pl. 9, A.41.
\textsuperscript{67} For the transcription of \textit{m-ht} see Edel, \textit{Grammatik}, 180.
\textsuperscript{68} Posener-Kriéger, “Graffiin”, pl. 8, A.30.
\textsuperscript{69} Posener-Kriéger, “Graffiin”, pl. 8, A.32.
\textsuperscript{70} Posener-Kriéger, “Graffiin”, pl. 8, A.28.
\textsuperscript{71} Posener-Kriéger, “Graffiin”, pl. 9, A.38.
\textsuperscript{72} Attributed to Khufu by Smith, “Evidence”, 118 fig. 6; 127 no. 4; so also Y. Harpur, \textit{Decoration in Egyptian Tombs of the Old Kingdom} (London, 1987), 269.
\textsuperscript{73} Attributed to Khufu by Smith, “Evidence”, 118, fig. 6; 127 no. 2, and by G. A. Reisner, \textit{A History of the Giza Necropolis} I (Cambridge, Mass., 1942), 76 n. 2 and 391/19/.
\textsuperscript{74} Attributed to Khufu by Smith, “Evidence”, 119 fig. 7; 126f. no. 1; originally, A. Rowe read this date “year 13”, see Reisner (n. 73), 71.
\textsuperscript{75} Attributed to Khufu by Junker, \textit{Giza I}, 159, fig. 24/10/., 161.
\textsuperscript{76} Junker, \textit{Giza I}, 161, no. 12.
• 10, \textit{\textit{šbd I šmwc}}, \textit{sw} 10 + \textit{x}; G 4000, Hemiunu\textsuperscript{77}
• 10, \textit{\textit{šbd II šmwc}}, \textit{sw} 10 + \textit{x}; G 4000, Hemiunu\textsuperscript{78}
• 12, \textit{\textit{šbd II šmwc}}; G 2120, Seshatsekhetniu\textsuperscript{79}
• 12, \textit{\textit{šbd II . . .}}; G 7130–40, Khufuhaf I\textsuperscript{80}

\textit{rnpt (m-)}\textit{ḥt zp}

• 13\textsuperscript{81}

\textbf{attested} \textit{rnpt zp}: 4, 5, 8, 10, 12
\textit{rnpt (m-)}\textit{ḥt zp}: 13
\textit{rnpt zp}: \textit{rnpt (m-)}\textit{ḥt zp—5: 1}

\textit{RA’DJJEDEF}

\textit{TC III.11 (?): 8 years}
Beckerath, \textit{Chronologie}, 159: 9 years

\textit{rnpt zp}

• 1, \textit{\textit{šbd III prt}}, . . .; pyramid of Ra’djedef\textsuperscript{82}
• 11 (or 10 ?), \textit{\textit{šbd I pr(t), sw} 24 (?}); boat pit, south side of Khepos’s pyramid\textsuperscript{83}

\textbf{attested} \textit{rnpt zp}: 1, 11 (10 ?)
\textit{rnpt (m-)}\textit{ḥt zp}: not attested
\textit{rnpt zp}: \textit{rnpt (m-)}\textit{ḥt zp}: 2: 0 (?)

\textsuperscript{77} Junker, \textit{Gīza I}, 158, 160; 159 fig. 24/1/.
\textsuperscript{78} Junker, \textit{Gīza I}, 159 fig. 24/2/; 160.
\textsuperscript{79} Attributed to Khufu by Smith, “Evidence”, 118, fig. 6; 127 no. 3, and by Spalinger, “Texts”, 283; according to N. Strudwick, \textit{The Administration of Egypt in the Old Kingdom} (London, 1965), 117 no. 6, the reign of Khephren is also possible.
\textsuperscript{80} Attributed to Khufu by Smith, “Evidence”, 119, fig. 7; 127 no. 8, and by W. K. Simpson, \textit{The Mastabas of Kawab, Khafrhufu I and II} (Boston, 1978), 9. This dating also accords with Stadelmann’s theory that Khufukhaf I assumed the name Khephren after succeeding Ra’djedef, see \textit{SAK} 11 (1985), 165–172.
\textsuperscript{82} M. Vallogia, in: \textit{Études sur l’Ancien Empire et la nécropole de Saqqara dédiées à Jean-Philippe Lauer} (Montpellier, 1997), 419.
\textsuperscript{83} According to I. E. S. Edwards, in: \textit{The Unbroken Reed: Studies in the Culture and Heritage of Ancient Egypt in honour of A. F. Shore} (London, 1994), 101, 105 n. 20, Posener-Kriéger read “year 10” (i.e. “year of the 10th cattle count”); see also R. Krauss, \textit{Orientalia} 66 (1997), 3 n. 16. Both readings are possible; however, the reading of the left column with the date is not doubt-free, and the right column of the graffito is almost illegible, see A. M. Abubakr & A. Y. Mustafa, \textit{The Funerary Boat of Khufu}, in: \textit{BABA} 12 (1971), 11, fig. 6 bottom left.
KHEPHREN (RA‘KHAEF)

TC III.12: 20 + x years

Manetho: Suphis (II) 66 years

Beckerath, Chronologie, 159: 26 years

\(\text{rmp} \ zp\)

1, \(\text{sb} \text{bd} \ IV \text{ zht}, \text{sw} \ 5\); ostracon from Helwan tomb 299 H 2

5, \(\text{sb} \text{bd} \ III \text{ prt}, \text{sw} \ 22\); ostracon from Helwan tomb 335 H 2

7, \(\text{sb} \text{bd} \ IV \text{ prt}, \text{sw} \ 10\); G 7530–40, Meresankh III

7, \(\text{sb} \text{bd} \ IV \text{ prt}, \text{sw} \ 20\); G 7530–40, Meresankh III

10, \(\text{sb} \text{bd} \ III \text{ smw}, \text{sw} \ 24\); ostracon Leiden J 429

10 (?), \(\text{sb} \text{bd} \ III \text{ smw}, \ldots\); G 7350, Hetepheres II (?)

12, \(\text{sb} \text{bd} \ II \text{ smw}, \text{sw} \ 10\); G 7650, Akhtihotep and his wife Meretites

---

84 Z. Saad, Royal Excavations at Saqqara and Helwan (1941–1945), Suppl. ASAE no. 3 (Cairo, 1947), 106, pl. 42 a left; as Spalinger notes, “Texts”, 287, Khephren’s cartouche in the inscription clinches its assignment to his reign.

85 Saad (n. 84), 107, pl. 43 at right; probably temp. of Khephren.

86 Attributed to Khephren by D. Dunham & W. K. Simpson, The Mastaba of Meryankh III (Boston, 1974), 3 fig. 1; see also Smith, “Evidence”, 127 no. 9, 119 fig. 7.

87 Attributed to Khephren by Dunham & Simpson (n. 86), 3 fig. 1; see also Smith, “Evidence”, 127 no. 9, 119 fig. 7. Anthropological examination of Meresankh III’s bones put her age at death at about fifty, see V. G. Callender, Egypt in the Old Kingdom (Melbourne, 1998), 172–173.

88 According to H. Goedicke, JEA 54 (1968), 24, 28–29, pl. 5 no. 4, the ostracon is of the same date as those of Helwan; thus \(\text{rmp} \ zp \ 10\) probably refers to Khephren. Cf. also, idem, Old Hieratic Palaeography (Baltimore, 1988), pl. 16.

89 According to Reisner (n. 73), 73 n. 2; see also Smith, “Evidence”, 119 fig. 7, 127 no. 9. The date was inscribed on the back of a block from G 7350, purportedly built for Hetepheres II. However, Smith identified the figures in the relief on the front as Hetepheres II (?) and Meresankh III (?), and he dated it to the time of Shepseskaf (PHESPOK, 1946, 164–165, 302, pl. 45 a). The attribution of G 7350 to Hetepheres II is not based on textual evidence. P. Jánosi, AS 123 (1996), 56–57, has questioned Smith’s conclusions. He suggests that the relief might have originally shown an anonymous prince followed by his mother and his wife. No doubt the attribution of the date is fraught with difficulties, regardless of the fact that a high date and Shepseskaf’s reign are mutually exclusive, which leaves either Khephren or Menkaure’s. Since Meresankh III was probably buried in the tomb intended originally for her mother at the beginning of Menkaure’s reign (see the dates \(\text{rmp} \ zp \ 1\) and \(\text{rmp} \text{ (m-)hph} \ zp \ 1\) sub Menkaure’s), it would be surprising to find her represented with her mother in a tomb built as late as Menkaure’s reign. When considering the data from G 7350 and G 7530–40 and with due circumspection in view of the complex stratigraphy and unclear chronology of cemetery G 7000, one is inclined to assign the date to Khephren.

90 Attributed to Khephren by Smith, “Evidence”, 119 fig. 7, 127–128 no. 11 b; see also Reisner (n. 73), 73 n. 1. For doubts about the attribution to Khephren, and a still higher date of \(\text{rmp} \ zp \ 13\) (see below) from the tomb of Akhtihotep, see P. Jánosi, Giza in der 4. Dynastie. (Wien 2005), 71–73, 443.
• 12 Tnwt . . . ; LG 87, Nikaure

• 13, ñbd IV . . . ; G 7650, Akhtihotep and his wife Meretites

\( r\nu pt \ (m-\nu)t \ zp \)
• 4 Tnwt, ñbd II šmw, sw 3; ostracon from Helwan tomb 305 H
• 4 Tnwt, ñbd II šmw, sw 4; ostracon from Helwan tomb 305 H
• 5, ñbd II šmw, sw 8; ostracon from Helwan tomb 322 H
• 5, ñbd III ðrt, sw 22; ostracon from Helwan tomb 335 H

attested \( r\nu pt \ zp \): 1, 5, 7, 10, 12, 13
attested \( r\nu pt \ (m-)\nu t \ zp \): 4, 5
\( r\nu pt \ zp : r\nu pt \ (m-)\nu t \ zp—6: 2 \)

**BICHERIS**

\( TC \) III.13 (?): . . . ? . . . years
Manetho: 22 years (Bicheris, preceded by Ratoises, was inserted by Manetho between Mycerinus and Shepseskaf.)
Beckerath, *Chronologie*, 159: 7 years

**MYCERINUS (MENKAURE’)**

\( TC \) III.14 (?): 18 (28 ?) years
Manetho: Mencherés—63 years
Beckerath, *Chronologie*, 159: 28 years.

---

91 Urk. I, 16,14; see also H. Goedicke, *Die privaten Rechtsinschriften aus dem Alten Reich* (Wien, 1970), 21–22. There is no unanimity on the dating of the will of Khephren’s son Nikaure. For instance, Strudwick (n. 79; 107) concluded that Nikaure should have been born in Khephren’s reign, “and thus would be no older than twenty-two at the end of his father’s reign”. Consequently, \( r\nu pt \ zp \) 12 should then apply to Khephren’s successor Menkaure’. With reference to art historical criteria and the replacement of Tnwt by ñpt in the date (the former being supposed by Goedicke, *Rechtsinschriften*, 22, to have disappeared by the beginning of Dyn. 5), Spalinger (‘‘Texts’’, 294) opts for Menkaure’, too. But Baud, *Ménès*, 128, argues that Khephren’s name occurs in Nikaure’s tomb with such an insistence that the date should refer to this king. Jánosi (n. 90), too, does not exclude the attribution of the date to Khephren, provided that Nikaure was born before his father ascended the throne. Taking all the arguments in account, including the possibility that Khephren might have become king later in his life, one is inclined to assign this date to him.

92 Attributed to Khephren by Smith, “Evidence”, 119 fig. 7, 128 no. 11.

93 Saad (n. 84), 106–107, pl. 42 b right. For the translation and interpretation, see H. G. Fischer, *Orientalia* 29 (1960), 187–190; Spalinger, “Texts”, 287.

94 Saad (n. 84), 106–107, pl. 42 b left. For translation and the reference of the ostracon, see Fischer (n. 93), 187–90; see also Spalinger, “Texts”, 287.

95 Saad (n. 84), 107, pl. 43 a right; see Spalinger, “Texts”, 288.

96 Saad (n. 84), 106–107, pl. 43 b right; see Spalinger, “Texts”.
The following dates from the Gebelein papyri can probably be attributed to Mycerinus:100

\[ \text{rnpt zp} \]
- 2, \( \text{bd II prt, sw 22;} \) G VI S97
- 2, \( \text{bd IV šmw, sw 22;} \) G 7530–40, Meresankh III98
- 11, \( \text{bd . . ., sw 10 + x;} \) G VI S99

The following dates from the Gebelein papyri can probably be attributed to Mycerinus:100

\[ \text{rnpt (m-)} \text{ḥt zp} \]
- 2, \( \text{bd . . .ḥt, sw 20;} \) Gebelein, frag. A101
- 3, \( \text{bd III prt, sw 26;} \) Gebelein, frag. B102
- 11, . . .; Gebelein, rouleau IV103

attested \( \text{rnpt zp: 2, 11} \)
attested \( \text{rnpt (m-)} \text{ḥt zp: 2(?), 3(?), 11(?)} \)
\( \text{rnpt zp: rnpt (m-)} \text{ḥt zp—2: 3(?)} \)

SHEPSESKEF

TC III.15 (?): 4 years
Manetho: Sebercherés—7 years
Beckerath, Chronologie, 159: 5 years

---

97 Junker, Giza X, 75, fig. 35.9, 78, no. 10. With regard to the occurrence of this date on some blocks at the site, Junker attributed the date to Menkaure’ because of the presence of his crew names.

98 Dunham & Simpson, (n. 86), 3, fig. 1 c; see also Smith, “Evidence”, 116 fig. 4, 126 no. 2. The date is inscribed to the north of the subsidiary niche, eastern façade, of the mastaba (from the date on the south side, only . . . prt, sw 17 survived). Reisner attributed the date to Khephren, see Smith, “Evidence”, Spalinger, “Texts”, 286, accepts this dating, though with some hesitation. However, Reisner’s dating can be seriously questioned. If the tomb was built around the 7th census of Khephren, as indicated by two masons’ inscriptions (Simpson & Dunham (n. 86), 3, Fig. 1 b, c), the lower date found on the mastaba’s façade can hardly be earlier. But to which event did the date refer? The attribution of the date to Menkaure’ seems to be, therefore, more probable. For the complex, and the problem of its history, see Jánosi (n. 90), 500 and idem, ZÄS 123 (1996), 46–62.

99 Junker, Giza X, 75 fig. 35.10, 77 no. 9; because Menkaure’’s crew names were found on some blocks at the site, Junker attributed the date to his reign.


101 Posener-Kriéger (n. 100; 1979), 318–331.


\textit{rnpt} zm\textsuperscript{\textdegree} b\text{\textit{w}}y
\begin{itemize}
  \item Palermo Stone\textsuperscript{104}
  \item dbd II šmw, sw 10;\textsuperscript{105}
  \item dbd II šmw, sw 10; G 5552\textsuperscript{106}
  \item dbd III šmw, sw . . . ; G 7450\textsuperscript{107}
  \item dbd IV šmw, sw 4; G 7450\textsuperscript{108}
\end{itemize}
\textit{rnpt} zp
\begin{itemize}
  \item 1, dbd 1 šmw, sw 21 (G 753040, Meresankh III)\textsuperscript{109}
\end{itemize}
\textit{rnpt} (m-\textit{ht}) zp
\begin{itemize}
  \item tpt, dbd II prt, sw 28\textsuperscript{110}
  \item 1 (n) ipt (!) ih \textit{wt nbt}, edict of Shepseskaf for the pyramid of Mycerinus\textsuperscript{111}
\end{itemize}

\texttt{THAMPHTHIS}

\textit{TC} III, 16 (?): 2 years
Manetho: Thamphthis—9 years
Beckerath, \textit{Chronologie}, 159: 2 years

\texttt{USERKAF}

\textit{TC} III.17: 7 years
Manetho: Usercherés—7 years
Beckerath, \textit{Chronologie}, 159: 8 years

\textsuperscript{104} Schäfer, “Annalen”, 32–33.
\textsuperscript{105} Attributed to Shepseskaf by Helck, in: \textit{Fs Goedicke}, 107.
\textsuperscript{106} Attributed to Shepseskaf by Helck (n. 105), 107–108.
\textsuperscript{107} Attributed to Shepseskaf by Helck (n. 105), 107–108.
\textsuperscript{108} The date to the right of the entrance to Meresankh III’s chapel refers to the preparation of the queen’s burial. Reisner attributed it to Shepseskaf, see Smith, “Evidence”, 126, fig. 4, 118; Jánosi (n. 90), 501 concurs. But Dunham & Simpson (n. 86), 8, pl. 2 a, fig. 2, and also Spalinger, “Texts”, 288–289, assign it to Menkaure’.
\textsuperscript{109} The date, inscribed on the left side of the entrance to Meresankh III’s chapel and referring to the completion of the queen’s burial, was attributed by Reisner to Shepseskaf, see Smith, “Evidence”, 126, fig. 4 on p. 118. Jánosi (n. 90), 501, attributes the date to Shepseskaf, too. On the other hand, Dunham & Simpson (n. 86), 8, pl. 2 a, and also Spalinger, “Texts”, 289, attribute the date to Menkaure’.
\textsuperscript{111} Schäfer, “Annalen”, 34.
Dynasties 4 to 5

rnpt zp
• 3; Palermo Stone, verso 2
• 3, šbd III prt, sw . . . ; sun temple of Userkaf

rnpt (m)-xt zp
• 1, (n) ṭmwt; Cairo frag. no. 1 recto

attested rnpt zp: 3
attested rnpt (m)-xt zp: 1
rnpt zp: rnpt (m)-xt zp, 1: 1

SAHURE

TC III 18 (?): 12 years
Manetho: Sephrés—13 years
Beckerath, Chronologie, 155: 13 years

rnpt zp
• 1; Cairo Frg. no. 1 verso 2
• 2, šbd I šmwc, sw 20; mason’s inscription, mortuary temple of Sahure
• 4, šbd IV Šht, sw 12; masons’ inscription, mortuary temple of Sahure
• 5, šbd I Šht; sun temple of Userkaf, tablet A
• 5, šbd III prt; sun temple of Userkaf, tablet B
• 5, šbd III šmwc; sun temple of Userkaf, tablet C

rnpt (m)-xt zp
• 2 (Palermo Stone, verso 3)
• 5, šbd II prt; sun temple of Userkaf, tablet D
• 6; Palermo Stone, verso 4

112 Schäfer, “Annalen”, 34.
114 Gauthier (n. 15), 45–46, pl. 26.
115 Gauthier (n. 15), 47.
117 Borchardt (n. 116), 89, M 29.
118 Probably to be attributed to Sahure, see Verner, “Remarks”, 386–390.
119 Probably to be attributed to Sahure, see Verner, “Remarks”, 386–390.
120 Probably to be attributed to Sahure, “Remarks”, 386–390.
122 Probably to be attributed to Sahure, see Verner, “Remarks”, 386–390.
123 Schäfer, “Annalen”, 38–39. To date, this is the highest contemporaneous date attested for Sahure’s reign. A. Roccati, La littérature historique sous l’Ancien Empire (Paris, 1982), 48, for instance, read the worn signs as 7 and, provided the census was biennial, evidence for year 15 of Sahure’s reign. However, as pointed out by Wilkinson (Annals, 168), 6 is a more likely reading than 7; in case of a biennial census, it would refer to year 13.
attested \(\text{rnpt} \, \text{zp}: \, 1, \, 2, \, 4, \, 5\) 
attested \(\text{rnpt} \, (m)-xt \, \text{zp}: \, 2, \, 5, \, 6\) 
\(\text{rnpt} \, \text{zp}: \, \text{rnpt} \, (m)-xt \, \text{zp}, \, 4: \, 3\)

**NEFERIRKARE**

\(\text{TC III.19} \, (?)\): length of reign lost 
Manetho: Nefercherés—20 years 
Beckerath, *Chronologie*, 155: 20 years

\(\text{rnpt} \, \text{zm} \, \text{bwy}; \, \text{Palermo Stone verso} \, 4\)

\(\text{rnpt} \, \text{zp}\)
- 5; Palermo Stone verso 5
- 5, \(\delta bd \, IV \, \delta ht, \, \text{sw} \, 4\); mason’s inscription, pyramid of Khentkaus II
- 5, \(\delta bd \, IV\); mason’s inscription, pyramid of Neferirkare

attested \(\text{rnpt} \, \text{zp}: \, 5\) 
\(\text{rnpt} \, m-ht \, \text{zp}: \, \text{not attested}\) 
\(\text{rnpt} \, \text{zp}: \, \text{rnpt} \, m-ht \, \text{zp}—1: \, 0\)

**SHEPSESKARE**

\(\text{TC III.20} \, (?)\): 7 years 
Manetho: Sisirés—7 years 
Beckerath, *Chronologie*, 155: 7 years

**RA’NEFEREF**

\(\text{TC III.21} \, (?)\): 1 year 
Manetho: Cherés—20 years 
Beckerath, *Chronologie*, 155: 11 years

\(\text{rnpt} \, \text{zp}\)
- \(\text{ipty}, \, \delta bd \, IV \, \delta ht \, \text{sw} \, 4 \, + \, x; \, \text{pyramid of Ra’neferef}\)

attested \(\text{rnpt} \, \text{zp}: \, 1\) 
\(\text{rnpt} \, (m-\text{ht}) \, \text{zp}: \, \text{not attested}\) 
\(\text{rnpt} \, \text{zp}: \, \text{rnpt} \, (m-\text{ht}) \, \text{zp}—1: \, 0\)

---

126 Probably to be attributed to Neferirkare, see Verner, *ZÄS* 107 (1980), 159, fig. 3; idem *The Pyramid Complex of Khentkaus* (Prague, 1995), 43–45.
128 Corrected copy: Verner, *ZÄS* 126 (1999), 76, fig. 6.
**NEUSERRE**

*TC III.22 (?)*: 11 (+ x years ?)

Manetho: Rathurés—44 years

Beckerath, *Chronologie*, 155: 31 years; cf. ibidem 208, where the figure 30—or 20 ? + 1 or 5 ?—is given

**rnpt zm3 (t3wy)**

- unpublished potsherd no. 763/I/84–x, mortuary temple of Ra’nefer

**rnpt zp**

- 1, *zbd I zḥt, sw 10 + x*; unpublished potsherd no. 531/I/82, mortuary temple of Ra’nefer

- 1, *zbd tpy zḥt, ...*; unpublished potsherd no. 763/I/84–e, mortuary temple of Ra’nefer

- 2, *zbd III šməw, sw 10*; a potsherd found by Borchardt\(^{129}\) in (or to the west of ?) the mastaba of Djađamankh in Abusir

- 5 (?), *zbd III pt, (sw) wfw; masons’ inscription, mastaba of Ptahshepse\(^{130}\)

- 7, *zbd III zḥt, sw 1 (or 7 ?)*; jar for beef fat no. 531/I/82, mortuary temple of Ra’nefer

**rnpt (m-)ḥt zp**

- 2, *zbd 3 zḥt, sw 24*; masonry block, found in the southern “Eckbau” of the mortuary temple of Neuserre\(^{131}\)

**MENKAUHOR**

*TC III.23*: 8 years

Manetho: Mencherés—9 years

Beckerath, *Chronologie*, 155: 9 years

**DJEDKARE**

*TC III.24*: 28 years

Manetho: Tancherés—44 years

Beckerath, *Chronologie*, 155: 38 years

---

\(^{129}\) L. Borchardt, *Das Grabdenkmal des Königs Ne-user-r*’ (Leipzig, 1907), 139.

\(^{130}\) To be attributed to Neuserre\(^{5}\): M. Verner, *Bauaufbaut der Ptahshepse Mastaba* (Prague, 1992), 110, graffito no. 194.

\(^{131}\) Borchardt (n. 129), 145.
140 MIROSŁAV VERNER

rt ph zmr bwy
- 3bd III prt, sw 29; tomb of Wepemneferet\textsuperscript{132}

rt ph
- 1, 3bd II 3ḥt, . . .; unp. pap., (mortuary temple) archive of Ra‘nfereref, pl. 51 A
- rt ph (sic), . . .; unp. pap., archive of Ra‘nfereref, pl. 76 A
- 3, 3bd IV 3ḥt, sw 25; papyrus archive, temple of Neferirkare\textsuperscript{133}
- 5, 3bd IV 3ḥt, . . .; unp. pap., archive of Ra‘nfereref, pl. 76 C
- 6, 3bd IV prt, sw 22; wooden box for linen found in the tomb of Nefer and Kahay\textsuperscript{134}
- 8, 3bd IV śmwt; papyrus archive, mortuary temple of Neferirkare\textsuperscript{135}
- 9; rock stela, Sinai\textsuperscript{136}
- 10, 3bd IV . . ., sw 24; papyrus archive, mortuary temple of Neferirkare\textsuperscript{137}
- 11, 3bd II 3ḥt, sw 11; papyrus archive, mortuary temple of Neferirkare\textsuperscript{138}
- 14, 3bd ḫlp śmwt (3bd II śmwt); papyrus archive, mortuary temple of Neferirkare\textsuperscript{139}

\textsuperscript{132} The date, mentioned in Wepemneferet’s will on a wall of his tomb (S. Hassan, \textit{Giza II}, Cairo, 1936, fig. 219), was attributed by Spalinger (“Texts”, 302, with a reference to K. Baer, \textit{Rank and Title in the Old Kingdom}, Chicago, 1960, 66) to Wenis. However, the persons mentioned in the tomb include a craftsman named Ra‘nfereref-anhk. If born in the reign of Ra‘nfereref, which seems probable, he could have been about 30 to 40 years old at the beginning of Djedkare’s reign. If this date be ascribed to Wenis, he would have been very old at the time of that king’s accession. The date should, therefore, refer to Djedkare\textsuperscript{4} rather than Wenis.

\textsuperscript{133} Posener-Kriéger & de Cenival, \textit{Abusir Papyri}, pls. 13, 13 A; Posener-Kriéger, \textit{Archives II}, 480.

\textsuperscript{134} H. Altenmüller & A. Moussa, \textit{The Tomb of Nefer and Kahay} (Mainz: AV 5, 1971), 18, 43-44, fig. 11. The excavators assigned the date to Djedkare’s. However, Spalinger, “Texts”, 302 suggested either Ra‘nfereref or Neuserre’s. Surely Ra‘nfereref can be excluded (see above sub Ra‘nfereref). The tomb seems to have been built in the time of Neuserre’s, as the excavators surmised; see also, e.g., N. Cherpin, \textit{Mastabas et Hypogées de l’ancien Égypte} (Bruxelles, 1989), 135. However, as pointed out by Altenmüller & Moussa, the burial in shaft no. 8, where the box with the date was found, was the last one made in the tomb and should be contemporary with Nefer’s children. The dating of the inscription to the time of Djedkare is, therefore, very plausible.

\textsuperscript{135} Posener-Kriéger, de Cenival, \textit{Abusir Papyri}, pls. 69, 69 A; Posener-Kriéger, \textit{Archives II}, 490.


\textsuperscript{137} Posener-Kriéger & de Cenival, \textit{Abusir Papyri}, pls. 72, 72 A; Posener-Kriéger, \textit{Archives II}, 490.

\textsuperscript{138} Posener-Kriéger & de Cenival, \textit{Abusir Papyri}, pls. 53, 53 A; Posener-Kriéger, \textit{Archives II}, 490.

\textsuperscript{139} Posener-Kriéger & de Cenival, \textit{Abusir Papyri}, pls. 2, 2 A; Posener-Kriéger, \textit{Archives II}, 490.
• 15, 3bd IV prt, (sw) ḫw; papyrus archive, mortuary temple of Neferirkare\textsuperscript{140}
• 15, 3bd IV šḥt, sw 27; unp. pap., archive of Ra‘nerefer, pl. 20 B
• 15, 3bd IV šḥt, sw 28; unp. pap., archive of Ra‘nerefer\textsuperscript{141}
• 15, 3bd I, . . .; unp. pap., archive of Ra‘nerefer, pl. 21 L
• 15 (n) T(ṃw); unp. pap., archive of Ra‘nerefer, pl. 3 A
• 16; papyrus archive, mortuary temple of Neferirkare\textsuperscript{142}
• [1]6, 3bd IV šmw, sw 28\textsuperscript{143}
• 17, 3bd III; unp. pap., archive of Ra‘nerefer, pl. 8 D
• 18, 3bd III šmw, sw ṣrq; unp. pap., archive of Ra‘nerefer, pl. 45
• 18, 3bd IV šmw, sw ṣrq; unp. pap., archive of Ra‘nerefer, pl. 63 A
• 21 (22 ?), 3bd IV šḥt, sw 12; papyrus archive, mortuary temple of Neferirkare\textsuperscript{144}

damaged evidence of rnpt ḥp
• 2 + x, 3bd I . . ., sw . . .; unp. pap., archive of Ra‘nerefer, pl. 76 B
• 10 + x; unp. pap., archive of Ra‘nerefer, pl. 85 C
• 11 + x Tnw(t) ḫḥ (iwt nb); unp. pap., archive of Ra‘nerefer, pl. 1 A.

rnpt (m-)ḥḥ ḥp
• 1, 3bd IV ḥḥt, sw ṣrq; unp. pap., archive of Ra‘nerefer, pl. 77 A
• 1, 3bd IV ṣmw, sw 1; unp. pap., archive of Ra‘nerefer, pl. 77 B
• ṭḥḥ; unp. pap., archive of Ra‘nerefer, pl. 82 0
• 3; rock stela, Sinai.\textsuperscript{145}
• 4, 3bd III ṣmw, sw 15; unp. pap., archive of Ra‘nerefer, pl. 76 C.
• 4, 3bd III ṣmw; unp. pap., archive of Ra‘nerefer, pl. 69 A
• 7 (?), 3bd I ḥḥt; unp. pap., archive of Ra‘nerefer, pl. 76 D
• 10, 3bd IV ṣmw, sw 21; papyrus archive, mortuary temple of Neferirkare\textsuperscript{146}

\textsuperscript{140} Posener-Kriéger & de Cenival, \textit{Abusir Papyri}, pls. 47, 47 A; Posener-Kriéger, \textit{Archives II}, 490.
\textsuperscript{142} Posener-Kriéger & de Cenival, \textit{Abusir Papyri}, pls. 1, 1 A; Posener-Kriéger, \textit{Archives II}, 490.
\textsuperscript{143} Urk I, 63.11; W. S. Smith, “Evidence”, 113 n. 2; see also E. Eichler, \textit{SAK} 18 (1991), 146–147 (letter of Izezi to Senedjemib).
\textsuperscript{144} Posener-Kriéger & de Cenival, \textit{Abusir Papyri}, pls. 41, 41 A; Posener-Kriéger, \textit{Archives II}, 490. Posener-Kriéger transcribed the numeral following rnpt ḥp as 21. There is, however, the trace of another vertical stroke which allows the reconstruction ‘22’.
\textsuperscript{145} Gardiner et al. (n. 136), I, pl. VII, no. 13; II, 60.
\textsuperscript{146} Posener-Kriéger & de Cenival, \textit{Abusir Papyri}, pls. 14, 14 A; Posener-Kriéger, \textit{Archives II}, 490.
• rnt zp (m)-xt zp (sic) 14, sbd I šḥt, sw 28; unp. pap., archive of Ra'nefer, pl. 66 B
• 14, sbd ...; sḥt; unp. pap., archive of Ra'nefer, pl. 76 J
• 17, sbd I šmw (?), sw 23; sarcophagus of Idu, Abusir

damaged evidence of rnt (m)-xt zp
• 4 + x, sbd I šḥt; unp. pap., mortuary temple archive of Ra'nefer, pl. 77 I
• 10 + x, ...; unp. pap., mortuary temple archive of Ra'nefer, pl. 76 E

documents dating from the time of either Djedkare$^e$ or Wenis:
• rnt zp 4, sbd IV prt, sw 2; papyrus archive, mortuary temple of Neferirkare
• rnt zp 4, sbd I šmw, sw ʾrq; papyrus archive, mortuary temple of Neferirkare
• rnt zp 11, sbd III prt, sw 3 (?); mason’s inscription, tomb of Rawer II

attested rnt zp: 1, 3, 4(?), 5, 6, 8, 9, 10, 11, 14, 15, 16, 17, 18, 21 (22?)
attested rnt (m)-xt zp: 1, 3, 4, 7 (?), 10, 14, 17
rnt zp: rnt (m)-xt zp, 15(?): 7(?)

WENIS
TC III.25: 30 years
Manetho: Onnos—33 years
Beckerath, Chronologie, 155: 20 years

---

147 M. Verner, SAK 8 (1980), 258–260, pl. 16. A new examination of the badly damaged inscription showed that the date should be read *rnt (m-ḥt zp* 17 rather than *rnt zp* 14, as suggested shortly after the discovery of the tomb.
148 Posener-Kriéger & de Cenival, *Abusir Papyri*, pls. 11, 11 A; Posener-Kriéger, *Archives II*, 491, was hesitant about the attribution of this date to either Djedkare$^e$ or Wenis.
149 Posener-Kriéger & de Cenival, *Abusir Papyri*, pls. 11, 11 A; Posener-Kriéger, *Archives II*, 491 was hesitant about the attribution of this date to either Djedkare$^e$ or Wenis.
150 Junker, Giza III, 223–235; idem Giza VIII, 39f. Though a sealing bearing the name of Djedkare$^e$ was found in the tomb, the attribution of the date to him is somewhat uncertain. Nevertheless Baer (n. 132), 98, assigned the tomb to the end of Dyn. 5, while Harpur (n. 72), 213, dates it mid-Djedkare$^e$ to Wenis.
Concerning several dates whose attribution is uncertain (Djedkare or Wenis), see above under Djedkare.

attested \textit{rnpt zp}: 3, 6, 8

attested \textit{rnpt (m)-xt zp}: 4

\textit{rnpt zp}: \textit{rnpt (m)-xt zp}, 3: 1

Postscript.—Unfortunately, the edition of this volume has been delayed by four years. In the meantime, there has appeared some new information relating to the subject of my article to which I could not respond. For instance, a work by J. S. Nolan (The Original Lunar Calendar and Cattle Counts in Old Kingdom Egypt in: AH 17, 2003, 75–97) offering the explanation of the imbalance between the “years of an occasion” and “years after an occasion” in the contemporaneous Old Kingdom documents. Moreover, some new conclusions concerning the dated documents of the late Fifth Dynasty eventuated as a result of an examination of the papyri from Raneferef’s mortuary temple archive (see P. Posener-Kriéger, M. Verner, H. Vymazalová, The Pyramid Complex of Raneferef. The Papyrus Archive, in press). It is thus a matter of some regret that this article could not be as comprehensive as I would have liked.

\footnote{151} M. Verner & V. Callender, \textit{Djedkare’s Family Cemetery} (Prague, 2002), 103.

\footnote{152} Posener-Kriéger & de Cenival, \textit{Abusir Papyri}, pls. 54 c, 54 A c; Posener-Kriéger, \textit{Archives} II, 491.

\footnote{153} Posener-Kriéger & de Cenival, \textit{Abusir Papyri}, pls. 50, 50 A; Posener-Kriéger, \textit{Archives} II, 491.
II. 5 THE RELATIVE CHRONOLOGY OF DYNASTIES 6 AND 8

Michel Baud

Although data are quite abundant for Dyn. 6 and derive from a variety of sources (royal annals and decrees on stone, administrative documents on papyrus, expedition graffiti), the interpretation of the dating system used by the monarchy remains controversial. For this period, the dogma of the biennial census has been challenged in the most recent studies, especially in the compilations of Spalinger\(^1\) and Helck\(^2\) prior to the publication of the South Saqqara Stone, with the royal annals of Dyn. 6.\(^3\) In theory, the discovery of such a monument might be expected to clarify chronological questions, since the text is organized in year-compartments ending with the citation of the year, either of the census type (\(mpt\ \zp\)) or post-census type (\(mpt\ \m-\hlt\ \zp\)). But unfortunately, the inscriptions were quite systematically erased prior to the reuse of the slab as a sarcophagus lid, so that neither the demarcation of the compartments (which may in any case have been painted, rather than carved) nor most of the dates are preserved. Documents of significantly later date, such as the \(TC\), do not provide any help for evaluating the dynasty’s duration, or the lengths of individual reigns. Most, if not all, of the figures preserved are at odds with contemporaneous OK data, despite repeated efforts to reconcile the two.\(^4\) Therefore, the value of the papyrus lies more in the realm of historiography than in chronology.\(^5\)

---

\(^4\) See Beckerath, \(Chronologie\), 147–152.
Reign of Teti

No dates are preserved on the annals (recto, first register), and the absence of lines dividing year-compartment does not even allow an estimate of the reign’s total length. The space allotted Teti seems much too small to accommodate the available data; most likely, the monument displayed a summary of the reign with compartments of very reduced size. Possibly what was initially considered the recto is rather the verso, but arguments in favour of this are weak.

The Abusir archive from the funerary temple of Neferirkare provides a number of dates for the early part of Teti’s reign. All come from pBerlin 10.474A–B recto and verso (HPBM V, 1969, pl. 92–95), a narrow roll which belongs to a single reign, as is obvious from the coherent time span of the recorded dates. Teti’s serekh (pl. 94) clearly identifies the sovereign, at least for the left document of the presumed verso preserving the earliest dates:

- \([\text{rnpt } (m)-\text{ht zp 1}], \text{III prt sw } \text{	extswd{r}}y; \text{rnpt } (m)-\text{ht zp 1 } [\text{III prt } sw 10]; \text{rnpt } ((m)-\text{ht zp 1}) \text{III prt sw 9}, \text{in reverse order (pl. 94, left doc.), to which the recto adds two:}\n  - \text{rnpt } (m)-\text{ht zp 1, III \text{\textswd{smw}} sw 3 (pl. 94, right doc.)},\n  - \text{rnpt } (m)-\text{ht zp [1], IV \text{\textswd{smw}} sw [x] and \text{rnpt zp 2, II \text{\textswd{smw}} sw 3}, \text{in normal order (pl. 92).}\n
pBerlin 15.729 verso (pl. 103) provides another date: \([\text{rnpt}] (m)-\text{ht zp [x], I \text{\textswd{h}}t sw 3\text{, but the year is missing and the identity of the king remains uncertain. It should not be Teti, since the recto displays a basilophorous name citing a king Pepy (not necessarily Pepy II). Whatever the numeral was, this document provides another example of a post-census year.}\n
---

8 Baud & Dobrev, “Annales”, 54; Baud & Dobrev (n. 3; 1997), 38.
9 Posener-Kriéger, Archives II, 491.
10 Helck, Fs Goedicke.
11 Posener-Kriéger, Archives II, 491.
Other dates for the reign of Teti are:

- \textit{rnpt (m)-ḥt zp 6, III šmwt sw [x]}: a graffito at the alabaster quarry of Hatnub (gr. no. 1);\textsuperscript{12}
- \textit{rnpt zp 11, I ḣḥt sw 20}: an ink inscription in the tomb of Nykau-Izezi (Teti Cemetery, Saqqara), added to a scene of fowling in the marshes, just above the boat in which the owner stands.\textsuperscript{13} The inscription dates the official’s burial “the 11th count, I ḣḥt sw 20: burial in the necropolis of the prince, the treasurer of Lower Egypt, Nykau-Izezi”. Although a king’s name is not mentioned, all arguments favour the reign of Teti. By doubling the number of “occasions” hitherto known, this new date raises several questions (see below).

\textit{Reign of Userkare}\textsuperscript{14}

The South Saqqara royal annals,\textsuperscript{14} demonstrate conclusively the existence of this king, but almost nothing remains of the section in the middle of the uppermost register devoted to his reign. The available space between the titularies of Teti and Pepy I, when compared to the size of an average year compartment of the latter, indicates that Userkare’s reign must have been brief, from two to four years. This conclusion is consistent with the very few monuments of this king, mostly seal impressions, so far recovered. The silence of contemporaneous private biographies is disturbing. A funerary complex planned but never erected, is a better explanation for this absence than a speculative \textit{damnatio memoriae}.\textsuperscript{15} Regardless, the chronographic purpose of the royal annals did not allow the omission of this king, whatever form his titulary may have taken.

\textsuperscript{12} Eichler, E., \textit{Untersuchungen zum Expeditionswesen des ägyptischen Alten Reiches} (Wiesbaden, 1993), 41, no. 36.
\textsuperscript{13} (a) N. Kanawati & M. Abder-Raziq, \textit{The Teti Cemetery at Saqqara VI. The Tomb of Nikauisesi} (Warminster: ACE Reports 14, 2000), pl. 50; (b) N. Kanawati, “A new ḣḥt/\textit{rnpt-zp} for Teti and its implication for Old Kingdom chronology”, \textit{GM} 177 (2000) 25–32.
\textsuperscript{15} R. Stadelmann, “König Teti und der Beginn der 6. Dynastie”, in: \textit{Fs Leclant} I, 335.
Reign of Pepy I

Again, the discussion must start with the data preserved in the annals stone from South Saqqara. The reign extends from the last third of the first register (A) to the very beginning of the fifth (E). Although there is again no demarcation of year-compartment, traces of a number of memorial formulae (nswt bjt Ppy jm.f m mnw.f) provide clues for reconstructing the original layout.\(^{16}\) The twelve surviving formulae (M3–M14) are spaced at rather regular intervals ($\times 2$ or $\times 3$ where one, or perhaps two formulae are lacking), which supports as estimate of the original number at up to 25. Since both “occasion” and “after-occasion” years are known for the reign, obviously each mnw-formula was associated with a pair of years, a census year and a post-census year, presuming a regular biennial system.

Contrary to the editio princeps of the monument,\(^{17}\) it is, however, by no means certain that a single heading systematically covered two years. Some compartments, especially at the beginning of a register, indeed appear much larger than others (see especially M5, second reg., and one formula before M10, fourth reg.). Therefore, it is tempting to conclude that they group two different years, by contrast to the others, which represent the vast majority of the (theoretical) compartments. But there are a number of objections to such a radical proposition. First, the size of a compartment might vary slightly according to the number of available and/or relevant data that needed to be recorded for posterity, as exemplified by the difference between the first and the second register where the average distance between successive mnw is respectively 30 and 40 cm. For years of crucial importance to the monarchy, such as the royal jubilee, the compartments could have been much larger than the average, although this is not an absolute necessity (cf. the minimal size of the first year, dedicated to the coronation rites). Secondly, there is at least one surviving example of two years grouped in a (theoretical) compartment of average size, reg. D, formula following M11 (hereafter M11 + 1). The date preserved here, a census year, occupies the middle of the available space and not the end, as anticipated for the case of a single year covered by its own mnw-formula. Nonetheless, if it is possible that most of the memorial

\(^{16}\) Baud & Dobrev, “Annales”, 50–53.

\(^{17}\) Baud & Dobrev, “Annales”, 50–52, fig. 19.
formulae grouped census and post-census years together, the present condition of the stone leaves some doubt about the generalization of such a layout. Only parallel evidence from other sources might help to solve this problem. The dates preserved in the annals are indeed very few for the reign of Pepy I, and not unproblematic as regards their reading:

- \( \text{rnpt zp 18} \) (reg. D, M11 + 1, text zone D4);
- \( \text{rnpt (m)-\(h\)t zp 23} \) (reg. E, M14 + 1, text zone E7);
- \( \text{rnpt [m-\(h\)t ?] zp 25} \) (reg. E, M14 + 3, text zone E8).

These high counts are also attested in several expedition graffiti\(^\text{18}\) and a royal decree:\(^\text{19}\)

- \( \text{rnpt (m)-\(h\)t zp 18, III \(\text{\(s\)mw sw 27}\) : Wadi Hammamat graffito no. 107, mentioning the first jubilee;}
- \( \text{rnpt m-\(h\)t zp 18, IV \(\text{\(s\)mw sw 5}\) : Sinai graffito no. 16, mentioning the first jubilee;}
- \( \text{rnpt zp 21, I \(\text{\(p\)rt sw 23}\) : decree for the Pyramid complex of Snofru, Dahshur;}\(^\text{20}\)
- \( \text{rnpt zp 25, I \(\text{\(z\)ht sw [x]}\) : Hatnub quarry graffito no. III, once more associated with the first jubilee.}

Major clearance work at the king’s pyramid, South Saqqara, 1987–88 and 1993–97, revealed a few dates among the great number of masons’ marks.\(^\text{21}\) Most did not include the year but, according to common practice,\(^\text{22}\) only a season, month and day.\(^\text{23}\) A block from the eastern end of the south side is a notable exception.\(^\text{24}\) After the group \( \text{rnpt(?)-zp} \) there is an hieratic sign, which at first sight reads 30, followed by two vertical strokes. Such a high date, count 32 (or even 22), from an early

\(^\text{18}\) Eichler (n. 12), nos. 133, 16, 30.
\(^\text{19}\) Spalinger, “Texts”, 303–304.
\(^\text{20}\) Goedicke, Dokumente, 55–77, fig. 5.
\(^\text{22}\) For the mastaba of Ptahshepses see M. Verner, Abusir II. Baugraffiti der Ptahshepses-Mastaba (Prague, 1992), 176–198.
\(^\text{24}\) Dobrev, pers. comm. 1994; see also F. Raffaele in 2001, “Sixth Dynasty Annals. The South Saqqara Stone”, http://members.xoom.it/francescoraf/hesyra/ssannals.htm. The mark is visible in Labrousse (n. 21), fig. 10, but at a very reduced scale.
Stage of the construction (corresponding to the 5th course of revetment blocks), leaves some doubt about this reading. Furthermore, since the highest count of the reign is 25, as confirmed by both the royal annals and the other contemporary data, the only satisfactory solution is to suppose that a double system of counting, one annual, the other biennial (whether regular or not) existed. The annual mpt-ḥp 32 should be therefore equated with a lesser number of biennial census counts, at least 16 if regular. (Note that an anomalous group of 19 strokes in two rows (10 + 9) just before the date is obviously a calculation of some sort, not necessarily connected to the dating system). At present, and until adequate publication, this intriguing problem defies solution. Conceivably, it may eventually provide a key to explaining the contradictory dates for the king’s first jubilee.

The date of Pepy’s first heb-sed is controversial, since it is associated with two different years, counts 18+ and 25. Taking the two figures at face value, they would have been separated by at least 6 years (systematically excluding post-census dates in this period, which is unlikely), and as many as 12 (with systematic post-census years). Therefore, the significance of both or either might reasonably be challenged, and could attest the prevalence of the Wunsch-Idee in the mention of the jubilee, for the benefit of the king’s longevity. A strictly historical/chronological interpretation is, however, still possible. Spalinger ingeniously envisaged the existence of two parallel dating systems at this period, one annual, i.e., 25 counts, the other (irregularly) biennial, i.e., 18 census counts, plus presumably 7 post-census. Although interpretation of building graffiti may support this hypothesis, there remains the very confusing consequences of such a theoretical double system, both citing all years simply mpt-ḥp. Furthermore, Spalinger has not considered one important factor: the context in which the dates are actually associated with the jubilee. As for the Sinai relief, there is no direct equation between the first jubilee and the date of the expedition. And though the scene depicts the royal ceremony in a format typical of an

25 These do not refer to two different jubilees as P. O’Mara (“Dating the Sed-Festival: Was there a Single Model?”, GM 136 [1993], 57–70) thought, nor can the second belong to Pepy II (as proposed by J.v. Beckerath, “Gedanken zu den Daten der Sed-Feste”, MDAIK 47 [1991], 30; tentatively Eichler [n. 12], 39).
year compartment in the annals, it is an all too frequent royal tableau to be taken as a true date.\footnote{28}

The same may possibly hold true for the other inscriptions, although the same historical connection between the Sinai and the Hammamat graffiti, both under count 18+, end of the *shemu*-season, may not be fortuitous.\footnote{29} However, a tendency to mention the jubilee repeatedly in the years following its celebration apparently existed,\footnote{30} for example, in connection with intense building activity at the royal funerary complex, down until the very end of the reign (i.e., count 25). Here again, the royal annals furnish a new argument favouring this hypothesis. Between the mention of count 18 and the next memorial formula which belongs to count 19, end of register D, the available space for count 18+ is the expected half of the average size of a theoretical compartment. It is hard to believe that such a narrow space corresponds to the jubilee celebration, which obviously had a considerable importance for this (and every) king, as is documented, for example, by the number of stone vessels celebrating the event.\footnote{31} (Count 25, the very last compartment of the annals, is of course excepted). By contrast, the longest compartment of the reign—more than half again the average length—is M10–1 (i.e., one formula before the preserved M10) at the beginning of register D. Fortuitously or not, this compartment corresponds precisely to year 30/31, if a strictly biennial system of numbering is presumed.\footnote{32} This could also explain why the handful of documents dated to the first jubilee did not cite any other date. For example, decree Coptos A simply epitomized the rule for the renewal of the king’s powers after 30 years.\footnote{33}

Specialists, however, remain divided on whether this rule obtained during the OK.\footnote{34} There would therefore be no necessity to place the

\footnote{28} See, too, two inscriptions recording Merenre’s visit to the First Cataract area to receive the hommage of Nubian chief[s]. One displays a real date (count 5, see infra), reign of Merenre; the other only a pictorial *zema-tawy* (*Urk. I*, 111), which may be indicative of the theoretical date—the coronation year—in which such an event would have taken place.


\footnote{30} See Hornung (n. 26), 170.


\footnote{32} Raffaele (n. 24).

\footnote{33} Goedicke, *Dokumente*, 41–54, fig. 4.

\footnote{34} For the range of interpretations see Beckerath (n. 25), Hornung (n. 26), O’Mara (n. 25), A. A. Krol, “The representation of the ‘Sed-Platform’ in the Early Dynastic monuments”, *GM* 184 (2001), 27–37.
jubilee as late as year 35/36,\textsuperscript{35} nor to equate \textit{rnpt zp} 18+, presuming Userkare\textsuperscript{c} was a usurper, with a canonical year 30 of strictly personal rule,\textsuperscript{36} an assumption invalidated by the royal annals.\textsuperscript{37}

\textit{Reign of Merenre\textsuperscript{c}}

The last register (F) of the recto of the Dyn. 6 annals is dedicated to the first years of this reign. The number of compartments is uncertain, but five or six is a reasonable estimate.\textsuperscript{38} The dates preserved are:

- \textit{rnpt zm\textasciitilde -\textasciitilde wy}, associated with the first memorial formula (M15) of the register (text zone F1);
- \textit{rnpt zp 1 (+ 1?)}, with the second formula (M16, zone F3);
- \textit{rnpt (m)-\textasciitilde t zp 1 (+ 1?)}, probably with the next formula, not preserved (zone F5).

In our initial publication, we logically assumed that the two last dates were to be read as counts 2 and 2+, since in these annals, the Unification of the Two Lands was apparently considered a year of cattle census (the expression \textit{\textasciitilde nwt j\textasciitilde} does follow the date). After this first census (count 1), a compartment was tentatively delineated to account for a post-census year after the Unification,\textsuperscript{39} considering that for such years also the system remained biennial. Although this remains a possibility, there are weaknesses in such a reconstruction. In the first place, this so-called count 1+ would be confined to a very narrow space, when compared to the other very broad compartments of the last register.\textsuperscript{40} Secondly, the figure of the next date consists of a very deeply carved single stroke,\textsuperscript{41} and it is unlikely that another stroke ever existed; there is also no space available for an alleged second stroke under the \textit{zp} sign. It may not be mere chance that the next date also retains only a stroke. These two dates should be read accordingly as counts 1 and 1+, even if the first year of the reign was labelled census year. Should the succeeding years be read 1/1+ or 2/2+, it is nonetheless clear that this

\textsuperscript{35} Contra e.g., H. Goedicke, “Two Mining Records from the Wadi Hammamat”, \textit{RdE} 41 (1990), 65–93, at 67, and O’Mara (n. 25).
\textsuperscript{36} Contra Spalinger, “Texts”, 305–306.
\textsuperscript{39} Baud & Dobrev, “Annales”, fig. 19.
\textsuperscript{40} Baud, “Ménès”, 123–124.
\textsuperscript{41} Baud & Dobrev, “Annales”, pl. VII c.
period experienced a biennial census. Since a year 5+ is also known (see below) and since it is likely that the document did not end abruptly in mid-reign, it must be concluded that the reign continued on the verso (see above, contra Dobrev), even if the titulary of this king probably featured in the introductory column of the recto, as recently proposed, citing new and convincing arguments. Other sources are restricted to two rock inscriptions:

- \textit{rnpt zp 5}, \textit{II ṣmwyw sw 28}, First Cataract area, Urk. I, 110, 12;
- \textit{rnpt (m)-ḥt 5}, Hatnub graffito no. VI.

Once again, it is clear that the latest years of the reign experienced a biennial system.

\textit{Reign of Pepy II}

Spalinger’s list remains relatively current and must be consulted for further references:

- \textit{rnpt (m)-ḥt zp ṭpy}, \textit{IV ḫty sw 10} (in two parts) and \textit{rnpt zp 2}, procession graffiti in Wadi Hilāl (El Kab), although the beginning of the reign of Pepy II is a good possibility, the dates could belong to his predecessor Merenre⁴⁷;
- \textit{rnpt zp 2}, \textit{III ḫty sw 15}, letter of the king to Harkhuf in his tomb, Aswan;
- \textit{rnpt zp 2}, Sinai graffito no. 17,⁴⁸
- \textit{rnpt zp 11}, \textit{I ṣmwy sw 23}, the famous letter found in the workshop adjacent to Temple T in the Djoser complex, Saqqara; the reign is inferred from other chronological data of the archives;⁴⁹
- \textit{rnpt (m)-ḥt zp 11}, \textit{II ṣmwy sw 26}, decree Coptos B, temple of Min;

⁴² Dobrev (n. 7).
⁴³ Dobrev (n. 7), 384–385, pl. 58.
⁴⁵ Eichler (n. 12), 40, no. 33.
⁴⁸ Eichler (n. 12) 35, no. 17.
• *rnpt zp 12*, graffito of Tômas, either of the two Pepys, but more probably Pepy II;\(^{50}\)
• *rnpt zp 14, I šḥt sw 23(?)*, Hatnub graffito no. 3;\(^{51}\)
• *rnpt (m)-ḥt 22, IV šm̀w sw 28* (date in two parts), decree Coptos C;
• *rnpt zp 31, III šḥt sw 3 [+ 3]*, decree for the cult of Mycerinus, Giza;
• *rnpt zp 31(?), IV prt sw [x]*, graffito from the king’s funerary temple, Saqqara;
• *rnpt (m)-ḥt zp 31, I šm̀w sw 20*, Hatnub graffito no. 7;\(^{52}\)
• *rnpt zp 33 (?) or 24 (?)*, IV sw [x], decree for the cult of Queen Udjebten, Saqqara.

There are also dates without a king’s name which can be placed securely in the second half of Dyn. 6. The first two are from Giza:\(^{53}\)
• *rnpt zp 2, III prt sw 27*, two mason’s marks on the walls of mastaba G 7803C, Giza Eastern Cemetery, and another citing the same year, but month, season and day lost;
• *rnpt (m)-ḥt zp 5, III prt sw 29*, two execration texts from Giza. Another date comes from an expedition graffito at Tômas;\(^{54}\)
• *rnpt 6, III šm̀w*, probably either Pepy I or II.

### Biennial, Irregular or Annual Census? The Case of Dynasty 6

The regularity of the census, backbone of the Ancient Egyptian dating system, is still a matter of controversy for the OK. The most recent discussions of this crucial problem present the largest possible spectrum of interpretations, ranging from a regular biennial census\(^{55}\) through an annual census with post-census years at irregular intervals\(^{56}\) to a strictly annual one.\(^{57}\) That an annual count was already established by Dyn.

---

\(^{50}\) According to Eichler (n. 12), 105 (no. 227A).
\(^{51}\) Eichler (n. 12), 43, no. 39.
\(^{52}\) Eichler (n. 12), 44–45, no. 43.
\(^{54}\) Eichler (n. 12), 109, no. 245.
\(^{55}\) E.g., Baud, “Ménès”.
\(^{56}\) E.g., Verner, “Archaeological Remarks on the 4th and 5th Dynasty Chronology”, *Archiô Orientalis* 69 (2001), 410–412.
\(^{57}\) E.g., Kanawati (n. 13).
6 (and not in the FIP, according to the traditional view),\textsuperscript{58} is disproved by the number of attestations of \textit{m-ḥt ḫp} years at this period. Kanawati believes, however, that they resulted from provisional numbering, subsequently altered to “normal 2 years counts”. For example, “the reference to the ‘year after the sixth count’ may simply refer to the seventh year, but before the seventh count was undertaken”.\textsuperscript{59} This hypothesis ignores the existence of the South Saqqara Stone, with at least two examples of post-census years (one in the reign of Pepy I, and the second under Merenre\textsuperscript{5}, see above). Since annals are an official recapitulation of events, there is no reason why the entries should reflect a provisional numbering system.

Kanawati’s proposal is an attempt to reconcile apparently contradictory data in the case of Nykau-Izezi (see above), viz., (a) a basilophorous name suggesting that Nykau-Izezi was born under Izezi\textsuperscript{60} (b) his representation in the reliefs of the causeway of Wenis, with the high ranking title ‘sole friend’; (c) the dating of his burial to the 11th count, presumably of Teti; (d) an estimate of his age at death, based on examination of his remains, as 40–45 years or even slightly younger (35).

Kanawati was influenced by the difficulty of reconciling the relative brevity of Nykau-Izezi’s life with the time-span between Djedkare’s reign and the 11th census in Teti’s reign, presuming a regular biennial census. The 11th census of Teti corresponds to year 22/23 of a regular biennial census system, but at least 13/14, if the census was irregular (since two intervening years are known, 1+ and 6+, see above). Nykau-Izezi was therefore between about 17/18 and 26/27 years old when Teti ascended the throne. Since, on the same premise, Wenis reigned between 16 (\textit{mpt ḫp} 8 as highest census) and 9 years,\textsuperscript{61} the official was either born at the very end of Djedkare’s reign, or ten years earlier. This would account for Izezi in his name, but this explanation is superfluous, since kings were celebrated thus for various reasons, if indeed such names were not simply passed from father to son.\textsuperscript{62} Thus the name does not prove that Nykau-Izezi’s career began in Djedkare’s reign. If he is the like-named official in the Wenis cause-

\textsuperscript{58} E.g., Gardiner, “Years”, 14–16.
\textsuperscript{59} Kanawati (n. 13; 2000a), 21, 23, b; see also Helck (n. 2), 110.
\textsuperscript{60} N. Kanawati & M. Abder-Raziq, The Teti Cemetery at Saqqara V. The Tomb of Hesi (Warminster: ACE Reports 13, 1999), 37–38, pl. 33, 59.
\textsuperscript{61} Verner (n. 56), 410–412, 416.
\textsuperscript{62} Another Nykau-Izezi is mentioned, for example, on three graffiti at the pyramid of Pepy I, see V. Dobrev, “Les marques sur pierres de construction de la nécropole de Pépi Ier. Étude prosopographique”, \textit{BIFAO} 96 (1996), 112, D.1.
way reliefs, he was promoted to ‘sole friend’ between the ages of 17 and 27—quite young in either case. The first alternative may indeed seem much too young, but high-ranking titles may not have been confined to mature officials. All in all, there are simply too many uncertainties in Kanawati’s argument. The same situation obtains for other officials who started their careers under Teti and died under Merenre⁶. Some cases may still be debatable, as Kanawati rightly pointed out.⁶³ Weni, for example, already held a relatively high position under Teti and must have been about 70 when Merenre ascended the throne, since Pepy I’s reign amounts to 50 years, presuming a strictly biennial system. This seems very old for the onerous duties reported in his biography, and for his journeys to obtain materials and monuments for the king’s tomb. However, this may have been a conceit to celebrate the official’s longevity and his capacity to remain active at an advanced age.

If the theory of an annual census be discarded for sound reasons, it must nevertheless be admitted that no basis exists for deciding in favour of either of the alternatives, the regular or irregular biennial system. On the one hand, the number of attested census years is very well balanced by post-census years during the reigns of Teti to Pepy I. When the sources shed some light on a segment of these reigns, i.e. the earliest counts of Teti (1 to 2), the latest counts of Pepy I (18 to 25) and the earliest and latest counts of Merenre⁴ (1 and 5), the number of intervening years equals, or nearly equals, the number of census years. The alleged total imbalance between the two⁶⁴ results from the limited number of sources and prejudice associated with the category of sources, as exemplified by the masons’ marks of Dyn. 4 at Giza.⁶⁵ On the other hand, the extreme imbalance for the reign of Pepy II could favour an irregular counting system in his particular case. The celebrated longevity of the king in tradition⁶⁶ as well as the fact that he was a child at his accession,⁶⁷ demand reconciliation with the contemporaneous record, to which a biennial count does justice.⁶⁸ The table below summarizes the dates for the period from Teti to Pepy II:

---

⁶³ Kanawati (n. 13, 2000a), 22–23.
⁶⁴ E.g., Helck (n. 2), 106–110; Spalinger, “Texts”, 314–316.
⁶⁵ Baud, “Ménès”, 119–121.
⁶⁶ Baud, “Ménès”, 129, with caution.
⁶⁷ K. Ryholt, “The Late Old Kingdom in the Turin King-list and the Identity of Nitocris”, ΖΑΣ 127 (2000), 87–100, at 94.
### X+ indicates a post-census year, for which X is the number of counts; “minimal reign length A” is the sum of the highest count (col. 2) and the attested intervening years (col. 3);69 “minimal reign length B” presupposes a regular biennial census; the estimate for Userkare is based on the royal annals (see above).

### Dynasty 8

The identity, number and order of the Memphite rulers of Dyn. 8 remain uncertain and identifications rely heavily on the much later Ramesside lists.70 The TC counts 8 rulers after Pepy II (col. iv, no. 5 to 13, this name and some others in lacuna).71 It includes, in second position, Queen Nitocris, who turns out to be a male ruler, Neitiqerty Siptah, according to Ryholt’s recent examination of the papyrus.72 The Abydos list (nos. 39 to 56) adds 10 more rulers, all probably between Neitiqerty (Abydos no. 40, if identified with Netjerkare) and Neferka Khered-seneb (Abydos no. 51, called Neferkare Pepy-seneb),73 a group which may have been in lacuna in the TC Vorlage and therefore probably reported as wsf/lost.74

---

69 After Verner (n. 56), 415–416.
70 E.g., Beckerath, Chronologie, 151–152.
71 This column should be renumbered 5, since according to Ryholt’s recent study (see n. 67) there is evidence of an intermediate column between col. I and II of Gardiner’s edition.
72 Ryholt (n. 67), 87–100.
73 See Ryholt (n. 67), 87–94.
74 Beckerath, Chronologie, 148–9; Ryholt (n. 67), 96–98.
According to the partially preserved figures in the TC, both for reign lengths and summations of grouped dynasties, Dyn. 8 covered a very short period of about one generation. However, not only is the reading of some of the figures problematic (e.g., the total for Merenre⁷⁵), but the very value of the figures remains largely questionable, as exemplified by contradictory OK data for a number of reigns. Recent analysis would double the duration of this dynasty, to at least 50 years, or even slightly more, but this is not a significant change in the image of a relatively short and obscure period. In this particular case, the TC data is probably not far from the truth with its low figures for individual reigns: 1 year for the immediate successor of Pepy II (name lost, no. 6) and between 1 1/2 to 4 years for the last four rulers (nos. 10–13). The six wsf-years reported in the subtotals (col. iv, 14–17) for ten missing kings probably represent an artificial emendation of the scribe, as exemplified by other occurrences of this figure. All in all, these brief reigns accord with the few royal monuments recovered so far, and the low figures of the preserved dates. Arranged in increasing numeric order, they are:

- \textit{rnt zm\textsuperscript{3}-\textit{b\textsuperscript{3}}}\textit{w}, II prt sw 20, Coptos decree P of [Netjери-bau] (Horus name of Neferkauhor; identification from parallel decrees), temple of Min;⁸¹
- \textit{rnt zp zm\textsuperscript{3}-\textit{b\textsuperscript{3}}}\textit{w}, IV šnw 1 (\textit{wfty}), decree of [Demedj-ib]-tawy (?), (Horus name), funerary complex of Queen Neith, Saqqara;

\begin{itemize}
  \item \textit{rnt zm\textsuperscript{3}-\textit{b\textsuperscript{3}}}\textit{w}, II prt sw 20, Coptos decree P of [Netjери-bau] (Horus name of Neferkauhor; identification from parallel decrees), temple of Min;⁸¹
  \item \textit{rnt zp zm\textsuperscript{3}-\textit{b\textsuperscript{3}}}\textit{w}, IV šnw 1 (\textit{wfty}), decree of [Demedj-ib]-tawy (?), (Horus name), funerary complex of Queen Neith, Saqqara;
\end{itemize}

⁷⁵ For the old reading ‘44 years’, see Ryholt (n. 67), 90, 98.
⁷⁶ Beckerath, Chronologie, 151–152.
⁷⁸ Ryholt (n. 67), 97–98.
⁷⁹ Spalinger, “Texts”, 312–313.—Note also the inscription Cairo JE 43290 dated to \textit{rnt zp <1 ?>; IV šhǐ 25. The numeral is omitted, but 1 is the most likely emendation, see H. Goedicke, “A Cult Inventory of the Eighth Dynasty from Coptos (Cairo JE 43290)”, MDAIK 50 (1994), 72. This could refer to the first incomplete civil year—year 0—usually designated \textit{zm\textsuperscript{3}-\textit{b\textsuperscript{3}}}\textit{w}. The inscription presumably originates from Coptos or nearby Khozam. Goedicke (ibidem) ascribed it tentatively to Nefer-kau-hor, but Fischer, in: Manuelian, ed., Studies Simpson, 267–270, argues for a date towards the end of Herakleopolitan rule in the Coptite nome. See also below Krauss, chapter III. 8 for the Khozam lunar date.
⁸¹ Goedicke, Dokumente, 195–196, with Hayes (n. 80), pl. V.
⁸² According to the restoration proposed by Schenkel, Memphis, 24–25.
• *rnpt zp tpy, IV šlḥt sw 2*, Wadi Hammamat inscription of King Ity (mentioned in the name of his presumed pyramid),\(^{83}\) possibly Dyn. 8 (O.Ham no. 169);\(^{83}\)
• *rnpt zp tpy (?), III ʿsnw sw 2*, Wadi Hammamat inscription of an unknown king, date uncertain but possibly Dyn. 8 (O.Ham no. 152);\(^{84}\)
• *[rnpt] zp 4 [+ x?],\(^{85}\) season etc. lost, Coptos decree H of king Kha[bau?] (Horus name).\(^{86}\)

The absence of post-census years probably testifies to a change in the dating system from a regular (?) biennial to an annual one.\(^{87}\)

---

\(^{83}\) Tentatively equated with Neferirkareʿ II of the Abydos list and the contemporary Horus Demedjibtawy by Spalinger, “Texts”, 313, and n. 104. Goedicke’s reading (n. 35), 66–67, *rnpt zp tpy <jḥ-sd>* taken to refer to Pepy I is not supported by the parallel evidence.

\(^{84}\) See Schenkel, *Memphis*, 32–33; Goedicke (n. 79), 83.

\(^{85}\) The stela is lost below the four aligned strokes. While 3 or even 4 more strokes could possibly have figured in a lower line, it is rather unlikely in such a period of ephemeral kings.

\(^{86}\) Goedicke, *Dokumente*, 163–164, fig. 16 and 23; for the date: Hayes (n. 80), 13, n. 7, and pl. iiiia, top, before col. 1.

\(^{87}\) Gardiner, “Years”, 14–16; Hayes (n. 80), 13; Spalinger, “Texts”, 312.
II. 6 THE RELATIVE CHRONOLOGY OF THE FIRST INTERMEDIATE PERIOD

Stephan J. Seidlmayer

In dynastic history, the FIP spans the era of Herakleopolitan rule (Dyns. 9 and 10) and the earlier part of the Theban Dyn. 11 up to the re-unification of the country which occurred at some point in the reign of Nebhepetre Mentuhotpe II. When we attempt to clarify the dynastic structure of this period and to estimate its chronological length, our argument will be more straightforward if we first deal with Dyn. 11 and only then turn our attention to the problems of the Herakleopolitan dynasties.

Dyn. 11

We are comparatively well informed about Dyn. 11. While the king lists of Abydos and Saqqara omitted all FIP rulers and listed only Nebhepetre Mentuhotpe II and S’ankhkare Mentuhotpe III of Dyn. 11, the TC gives a full account of its rulers, omitting only (as do the lists of Abydos and Saqqara) its last ruler Nebtawyre Mentuhotpe IV, whose reign was relegated to a group of “missing” (wsf) years. While the names of most of the kings are destroyed in the TC, a number of reign length data are preserved. Most valuable, however, is the fact that this document also provides a figure for the total length of the dynasty which allows us to determine the combined length of the first two reigns, for which individual length data are not preserved. The royal names which are destroyed in the TC can easily be reconstructed.

---

1 To define the FIP as a distinctive phase in the history of pharaonic culture or its political structure, one would envisage a more extensive period including at least the end of the OK after the demise of Pepy II.
2 For accounts of the chronology of Dyn. 11 see Schenkel, Studien, 145–149; Gestermann, Kontinuität, 22–31; Beckerath, Chronologie, 139–142.
3 Abydos list nos. 57–58, Saqqara list nos. 37–38.
4 TC V, 11–18.
The list of royal ancestors inscribed by Tuthmosis III in the temple of Karnak and a relief block from the temple of Tod which lists the predecessors of king Mentuhotpe II are particularly relevant. Biographical inscriptions of officials also attest the names and sequence of the more important rulers, while dated monuments and inscriptions concur to confirm the accuracy of the reign length data of the TC. Confusion about the number of rulers named Mentuhotpe, caused by the fact that Nebhepetre Mentuhotpe II changed his protocol twice, were settled by Gardiner. On this basis, the data relating to the sequence and length of reigns of Dyn. 11 can be summarized with some confidence as follows:

<table>
<thead>
<tr>
<th>TC</th>
<th>Years</th>
<th>Karnak</th>
<th>Urk. IV</th>
<th>Tod</th>
<th>Modern</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Mnw-hfp]</td>
<td>16</td>
<td>[Hrw tvj-] Mn[w-t] Jnj-[jj;j]</td>
<td>608.15</td>
<td>count Inyotef</td>
<td></td>
</tr>
<tr>
<td>[Jnj-jj;j]</td>
<td>608.11</td>
<td>[Hrw Njt-tp-nfr Jnj-[jj;j]</td>
<td>608.10</td>
<td>Inyotef II</td>
<td></td>
</tr>
<tr>
<td>Nb-hpt-R</td>
<td>51</td>
<td>Nb-hpt-R</td>
<td>609.14</td>
<td>Mentuhotpe III</td>
<td></td>
</tr>
<tr>
<td>S?j-k2-R</td>
<td>12</td>
<td>S?j-[k2]-R</td>
<td>609.15</td>
<td>Mentuhotpe IV</td>
<td></td>
</tr>
<tr>
<td>wsf</td>
<td>7</td>
<td>[Nb-]t[.v]-R</td>
<td>609.16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td>143</td>
<td></td>
</tr>
</tbody>
</table>

5 Urk. IV, 608–609.
7 The sequence Inyotef II, Inyotef III, Mentuhotpe II is attested in three biographical inscriptions from Thebes, see Clère & Vandier, Textes, 15–16 § 20, and 19–20 § 23–24.
8 For Inyotef II a regnal year 50, probably the year of his burial, is attested on a stela from his tomb, Clère & Vandier, Textes, 11 § 16; no dated monuments are known for Inyotef III; for Mentuhotpe II, stela Turin 1447 (Schenkel, Memphis, 240) attests year 46; for Mentuhotpe III a rock inscription in Wadi Hammamat attests year 8 (Schenkel, Memphis, 253 no. 426), and for Mentuhotpe IV a series of graffiti at the same place, year 2 (Schenkel, Memphis, 263–268, nos. 441–444).
A number of comments are in order. “Count” Inyotef, who was prefixed as a non-royal ancestor to the line of Dyn. 11 kings in the Karnak inscriptions, is in all probability identical with the $nj{j-jtj} ms f{kayj}$ to whom Senwosret I dedicated a votive statue in this temple.\(^{10}\) Whether he can also be identified with one of the attested pre-11th dynasty nomarchs of this name,\(^{11}\) cannot be strictly demonstrated. The lacunary state of the evidence available would seem to recommend a careful stance in such matters. In any case, this question has no direct consequences for the chronology of the period.

The Horus name $tpj{'}$ “the ancestor” accorded the first king of the dynasty is evidently a later fiction intended to prolong the royal line into the past. No contemporary monuments are attested for this person; however, a statue erected by Inyotef II at Elephantine calls him “father of the gods”, i.e. the father of the first two kings of Dyn. 11.\(^{12}\) Nor is his direct successor, Sehertawy Inyotef I ever attested in contemporary inscriptions.\(^{13}\) However, the sequence of tombs in the royal necropolis at el-Tarif suggests that the Saff Dawaba belonged to this ruler. The truly extraordinary size and layout of this tomb substantiate his claim to royal status.

All other kings of the dynasty are well documented in contemporary sources. Of some interest is the fact that the last ruler, Nebtawyre’s Mentuhotpe IV, attested in rock inscriptions from his second regnal year in Wadi Hammamat,\(^{14}\) was omitted from all of the NK kings lists. The reason is speculative, but it does not seem very far fetched to suppose that his absence was motivated in some way by the circumstances of the transfer of power to a new royal house. In view of the lack of sufficient evidence it remains uncertain whether all 7 “missing”-years in the TC belonged to him or whether there was a period of disputed rule at the end of the dynasty,\(^{15}\) for which, however, there is no positive evidence.

\(^{10}\) Cairo CG 42005.
\(^{11}\) See the discussion in Gestermann, _Kontinuität_, 24–26, and F. Gomaa, _Ägypten während der Ersten Zwischenzeit_ (Wiesbaden: TAVO B27, 1980), 138–144.
\(^{14}\) Schenkel, _Memphis_, 263–268 nos. 441–444.
While none of the Manethonian sources lists individual kings, all of them claim that Dyn. 11 comprised 16 kings who ruled for 43 years. Evidently, the number of kings was inflated by 10 from 6 to 16, while the number of years was reduced by 100 from 143 to 43. Nevertheless the basic similarity of the figures again shows how close Manetho’s data are to earlier pharaonic tradition.

Unfortunately, the date of the re-unification of Egypt cannot be determined precisely within the reign of Nebhepetre Mentuhotpe II. A stela of one Inyotef from Thebes is dated to year 14 of Mentuhotpe II, “the year of the rebellion of Thinis”. This event is in all probability to be seen in the context of the war between Thebans and Herakleopolitans, which was fought, at least in its earlier phases, in the Abydos-Asyut region. An inscription of an official who governed the Heliopolitan nome, dated to year 41 of Mentuhotpe II, provides proof that by then Mentuhotpe II controlled all of Egypt.

Information which could clarify the sequence of historical events in the period between these two dates is lacking. The phases and modalities of Mentuhotpe II’s conquest of the Herakleopolitan kingdom, as well as the development of his political aspirations and his propaganda, remain unknown. Nevertheless it seems likely that both the actual course of political events and the ideological dimension of the war between Thebans and Herakleopolitans did have some influence on how the end of the Herakleopolitan dynasty was chronologically fixed in later annalistic tradition. Therefore one should be well aware that not only the date of the historical event of the re-unification of Egypt is lacking from our documentation but that the historical process itself in its substance eludes us.

It is even more difficult to use indirect criteria in an attempt to fix the date of the re-unification of Egypt. The two alterations of Mentuhotpe II’s royal protocol may be linked to the stages of his rule over Egypt. In particular his latest Horus name uniter of the two lands, attested for the first time in regnal year 39, invited direct historical

---

16 On this issue see Franke, “Chronologie I”, 133, and Gestermann, Kontinuität, 35–42, with further literature.
17 Clère & Vandier, Textes, 19 § 23; Schenkel, Memphis, 227.
18 Gestermann, Kontinuität, 42 n. 5.
19 Beckerath, Handbuch, 78–79.
20 Inscriptions in Wadi Schatt el-Rigâl, Schenkel, Memphis, 207–208 no. 318 and 320. Beckerath’s doubts that the date belongs to the rock inscription of Mentuhotpe II (Chronologie, 141 with n. 632) are in no way convincing.
interpretation. However, as Gestermann rightly pointed out, this is not at all certain and in fact all his Horus names imply a claim of dominance over the whole of Egypt.\textsuperscript{21} Rather more significant seems to be the development of the structure of the royal protocol. While in the first stage, Mentuhotpe, like his Theban FIP predecessors, used only a Horus name and the titles \textit{nswt-bjt} and \textit{\textbeta-R} with personal name, he introduced in the second stage both a \textit{nb.tj}-name and the throne name Nebhepetre\textsuperscript{2}, thus claiming full royal status.\textsuperscript{22} Whether this move reflected only his aspirations or his actual taking over of power remains unknown, however. In addition, from a strictly chronological point of view, this discussion is bound to remain more or less fruitless, since we do not know when the changes in the royal protocol occurred. Speculating that the earlier, rather than the later change of the protocol might be linked to the end of Herakleopolitan rule over northern Egypt would only intuitively make it more likely that Mentuhotpe’s victory had occurred in the earlier part of his reign. Strictly speaking, however, an uncertainty of about 25 years in fixing the date of the re-unification of Egypt remains until new sources become available.

\textit{The Herakleopolitan Dyns. 9 and 10}

Determining the identity and length of Herakleopolitan rule is much more difficult.\textsuperscript{23} Manetho’s account listed two dynasties of rulers from Herakleopolis,\textsuperscript{24} Dyn. 9 with four (Eusebius) or 19 kings (Africanus) who ruled for 100 (Eusebius) or 409 years (Africanus), and Dyn. 10 with 19 kings who ruled for 185 years according to all sources. The \textit{TC}, in contrast, listed only a single dynasty of 18 rulers;\textsuperscript{25} unfortunately nearly all of the royal names and all reign length data as well as the total for this dynasty, which originally was given in line V.10, are lost.

\textsuperscript{21} Gestermann, \textit{Kontinuität}, 35–39.
\textsuperscript{22} This view was envisaged already by Hayes and Arnold, see Gestermann, \textit{Kontinuität}, 37, n. 2–3.
\textsuperscript{24} Waddell, \textit{Manetho}, 60–63.
\textsuperscript{25} \textit{TC} IV.18–V.10.
The king lists of Abydos and Saqqara omitted the period of Herakleopolitan rule completely.

While following the authority of the more ancient king list the unity of the Herakleopolitan dynasty was already assumed by Schenkel and others, Malek was able to account convincingly for the discrepancy between the TC and Manetho. He demonstrated that the first four kings of the dynasty came to be separated from the main group of kings as a result of a series of misunderstandings which occurred when the original text was copied. The number of 19 kings which Manetho gives for Dyn. 10 and which Africanus duplicated also for Dyn. 9 accurately reflects the total number of kings as given for the Herakleopolitan dynasty in TC V.10. The difference of one king between TC and Manetho can very likely be explained by suggesting that the TC omitted the last Herakleopolitan ruler, just as the last king of Dyn. 11 was omitted, probably because he was not considered legitimate, having been removed from power under shameful circumstances as a result of the victory of the Thebans over the Herakleopolitan kingdom. According to this analysis which interprets the separation of Dyns. 9 and 10 merely as a result of textual corruption in post NK tradition, the terms “Dyn. 9” and “Dyn. 10” should, for the sake of terminological precision, no longer be used in historical interpretation to designate an earlier and a later phase of Herakleopolitan rule. This argument has, of course, no implications whatsoever for the length and historical structure of the period.

Since the relevant entries are destroyed in TC, and since only very few contemporary monuments of the Herakleopolitan kings are preserved, the names and the sequence of the 19 Herakleopolitan kings cannot be reconstructed coherently. Manetho names a king Khety as the founder of the dynasty, and the fact that the Herakleopolitan kingdom was referred to as pr Hty “the house of Khety” in contemporary

---

26 Schenkel, Studien, 149–150; Beckerath, “Herakleopolitan” (n. 23).
27 J. Malek, “The Original Version of the Royal Canon of Turin”, JEA 68 (1982), 105; Redford, King-Lists, 238–239, arrives at an equivalent conclusion, though with different arguments.
28 For another solution see Malek, “Version” (n. 27), 105.
29 Seidlmayer, “Anmerkungen” (n. 23), 85–86.
30 For the available data see Beckerath, Handbuch, 72–75; to the material listed there add M. Abd el-Gelil, A. Saadani & D. Raue, “Some Inscriptions and Reliefs from Matariya”, MDAIK 52 (1996), 146–147.
sources\textsuperscript{31} lends credibility to this tradition. For the third ruler, the name \textit{Nfr-k3-R} is preserved in TC. He could be identical with King \textit{Nfr-k3-R} whose name appears (with a graphic transposition \textit{k3-nfr-R}, typical for the Herakleopolitan period)\textsuperscript{32} on a label in the tomb of ‘Ankhtifi at Moalla.\textsuperscript{33} The last ruler of the dynasty was probably Merykare, whose name appears in texts relating to the final phase of the Theban-Herakleopolitan war in Siut tomb IV\textsuperscript{34} and whose pyramid complex at Saqqara is attested in the titles of funerary priests.\textsuperscript{35} In fact, the general tenor of the “Teachings for king Merykare” seems to suggest that this king suffered defeat by the Thebans.

Determining the length of the Herakleopolitan period is fraught with all but unsurmountable difficulties. Data for the length of individual reigns or of the entire dynasty are not preserved. Since it is clear, however, that the Herakleopolitan dynasty did not start after Dyn. 11 but ran parallel to it up to the re-unification of Egypt under Nebhepetre Mentuhotpe II, it must have lasted for between 87 and 114 years \textit{at least}, depending on the exact date of the re-unification. Dismissing the data given by Manetho as unreliable, Beckerath developed the hypothesis of an ultra-short Herakleopolitan period making the beginning of Dyn. 11 more or less coeval with the establishment of the new Herakleopolitan line of rulers in the north.\textsuperscript{36} Apart from speculations about the historical development, this hypothesis rests mainly on the fact that so very few monuments are attested for the Herakleopolitan period, implying a short duration. This argument, however, is clearly not valid, since the 100 years or so when the Herakleopolitan dynasty existed parallel to the Theban kingdom did not leave many traces in the monumental record either. Evidently, this situation is due to the bias of

\textsuperscript{32} Schenkel, \textit{Studien}, 150; D. B. Spanel, “The Date of Ankhtifi of Mo’alla”, \textit{GM} 78 (1984), 89.
\textsuperscript{33} J. Vandier, \textit{Mo’alla} (Cairo: BdE 18, 1950), 36.
\textsuperscript{34} Schenkel, \textit{Memphis}, 86 No. 64.
\textsuperscript{36} Beckerath, “Herakleopoliten” (n. 23); for the details of the discussion see Seidlmayer, “Anmerkungen” (n. 23), 82–83.
our sources, which tend to favour UE, and to the special character of FIP kingship which was no longer able to muster the resources of the country to construct monumental buildings. The argument that the Herakleopolitan kings were dropped from the Abydos king list and therefore never ruled UE does not carry much weight either. Even if the Herakleopolitan dynasty never wielded effective rule over UE, it could nevertheless have held nominal supremacy over the whole country for a period of time. The fact that a Herakleopolitan ruler was mentioned in the tomb of ‘Ankhiti and that a certain Setka in his still unpublished biographical inscription in his tomb on Qubbet el-Hawa claims to have entertained peaceful trade relations with the “House of Khety” seem to provide direct proof that there was indeed a period of Herakleopolitan sole rule before the advent of Dyn. 11 at Thebes.

The only source which could provide data on the length of this period is the account of Manetho which has to be used with extreme caution, however. As was argued elsewhere,37 Manetho’s data for the length of Dyn. 9 can be dismissed since these numbers clearly could have been created only after the artificial division of the dynasties had occurred in post NK textual tradition. The information on the length of Dyn. 10, however, derives from a year total which was present already in earlier annalistic tradition and therefore could be of real historical value. Taking Manetho’s figure at face value, the period of Herakleopolitan rule before the start of Dyn. 11 would amount to something between 71 and 98 years, again depending on the date of the re-unification of the country. Of course, there is no way to be sure about the correctness of Manetho’s figure; if one chooses to disregard Manetho’s data, however, the length of the Herakleopolitan dynasty becomes entirely a matter of speculation, since there are no other sources available for fixing the length of Herakleopolitan rule before Dyn. 11. Nevertheless a number of excellent scholars have tried, hypothetically linking the prosopographical and historical data which can be derived from tomb inscriptions from UE, to reach a reconstruction of the historical events of the earlier part of the FIP which would provide the basis for a tentative estimate of its length.38 It should be not overlooked, however, how very problematic this type of reasoning is.

37 For details see Seidlmayer, “Bemerkungen” (n. 23), 86–88.
38 An intermediate estimate between Beckerath’s minimum solution and the Manethonian maximum model was proposed e.g. by Fischer, Dendera, 131 n. 579.
bound to remain and how very unlikely it is that the dispersed pieces of fragmentary evidence which were preserved by mere chance could indeed link up to form a historically coherent picture.

The customary “short model” and the Manethonian “long model” result in two profoundly different views about the FIP. Therefore a look at the documentation for the period beyond the material relating to dynastic history in the strict sense could provide indications whether a short or a long model is more likely. Basing the argument solely on material from the royal sphere, as is often done in discussions of dynastic chronology, leads inevitably to a foreshortened perspective for periods of weak kingship. The extensive prosopographic data from the FIP led Brovarski and Spanel to conclude that a succession of several generations of local administrators held office in many UE towns between the end of the OK and the beginning of Dyn. 11,39 thus clearly favouring a long model for the period in perfect accord with the data of Manetho. Also, the archaeological record can be made to bear on the problem. As was argued by Ward and Seidlmayer, the large number of burials in Upper Egyptian cemeteries which are to be dated to the earlier part of the FIP, as well as the fundamental morphological change which can be discerned in the archaeological material exactly in this phase, argue for a period of several generations.40 Therefore, substantial evidence seems to support Manetho’s figure for the length of the Herakleopolitan period. Nevertheless, the chronology remains on shaky ground. Since the discovery of new historical sources cannot be predicted (although the excavations at the site of Herakleopolis Magna could certainly turn up new evidence), and since the potential of radiocarbon dating for this period seems to be limited, current efforts to establish a dendrochronological series which covers the second millennium BC might offer the prospect of substantial progress.41

40 W. A. Ward, Egypt and the East Mediterranean World 2200–1900 BC (Beirut, 1971), 10–11; S. J. Seidlmayer, Gräberfelder aus dem Übergang vom Alten zum Mittleren Reich (Heidelberg: SAGA 1, 1990), 378; idem, “Anmerkungen” (n. 23), 84.
41 See below Cichocki, chapter III. 3, with additional literature.
II. 7 THE RELATIVE CHRONOLOGY OF THE MIDDLE KINGDOM AND THE HYKSOS PERIOD (DYNS. 12–17)

Thomas Schneider

1. Terminology and Methodology

Substantial progress has been made in the study of the relative Chronology of the MK and Hyksos Period (MK/SIP) since the presentation of the state of our knowledge fifteen years ago by D. Franke thanks to new discoveries and the reappraisal of core issues. Moreover, there have been impulses to improve the terminological precision—particularly due to K. S. B. Ryholt’s reassignment of dynasty designations—that are basically desirable.

Ryholt has reassigned the term “Dyn. 16”, which had traditionally been used to designate vassals of the Dyn. 15 Hyksos, although it was known that this was based on an erroneous reading of the Manethonian tradition, to a sequence of Theban rulers which would have been listed in TC X, 31–XI, 14 and which he identifies as a “First Theban Dynasty”. While the term “Dyn. 17” is generally understood as referring to all of the Theban rulers between Dyns. 13 and 18 who were believed to be listed in TC X, 31–XI, 14, this term is used by Ryholt only for a

1 The designation of the period is a historiographical, rather than a chronological, concern. Cf. Franke, “Chronologie II”, 245–274, esp. 245f.; idem, Heqaib, 77–78; Schneider, Ausländer, 155–156; differently, Ryholt, Situation, 311. For the present chapter, I prefer the title “MK and Hyksos Period”, as Ryholt’s use of “Intermediate Period” is based on the alleged political division of Egypt since the end of Dyn. 12, which is not necessarily valid (cf. below) whereas our term corresponds to the period. I would like to thank M. Bietak, D. Franke, E. Hornung, D. Polz and A. Spalinger who read and commented upon earlier drafts of the text. Bibliography has been considered until spring 2002 when the manuscript was delivered.

2 Franke, “Chronologie I. II.”


4 Beckerath, Untersuchungen, 17–20, Schneider, Ausländer, 123.

5 Ryholt, Situation, 151.
chronologically later group of Theban kings, his “The Second Theban Dynasty”. The rulers of Near Eastern origin, but not members of Dyn. 15, are then designated as “Dyn. 14”.6

In a response, Beckerath has suggested that the entire sequence of Theban kings between Dyn. 13 and 18 should henceforth be termed “Dyn. 16”, and to use the term “Dyn. 17” for the rival dynasty at Abydos postulated by Ryholt.7 Depending upon the course and outcome of the discussion (for details, cf. below section 4) it might be useful to maintain “Dyn. 17” for the (larger number of) Theban kings.

In order to avoid the menace of conceptual confusion, this contribution will distinguish the different terminologies by adding the exponents “t” (for traditional) and “R” (for Ryholt) to positions of kings where these vary in the chronological reconstruction. Furthermore, alternative dynasties differing from the customary usage will be put in quotation marks, e.g. Dyn. 16 signifies the conventional Dyn. 16, whereas “Dyn. 16” refers to the terminological reassignment by Ryholt or later. The numbering of the columns in the TC follows Gardiner’s standard publications whereas different systems of numbering are explicitly stated (“Ryholt’s ninth column”).

Methodologically, it is important to note that a chronological framework for the period can be established that extends from Dyn. 12 to Dyn. 13 where it can be roughly fitted into Dyns. 15 and 17 (or “Dys. 16/17” according to Ryholt). In its original state, the TC recorded at least 50 kings for Dyn. 14, for whom, however, the length of the reign is preserved for only a few, and only two (‘3-sh-r Nhsj; Mrj-df³-r’) are otherwise attested through monuments. The rulers known from scarabs are not among those listed in the entries for Dyn. 14 in the TC. Ryholt’s attempt to create a typological sequence of scarabs upon which to build chronologically acceptable successions has encountered considerable criticism.8 As other hypotheses are likewise difficult to support (an overlap of early Dyn. 14 and the end of Dyn. 12;9 the relationship between Dyns. 13 and 14 in the sense of a “trade agreement”),10 Dyn. 14

6 Ryholt, Situation, 94ff.
7 Cf. below, section 4. A decision depends largely upon the interpretation of TC XI.
8 Ben-Tor et al. (n. 3), 53–65.
9 Ben-Tor et al. (n. 3), 55, 59, 66.
10 Ben-Tor et al. (n. 3), 59f.; Spalinger (n. 3), 299; more positive, Beckerath (n. 3), 434; Grajetzki (n. 3), 153–154 (who does point out that of 600 seals from Dyn. 14, only one was found in Ryholt’s postulated capital of Dyn. 14, Avaris/Tell el-Daba).
disappears as an alternative to Dyn. 13 as a chronological link between
the MK and Dyns. 15 and 17 ("Dyns. 16/17" according to Ryholt).
Ryholt weeds out a number of fragments of TC col. X which allegedly
record fictitious royal names, and places them in a postulated addi-
tional column of gods and demigods at the start of the papyrus (new
second column) with the result that the numbering of the columns
would increase by one for all following columns.11

2. Dynastie 12

The more recent chronological discussion on Dyn. 12 has been dom-
inated by the issue of coregencies, whereas the succession of rulers
and their reign-lengths are in principle resolved.12 After Franke in his
survey in 1988 assumed the validity of the coregencies of Dyn. 12,13
C. Obsomer has not only rejected the alleged 10-year coregency of
Amenemhet I and Senwosret I, but all other coregencies of Dyn. 12
as well, in the extensive discussion of the problem in his study of the
reign of Senwosret I (as R. D. Delia and W. Helck before him).14 Delia
remarked about this: “Obsomer’s reconstruction largely rests upon an
all-or-nothing foundation. If one is unconvinced that Obsomer has sat-
sfactorily explained away all of the coregency evidence, then much of

11 Ryholt, Situation, 24–25. In some responses to Ryholt’s work, the elimination of
the allegedly fictitious names of the TC have been met with enthusiastic agreement:
Ben-Tor et al. (n. 3), 315, 49; Beckerath (n. 3), 433; idem, Handbuch, 282; Dodson
(n. 3), 49. Note however, that Ryholt’s proposal (Situation, 24 n. 59) takes part of its
legitimation from considering Redford’s efforts to recognize West Semitic names in the
notations a failure. A modified version of the approach has been offered by Schneider,
Ausländer, 99–122; the doubts mentioned there (100) on the reorganization of the frag-
ments have not been eliminated. There is also the question whether names such as
“Protector of noble women” etc. would be more plausible among the mythical demigods.
Note also that Ryholt moves fr. 42 with the divine name “Apis” whereas fr. 123 with
the same name “Apis”, followed by two entries written in group writing, is left in the
section of the SIP. Fr. 22 which Ryholt also shifts might preserve the name of a ruler
known from scarabs, ‘nt-hr (Schneider, Ausländer, 134), and fr. 152 another king known
from scarabs, Pns (Schneider, Ausländer, 106–109, 140).

12 An absolute chronological date in the early 12th dynasty could perhaps be pro-
vided by the astronomical reference of Sesostris’s temple at Karnak, cf. L. Gabolde,
Le „Grand Chateau d’Amon de Sesostris Ier à Karnak“ (Paris, 1998), 123–134; but see below
Belmonte, Chapter III. 5.

13 D. Franke, Chronologie II”, 114–125. In idem, Heqaib, XII, he shares the view
rejecting the coregency of Amenemhet I and Senwosret I.

14 C. Obsomer, Sesostris Ie. Étude chronologique et historique du règne (Bruxelles, 1995).
In fact since Franke’s summary, a number of new documents and archaeological evidence, particularly from the sites of the pyramid complexes of Dyn. 12, has appeared which objectively speaking can hardly be interpreted in a different manner. In the fundamental case, of the first royal transition from Amenemhet I to Senwosret I, the 10-year coregency of these first two kings is favoured not merely by the two main witnesses to which appeal is usually made (Stela Cairo CG 20516 naming both rulers in the field at the top with the regnal years “30” and “10” and Louvre C1 with a date naming both kings).17 An architrave from Matariya published in 1990 names both kings symmetrically with their titularies and apparently as co-reigning builders; both are designated as nsw bjt and living Horus (i.e. as reigning king).18 Finally, the control marks from Lisht published by F. Arnold reveal that it was only in regnal year 10 of Senwosret I that the construction of his pyramid began, i.e., apparently after the death and burial of Amenemhet I in his pyramid complex.19 The description of the attack on Amenemhet I in the Teaching of Amenemhat I may have served, as Jansen-Winkeln suspected,20 to legitimize the introduction of the institution; making, in any case, “a decision in favour of a coregency practically unavoidable”.21 The length of the reign of Senwosret I is somewhat more than

---

17 Jansen-Winkeln (n. 16), 122–125.
18 Both are also wished “eternal life”, which clearly underscores that Amenemhet I could not have been dead at the time (cf. Ryholt, *Situation*, 273); A. Awadalla, “Un document prouvant la corégence d’Amenemhat et de Sesostris I”, *GM* 115 (1990), 7–14; Jansen-Winkeln (n. 16), 125.
45 years (as deduced from the highest attested date in a graffito south of Amada and the entry in the TC, whereas Manetho has 46 years). A coregency of roughly 3 years with his successor can be plausibly deduced from the stela Leiden V.4, where apparently, regnal year 44 of Senwosret I is made equivalent to regnal year 2 of his son Amenemhet II. A still more explicit equivalency of regnal years using the preposition hft comes from the coregency of Amenemhet II and Senwosret II, whose regnal year 3 is identified as the regnal year 35 of his predecessor in a stela near Komosso. This date is also the highest recorded regnal year for Amenemhet II.

A regnal year 8 (9?) is preserved for Senwosret II on a stela from Toshka; and a “year 8” is also now known from the stela Cairo JE 59485. It is therefore necessary to emend accordingly the Manethonian tradition and the figure of “19 years” in TC VI, 23 (see below). There would not appear to have been a coregency with his successor Senwosret III.

The debate over a short (19 year) or a long (39 year) reign for Senwosret III can now be viewed as resolved. A regnal year “39” found in the valley temple of the cenotaph of Senwosret III at Abydos in 1994 confirms a long reign, supported by a control mark of year “30” from the royal pyramid complex at Dahshur, and a reference to a first sed-festival of this king—as had already been argued by W. Helck, W. Barta and J. v. Beckerath; TC VI, 24 indicates 30+ regnal years. In terms of relative chronology, this is not relevant as there had been a coregency with Amenemhet III since year 20, and thus regnal year 20 of Senwosret III is identical to regnal year 1 of his son. It is in this

---

22 Jansen-Winkeln (n. 16), 117–118.
28 Jansen-Winkeln (n. 16), 119–120.
fashion that one must understand the change of dates in pBerlin 10055 from Illahun where a “year 19” is followed by a “year 1”, which has previously been used by those favouring a short reign (M. Bietak, D. Franke) and would entail an emendation in Manetho and the TC. Chronologically, it is these 19 years that must be accounted for in a relative chronology.

Until recently, the alternatives for Amenemhet III did not affect chronology: whether proposing a short reign for Senwosret III without a coregency (Franke) or a long reign with a 20-year coregency. With Senwosret’s long reign confirmed, a chronological consequence would result if one rejected the coregency (as do Delia and Obsomer). However, the coregency is also confirmed by the presence of the names of both kings on scarabs and cylinder seals as well as fragments of inscriptions of the coronation ritual of Amenemhet III which was apparently performed by Senwosret III.

The highest explicit regnal year attested for Amenemhet III is the 45th, but a “year 46” in the Illahun letters should probably also be assigned to him. A short coregency with Amenemhet IV is assured by a double date in a rock inscription at Semna (RIS 7), where the first regnal year of Amenemhet IV is made equivalent to regnal year 44 (or 46 or 48?) of Amenemhet III. The coregency is also supported by representations of two kings from the pyramid complex of Amenemhet III in Hawara.

The TC records a reign of 9 years, 3 months and 27 days for Amenemhet IV. The highest date known from inscriptions is that of the 9th year (Sinai 122), but a “year 10 (?)” from the Illahun papyri may belong to him as well. His successor Nofrusobek reigned for 3 years, 10 months and 24 days according to the TC. Her highest date documented epigraphically is regnal year 3 on a Nile level mark at Kumma.

---

29 See also Ryholt, *Situation*, 212 n. 728, who still assumes a short reign for Senwosret III and a one-year coregency with Amenemhet III.
31 Obsomer (n. 14).
32 Jansen-Winkeln (n. 16), 120; Ryholt, *Situation*, 212 n. 728.
33 Cf. Franke, “Chronologie,” 120; Ryholt, *Situation*, 209–210 with n. 716. This coregency is also supported by Leprohon (n. 21), 170.
The original text of the *TC* seems to have corresponded to the dates known from epigraphical sources in almost every instance. The reigns preserved in the *TC* are:

<table>
<thead>
<tr>
<th>King</th>
<th>Years</th>
<th>Months</th>
<th>Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amenemhet I</td>
<td>29</td>
<td>(x)</td>
<td>(x)</td>
</tr>
<tr>
<td>Senwosret I</td>
<td>45</td>
<td>(x)</td>
<td>(x)</td>
</tr>
<tr>
<td>Amenemhet IV</td>
<td>9</td>
<td>3</td>
<td>27</td>
</tr>
<tr>
<td>Nofrusobek</td>
<td>3</td>
<td>10</td>
<td>24</td>
</tr>
</tbody>
</table>

Rests of the entries (without names) of the four reigns between Senswosret I and Amenemhet IV are probably preserved on fr. 67 and have been discussed most recently by Krauss,35 Franke,36 and Ryholt.37 The four lines give these numbers of regnal years:

<table>
<thead>
<tr>
<th>TC fr.</th>
<th>67,1</th>
<th>10 (or 20/30?) + x</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>67,2</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>67,3</td>
<td>30 (+ x)</td>
</tr>
<tr>
<td></td>
<td>67,4</td>
<td>40 (+ x)</td>
</tr>
</tbody>
</table>

Of these, only *TC* fr. 67,2 has to be emended (19 instead of 9). The entire picture would thus be:

<table>
<thead>
<tr>
<th>King</th>
<th>Highest Year</th>
<th>Coregency with Successor</th>
<th>Turin Canon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amenemhet I</td>
<td>30</td>
<td>10 years</td>
<td>29 years</td>
</tr>
<tr>
<td>Senwosret I</td>
<td>45</td>
<td>2–3 years</td>
<td>45 years</td>
</tr>
<tr>
<td>Amenemhet II</td>
<td>35</td>
<td>3 years</td>
<td>10/20/30 + x years</td>
</tr>
<tr>
<td>Senwosret II</td>
<td>8/9</td>
<td>–</td>
<td>19 years</td>
</tr>
<tr>
<td>Senwosret III</td>
<td>39</td>
<td>20 years</td>
<td>30 + x years</td>
</tr>
<tr>
<td>Amenemhet III</td>
<td>46</td>
<td>1 year (?)</td>
<td>40 + x years</td>
</tr>
<tr>
<td>Amenemhet IV</td>
<td>10</td>
<td>9 y., 3 m., 27 d.</td>
<td></td>
</tr>
<tr>
<td>Nofrusobek</td>
<td>3</td>
<td>3 y., 10 m., 24 d.</td>
<td></td>
</tr>
</tbody>
</table>

36 Franke, “Chronologie I,” 122, 126.
The total length of Dyn. 12 would be the sum of the reigns minus the coregencies, which amounts to ca. 181 years according to this table. This would confirm the year sum recorded by Eusebius of “182”. By contrast, the sum in TC VI, 3 of “213 years, 1 month; 15/17/19 days” was simply the total of the individual reigns without subtracting the coregencies.38

3. Dynastie 13

Ryholt’s monograph provides a comprehensive new discussion of Dyn. 13 which necessarily entails numerous shifts and reassignments of chronological positions. TC VII, 5—VIII, 27 listed a total of 51 kings, which he raises to 57, based on the restoration of lacunae which he postulates for the three usf-notes in VII, 6, VII, 7 and VII, 17.39 Manetho gives a total of 60 kings for Dyn. 13. In order to make the changes clear, I provide a table with both the traditional sequence (according to Franke) and the new one proposed by Ryholt in Fig. II. 7.1.

According to TC VII, 5, a king Wegaf founded Dyn. 13. As earlier H. Stock and K. A. Kitchen, Ryholt shifts this king 20 places so that he follows Amenemhet VII, since the names of Wegaf appear on both sides of the titulary of Amenemhet VII on the back of a statue base dedicated to Month in Medamud.40 However, the fact that the name Wegaf was later added to the statue does not necessarily demand the assumption of a later reign (after Amenemhet VII). As only about 30 years separate the reign of Amenemhet VII and the foundation of the dynasty, it is also conceivable that a later reference to the founder of the dynasty by a king who may have been related to him was desired. In Ryholt’s reconstruction, Sekhemre‘-khutawy Sobekhotep I who is traditionally identified as Sobekhotep II and listed as the 16th king of the dynasty, opens Dyn. 13 which is justified by assuming an erroneous exchange of names in the TC. A definite judgement on the matter is not possible at present.41

38 Ryholt, Situation, 16 (partially based on other figures; differently also Franke, “Chronologie I,” 122, 126f.; Krauss, Sothis, 198; Beckerath, Chronologie, 134.
39 Ryholt, Situation, 72.
40 Ryholt, Situation, 317–318.
41 Positive is Allen in: Ben-Tor et al. (n. 3), 50; cf., however, Franke, “Chronologie II”, 249.
Franke, “Chronologie” II (1988)

1) Khutawyry / Wefaf
2) Sekhemcare / Amenemhetsonbef
   = Amenemhet V ?
3) (Sekhemrekhutawy)
4) *Amenemhet (V)
5) Sehetepibre
6) Iuefni
7) Sennchibire / Amenemhet VI
8) Semenkare / Nebnun
9) (Se-)Hetepibre / Harmedjheritof
10) Swadjkare
11) Nedjemibre
12) Khabarchre / Sobekhotep I
13) Reniseneb
14) Auibre / Hor I
15) Sedjefakare / Amenemhet VII
16) Sekhemrekhutawy / Sobekh. II
17) Userkare / Khendjer
18) Semenkhakare / Mermesha
19) Schetepake / Inyotef IV
20) ...ibre / Seth I
21) Sekhemresewadjiawy / Sebekh. III
22) Khasekhemre / Neferhotep I
23) Menwadjre / Sibathor
24) Khaneferre / Sebekhotep IV
25) Khahepetre / Sebekhotep V
26) Wahibre / Jauib (Ibiuau)
27) Merneferre / Aya
28) Merhetepre / Ini (Sebekh. VI ?)

Unplaced: Qemau
Unplaced: Sebekaj

Dyn. 13

1) Sobekhotep I Sekhemrekhutawy
2) Senbef Sekhemkare
3) Nerikare
4) Amenemhet V Sekhemkare
5) Qemau
6) Sihamedjheritof Hetepibre
7) Iuefni
8) Amenemhet VI Seankhibre
9) Nebnun Semenkare
10) Seusekhthaui (11) Schetepibre
11) Swadjkare
12) Nedjemibre
13) Sobekhotep II Khankaure
14) Reniseneb
15) Hor I Auibre
16) Khabau (H) Sekhemrekhutawy
17) Djedkheperu (H) ...kare
18) Seb
19) Kay
20) Amenemhet VII Sedjefakare
21) Wefaf Khutawyry
22) Khendjer Userkare
23) Mermesha Semenkhakare
24) Inyotef V Schetepakare
25) Seth Meribre
26) Sobekh. III Sekhemresewadjt.
27) Neferhotep I Khasekhemre
28) Sibathor Menwadjre
29) Sobekhotep IV Khaneferre
30) Sobekhotep V Merhotepre
31) Sobekhotep VI Khahepetre
32) Ibiuau Wahibre
33) Aya Merneferre
34) Ini Merhetepre

Fig. II. 7.1
Ryholt postulates a crisis of legitimacy at the start of Dyn. 13, on the assumption that Dyn. 14 had recently come to power. The double names of early Dyn. 13 would indicate a filiation that was to legitimize their rule. In this vein, a name such as Ameni Qemau would mean “Ameni’s (Amenemhet’s) son Qemau”. However, the proposed early date for Dyn. 14 rests on very uncertain foundations and has probably to be rejected. By contrast, the interpretation of the double names as filiations (without any further political implications) appears very plausible. In the 2nd and 4th positions of the TC are “Amenemhetsenbef” and “Amenemhet” (V). Whereas Ryholt proposes reading “Amenemhet (IV)’s son Senbef”, earlier scholars had considered that the two were identical. The assumption of a name indicating filiation has implications for other relative positions at the start of Dyn. 13. King Ameni Qemau, who had not been assigned a firm place until now, probably also occupied a position in early Dyn. 13. If his double name is to be understood as a filiation, Qemau could, following Ryholt, be understood as the son of Ameni = Amenemhet V, and assigned the 5th position. A more convincing solution is that proposed by J. P. Allen where the fragmentary entry TC VI, 7 “Amenemhet” is believed not to denote Amenemhet V, but Amenemhet Qemaw, and thus the lacuna of TC VI, 6 would once have held the name of Amenemhet V. The 5th position (Sehetepibre) is shifted to place 10 by Ryholt.

The 3rd position in Dyn. 13, where only a figure of 6 regnal years is preserved in the TC, remains unclear. Ryholt fills this with a Nerikare, known from a Theban stela, on the basis of a Nile level mark at Semna, but the Semna record should be read in a different fashion. Beckerath proposes the hypothetical Pentjini here, who is a ruler in the parallel provincial line in Abydos according to Ryholt.

The following five rulers (places 6–9) are identical in both the traditional arrangement and in the new reconstruction, with only the last two Har-nedjheritef and Sehetepibre having been switched. The TC

42 Cf. the references above in note 10.
43 Beckerath (n. 3), 434; Allen in: Ben-Tor et al. (n. 3), 50; Dodson (n. 3), 50.
44 Ryholt, Situation, 208, 212.
45 Allen in: Ben-Tor et al. (n. 3), 50.
46 Beckerath (n. 3), 434. The existence of this king had earlier been thrown into doubt by L. Gabolde, “Nerkarê, a-t-il existé?”, BIFAO 90 (1990), 213–222.
47 Beckerath, Chronologie, 137.
records the throne name of Sehetepibre for both so that an error must be in place in the case of Har-nedjheritef (with a throne name Hetepibre). The reason for Ryholt’s proposed switch of Har-nedjheritef (read as Sihar-nedjheritef by him) is the assumption of a filiation, as Khnw z3 precedes the name in the cartouche. Ryholt takes the word “son” as the first part of the personal name, and interprets the sequence of the two names as a filiation: Qemaw’s son Sihar-nedjheritef. Accordingly, he places the king immediately after his hypothetical father Qemaw. However, as the inverted filiation can be written with or without the word for “son”, the proper name can still be read Har-nedjheritef; even as the son of Qemaw he could have come to power a few years after his father’s reign.

The next five positions are once again identical (Franke 10–14 = Ryholt 11–15). One should merely note that Sobekhotep bears the ordinal number “II” in Ryholt’s reconstruction because the traditional Sobekhotep II has been shifted from the 16th place to the first. The last of these five kings is Hor (I) Awibre, whose Horus name is attested on a reused block in Tanis together with the Horus name Khabaw. Ryholt therefore concludes that Khabaw Sekhemre-khutawy was the successor of Hor (I) Awibre (places 15 and 16), whereas the lost 3rd position of Dyn. 13 in the TC was customarily reserved for him.

Accounting for the fact that neither does Khabaw Sekhemre-khutawy follow Awibre in the TC, nor does a certain Djedkheperu (Horus name) attested in seal impressions from Uronarti alongside Khabaw’s, but immediately Amenemhet VII Sedjefakare (TC VII, 18), Ryholt postulates a lacuna of four places in the Vorlage of the TC, to be filled by Khabaw, Djedkheperu, Seb and Kay. To Djedkheperu he assigns the Osiris bed from Abydos, and suggests that the effaced titulary consisted in the name of Hor (I Awibre) as the beginning of his proper name and simultaneously filiation, but J. P. Allen has plausibly argued that it was Pentjini who was responsible for the inscription.

48 N. Swelim & A. Dodson, “On the Pyramid of Ameny-Qemau and Its Canopic Equipment”, MDAIK 54 (1998), 330, suggest that Har-nedjheritef was only the fourth successor of his father.
49 Critically, and with an alternative Ben-Tor et al. (n. 3), 50.
50 Ryholt interprets the note wsf of the TC as an indication of a lacuna in the Vorlage, not as a reference to a king whose name had been deliberately omitted. For this question, cf. C. Bennett, “King Qemau: a Reconsideration”, GM 159 (1997), 11–17.
51 This was assigned to Khendjer by A. Leahy and to Nebiriraw II by Beckerath.
52 Allen in: Ben-Tor et al. (n. 3), 50–51.
Ryholt postulates Seb and Kay as new kings of Dyn. 13, as he dissolves the proper name Sebkay (Sbkḥy) on the magic ivory CG 9433 (JdE 34988) into the filiation, “Seb’s son Kay”. Since Amenemhet VII names himself Kay-Amenemhet, three generations of kings would thus have reigned within the span of a few years. This “daring construction” (J. von Beckerath) which in addition requires the postulation of a lacuna in the Vorlage of the TC does not seem necessary. If we do not move Sobekhotep II from his traditional place 16 to the top of the dynasty (against Ryholt), the proper name of the magic ivory can be assigned to him. In this case we would have a pet form of a divine name formed by means of the suffix -lī. In the NK this suffix was written <mr>, <mj> (Hali for Hathor, Wurel for Weret), for which in Dyn. 13 a notation with <i> would have been mandatory. The sounding of the name would thus have been something like Šabkuli. The possible patronymic for Amenemhet (Kīy = Kulī) would be the abbreviated form, so that Sobekhotep II (and not an otherwise unknown Kīy) should be viewed as the father of Amenemhet. This would require a switch between TC VII, 18 and TC VII, 19 at the most. Amenemhet VII is followed in the traditional chronology by Sobekhotep (II) Sekhemre-khutawy, and by Wegaf who has changed places with him according to Ryholt.

This takes us into uncontested territory: the following 16 kings of Dyn. 13 are arranged in the same succession in the two competing reconstructions, with a single minor variation: Sobekhotep Merhotepre would be inserted as Sobekhotep V between Sobekhotep IV Khaneferre and Sobekhotep VI (previously labelled ‘Sobekhotep V’), and his identification with Ini Merhotepre completely abandoned. A relief from the reign of Neferhotep I depicting the enthroned prince of Byblos Antin serves as the traditional basis for the synchronism between Egypt and Babylonia for the first half of the second millennium BC (Neferhotep: Jantin‘ammu of Byblos: Zimrilim of Mari: Hammurabi), which is, however, probably not reliable.

53 Beckerath (n. 3), 434; a similar appreciation by Grajetzki (n. 3), 155; cf. Allen in: Ben-Tor et al. (n. 3), 51.
54 T. Schneider, Asiatische Personennamen in ägyptischen Quellen des Neuen Reiches (Freiburg: OBO 114, 1992), 276–277.
55 Ryholt, Situation, 231–232.
57 C. Eder, Die ägyptischen Motive in der Glyptik des östlichen Mittelmeerraumes zu Anfang des
Aya Merneferre is the last ruler of the dynasty attested in both the north and the south, whereas his successor Ini Merhotepre is the first to be only attested in southern Egypt. The lower part of TC’s column VII (Ryholt’s eighth column)—after Sobekhotep VII Merikawre; TC VII, 8—is very badly preserved after a long gap. At the end of the column (now lost) was probably the total for Dyn. 13 and the start of Dyn. 14, which continued on column VIII (Ryholt’s ninth column), with Nehesi in TC VIII, 1. That Nehesi should have had five predecessors which would justify the postulation of an additional lacuna in the Vorlage of the TC is hardly plausible.

Of the lengths of the reigns of Dyn. 13 kings in the TC, the following entries display preserved year dates:

| TC VI, 5 | Wegaf       | 2 years, 3 months, 24 days |
| TC VI, 6 | wsf         | 6 years                   |
| TC VI, 7 | Amenemhet V | 3 or 4 years              |
| TC VI, 8 | Schetepibre | 1–4 years                 |
| TC VI, 14| Nedjemibre  | 0 years, 7 months         |
| TC VI, 16| Reniseneb   | 0 years, 4 months         |
| TC VI, 24| Sobekhotep III | 4 years, 2 months     |
| TC VI, 25| Neferhotep I| 11 years, 1–4 months      |
| TC VI, 26| Sihathor    | 0 years, 1 + x months, 3 days |
| TC VII, 1| Sobekhotep V\textsuperscript{T}/VI\textsuperscript{R} | 4 years, 8 months, 29 days |
| TC VII, 2| Ibiau       | 10 years, 8 months, 28 days |
| TC VII, 3| Aya         | 23 years, 8 months, 18 days |
| TC VII, 4| Ini         | 2 years, 2–4 months, 9 days |
| TC VII, 5| Sewadjtu    | 3 years, 2–4 months       |
| TC VII, 6| Ined        | 3 years, 1 months, 1 day  |
| TC VII, 7| Hori        | 5 years, ? months, 8 days |
| TC VII, 8| Sobekhotep VII | 2 years, ? months, 4\textsuperscript{63} days |

\textsuperscript{2} Jts. v.Chr. (Leuven: OLA 71, 1996), 13; T. Schneider, ZDPV 114 (1998), 184–188. Jantin itself would have been a hypocoristic abbreviation of Jantin’ammu, but what we have is only ‘Antin.

\textsuperscript{58} For Nehesi, see now A. Loprieno, “Mḫy, ‘der Südländer’?”, in: Stationen, 211–217.

\textsuperscript{59} Ryholt, Situation, 94.

\textsuperscript{60} See above, notes 8–10. Spalinger (n. 3), 297 assumes (following Ryholt) that it is demonstrated that Sheshi belongs in early Dyn. 14, whereas this assignment is disputed by Ben-Tor et al. (n. 3), 61.

\textsuperscript{61} Cf. Ryholt, Situation, 192, and Fig. 10 with the sheet joins as opposed to Franke, “Chronologie II”, 267ff.

\textsuperscript{62} Franke, “Chronologie II”, 267ff. has “2” months, Ryholt “3–4”; cf. however TC VIII, 5, and thus “2–4”.

\textsuperscript{63} Ryholt, Situation, 192 has erroneously “3” days.
Down to the reign of Aya, a minimum of 100 years must be accounted for since the beginning of Dyn. 13. The last ca. 25 kings of Dyn. 13 are very badly documented in the epigraphic material, and their monuments are restricted to a few places (Abydos, Thebes, Deir el-Bahri, Gebelein, Edfu). “By the end of Aya’s 24-year reign, the administration seems to have collapsed [. . .] This period further witnessed no less than 24 kings, whose reigns on the average lasted little more than one year.”

In place of a precise chronology, we can merely estimate a total of some two decades, after which Dyn. 13 would be immediately followed by the new Theban dynasty (Dyn. 17 according to the traditional version; “Dyn. 16” according to Ryholt). There are some dated monuments for a few kings data for whose reigns are not preserved in the TC: Sobekhotep II^I/IP (year 4), Amenemhet-Senbef (year 5), Khendjer (year 5), Sobekhotep IV (year 9) and a few additional of contested attribution. The only indication of the total length of Dyn. 13 remains the total given by Manetho of 453 years, which is usually emended to *153 or 133 (Beckerath) years and represents the basis for approximate estimates of 133 years (Beckerath), some 130 years (Franke), 152 years (Kitchen), and 154 years (Ryholt); cf. our final remarks in section 6.

4. Dyn. 17 (Ryholt: “Dyn. 16” & “Dyn. 17”)

4.1. Generalities

Arranging the relative chronology of the kings attested in the Thebaid between Dyns. 13 and 18 is one of the most difficult challenges of the SIP. The traditional reconstruction of Dyn. 17 assumes 15 rulers, based on the sum in TC XI, 15 (which must apparently be emended to “15”); these kings would have been named in TC X, 31–XI, 14.

Against this, Ryholt (following H. E. Winlock) postulates two
Theban dynasties, “one prior and one subsequent to the Hyksos conquest of the south”. He assigns all the aforementioned 15 places of the TC to his first Theban dynasty, which he terms “Dyn. 16”, correcting an error in the terminology of Africanus and traditional research (where Dyn. 16 were considered princes and vassals of Dyn. 15), whereas the designation “Dyn. 17” applies exclusively to his second Theban dynasty. This “Dyn. 17” would have been listed in a now lost column of the TC, being separated from “Dyn. 16” by an alleged local dynasty in Abydos (TC XI, 16–31).

That allowance must be made for more space after the end of Dyn. 13 for kings of the Thebaid than is permitted in the traditional 15 places is an indisputable fact which means that Ryholt’s revision is a welcome attempt. It is, however, reasonable to suppose that the correct reconstruction could have a different appearance. According to Beckerath, a column might have been lost after TC X (with the first entry being TC X, 31), and this column would have included all of the Theban kings as a single dynasty; only then would one have to add the rulers from Abydos. Beckerath proposes that all of the Theban kings between Dyns. 13 and 18 be termed “Dyn. 16”, and that the local dynasty at Abydos be termed “Dyn. 17”. A. Spalinger is also opposed to assuming two Theban dynasties, divided by the postulated Hyksos conquest of Thebes.

Ryholt concludes that the number of Theban rulers was 15 (“Dynasty 16”, listed in the TC) + about 10 (“Dynasty 17”, known from the monuments and lasting a maximum of ca. 40 years). Taking Beckerath’s version of Ryholt’s reconstruction, the succession of Theban rulers would be from TC X, 31 through Beckerath’s new column “Xa” to TC XI, 14 (with the total in TC XI, 15), which would thus include 1+31+14 = 46 places, nearly twice as many as in Ryholt’s approach. This is not conceivable for chronological reasons and with regard to the extant epigraphical evidence.

---

73 King Sekhemre’-wahkhaw Ra’hotepr, traditionally viewed as second king of Dyn. 17, occupies the first place in Ryholt’s Dyn. 17 (Dyn. 17^{1}/1 vs. Dyn. 17^{2}/2) and is thus moved 14 places away. Sobekemsaf (traditionally I, Ryholt: II) has been shifted 18 places.

74 Ryholt, Situation, 164.

75 Beckerath (n. 3), 434.

76 Spalinger (n. 3), 298: “There is little evidence for a Theban dynasty à la Ryholt unless we reinterpret the data to suit the hypothesis.”
Regardless of the judgment of the order in the TC, we must concur with Ryholt that the total number of Theban rulers between Dyns. 13 and 18 cannot be higher than 25. However, a division of the sequence into two dynasties based upon Ryholt’s postulated Dyn. 15 Hyksos conquest of Thebes is just as difficult to accept as Ryholt’s proposed scorched earth policy during the withdrawal of Apopis from the south. It is entirely possible that there was originally a division of two groups of kings in the TC, but this may have resulted from other considerations (cf. below). These 25 kings at the most seem not to have ruled longer than 90–115 years.

4.2. Dyn. 17 (Ryholt: “Dyn. 16” & “Dyn. 17”)—Details The issue of ordering these kings is extremely complex due to the state of preservation of the TC and the epigraphic situation. Even for the more important rulers and their families, the data is fragmentary and open to diverse interpretations. Three problems of the interconnected families of Inyotef/Sobekemsaf should suffice as exemplary in prohibiting a definitive resolution of the issue.

1) Inyotef Nebukheperre’s consort Sobekemsaf (N.B. “Sobek is his (!) protection”), presumably the daughter (or granddaughter?) of a king, seems to have been named after a king Sobekemsaf; and the name Sobekemsaf was also borne by Raḥotep’s consort (or mother?). Both the identity of the Queen(s) Sobekemsaf and the identity of the king Sobekemsaf are subject to debate.

2) Whether this king was the father of Inyotef Nebukheperre or merely an indirect predecessor depends upon the interpretation of a newly found fragmentary inscription on the Luxor-Farshut road.

3) The precise placement of the Inyotef kings, the Sobekemsaf kings and the king Raḥotep is subject to controversy. That a prince with the basilophorous names Inyotefmose was praised by a king Sobekemsaf for his actions during a Sokar festival could demand at the most the placing of a king Sobekemsaf after the Inyotef kings.

The following brief presentation attempts to provide a solution along this line of arguments: A detailed discussion must take account of the

80 Ryholt, *Situation*, 170.
aforementioned differences between Ryholt’s interpretation of the TC and Beckerath’s response to it (cf. above, with Figure). One possible solution is to reject the proposed additional column TC Xa (with Ryholt, against Beckerath), while simultaneously assuming (with J. P. Allen, against Ryholt)\(^\text{81}\) that all of the Theban rulers between Dyns. 13 and 18 were originally listed between TC X, 31 and TC XI, 25. A first group (TC X, 31–XI, 14) would close with the total at TC XI, 15; and then 9 additional rulers would follow in TC XI, 16–XI, 24 whose total would once have been noted in TC XI, 25 (before the inception of fr. 163).\(^\text{82}\) The division into two groups could easily have been motivated by their lineage or residence (e.g., Thebes vs. Dendera).\(^\text{83}\)

The five kings mentioned on fr. 163 would only be inserted then, and possibly others on a possible column “XII”. That these will have been Abydenian rulers—Ryholt suggests that the remainder of his Abydos dynasty was listed here—is not demonstrable since the traces of the names do not match any epigraphically attested names.

Despite diverging on the reconstruction of TC XI, I agree with Ryholt in the number of rulers who can be viewed as Theban kings between Dyns. 13 and 18. In addition to the 15 places given in the TC (i.e., the traditional Dyn. 17), Ryholt names 9 kings of a “second Theban dynasty” (i.e. his “Dyn. 17”). According to the placement of these rulers in TC XI such as proposed above, there would in fact be exactly that many places.

The first three places of TC XI are damaged and begin with $\text{Shm-r'}$, $\text{Shm-r'}$- and $\text{Shm-r'}$-s-. The traditional restoration (since H. Stock) to the throne names $\text{Shm-r'}$-w$\text{h}$-h$\text{w}$ (= Ra’hotep), $\text{Shm-r'}$-w$\text{d}$-h$\text{w}$ (= Sobekemsaf I) and $\text{Shm-r'}$-smn-t$\text{wj}$ (= Djehuti) has recently been thrown into doubt by Beckerath himself, who considers Ra’hotep as doubtful, the third place as completely uncertain, and views only Sobekemsaf I as certain.\(^\text{84}\) On account of their building activity in Abydos and their restorations in Medamud and Coptos, Ryholt places Ra’hotep and Sobekemsaf Sekhemre$^\text{s}$-wadjkhaw in his chronologically

\(^{81}\) Allen in: Ben-Tor et al. (n. 3), 49.

\(^{82}\) An alternative placing of the fragments is not possible; cf. W. Helck, “Anmerkungen zum Turiner Königspapyrus”, \textit{SAK} 19 (1992), 151–216.

\(^{83}\) Cf. below, text referring to n. 111.

later “Dyn. 17”\textsuperscript{85} and restores $TC$ XI, 1–3 with the throne names $Slm-\text{r}^{-}\text{s}mn-b\text{w}j$ (\textit{= Djehtu}), $Slm-\text{r}^{-}\text{s}swr-b\text{w}j$ (\textit{= Sobekhotep VIII}) und $Slm-\text{r}^{-}\text{s}nh-b\text{w}j$ (\textit{= Neferhotep III}), of whom the last two were traditionally acknowledged as contemporary but had not been placed.\textsuperscript{86} Djehtu is thus shifted only two places in contrast to the traditional sequence (Dyn. 17\textsuperscript{1}/4 and “Dyn. 16\textsuperscript{R}/2”).\textsuperscript{87} Placing Neferhotep III here is favoured by the position of Se\textsuperscript{ankhenre}\textsuperscript{c} Mentuhotpi (Mentuhotep VI) in $TC$ XI, 4, as two similarly executed stelae of the two kings could possibly have come from the same workshop.\textsuperscript{88} The next five places $TC$ XI, 5–9 are preserved whereby $TC$ XI, 6 (Nebiriaw II) could be a copying error\textsuperscript{89} and in $TC$ XI, 9 Sekhemre\textsuperscript{c}-shedwaset (as traditionally maintained) might be a deliberate change for the correct Sekhemre\textsuperscript{c}-shedtawy = Sobekemsa[1].\textsuperscript{89} The proper name of $TC$ XI, 7, Semenenre\textsuperscript{c}, is unknown; as the successor is named “Bebiankh” and “Bebi” is a possible abbreviation of a name containing the element “Sobek”,\textsuperscript{91} one could speculate on a Sobek-name. Of the following five places ($TC$ XI, 10–14), only the insignificant beginning is preserved, before the total ($TC$ XI, 15). $TC$ XI, 15–17 apparently introduces a new group of kings.

The main difficulty here is the correct restoration of the five places before the sum. If one places the traditional Dyn. 17 in $TC$ X, 31–XI, 14, the last three places are occupied by Senakhutenre\textsuperscript{c}, Seqenenre\textsuperscript{c} Tao and Wadjkheperre\textsuperscript{c} Kamose.\textsuperscript{92} Ryholt assigns to these positions the
rulers Dedumose I, Dedumose II, Mentuemsaf, Mentuhotep (VI\textsuperscript{R}) Mer'\'ankhre\textsuperscript{c} and Senwosret IV Seneferibre\textsuperscript{c}, who are documented epigraphically at Thebes but had not been positioned chronologically. However, the Dedumose kings certainly belong in Dyn. 13.\textsuperscript{93} If one follows the scheme outlined above, with the assumption that further Theban kings down to Kamose were named in TC XI, 16–XI, 25, we face the question of the placement of the kings Inyotef/Sobekemsaf/\textsuperscript{Ra}hotep and thus of the exact relationship between the late Dyn. 13 and the kings named between TC X, 31 and TC XI, 25.

As Ryholt correctly notes, the traditional placing of Nebukheperre\textsuperscript{c} Inyotef (V) at the beginning of Dyn. 17 (his “Dyn. 16”), in the lost entry at TC X, 31, cannot be justified. D. Polz, who succeeded in finding the tomb of the king in Dra Abu’l Naga in 2001, argues likewise for situating him before the final kings of Dyn. 17.\textsuperscript{94} Such a placement is likewise favoured by the evidence of the box of Minemhat, who was mayor of Coptos under Inyotef V, which was part of the funerary equipment of an Aqher who lived under Seqenenre\textsuperscript{c}.\textsuperscript{95}

From the legend on the coffin Louvre E 3019, it follows that Inyotef Nebukheperre\textsuperscript{c} (Dyn. 17\textsuperscript{R}/4: Inyotef VII) arranged the burial of his brother Inyotef Sekhemre\textsuperscript{c}-upimaat (Dyn. 17\textsuperscript{R}/3) and must therefore have followed him on the throne.\textsuperscript{96} In his Untersuchungen, Beckerath had viewed Inyotef Sekhemre\textsuperscript{c}-upimaat (VI) and Inyotef Sekhemre\textsuperscript{c}-herhermaat (VII) as brothers, whereas he had separated Inyotef Nebukheperre\textsuperscript{c} (VI; coffin BM 6652) from them as a king he considered not necessarily related to them, placing him at the beginning of the dynasty. Ryholt equally bases his arguments upon a consistent palaeographic peculiarity (the Plenenschreibung of “j”) in the case of the coffin of Inyotef Sekhemre\textsuperscript{c}-herhermaat

\textsuperscript{93} Franke, Heqaib, 77–78.
\textsuperscript{94} D. Polz & A. Seiler, Die Pyramidenanlage des Königs Nub-Cheper-Re Intef in Dra’ Abu el-Naga. Ein Vorbericht (Maniz: DAIKS 24, 2003). J. C. Darnell views Inyotef Nebukheperre\textsuperscript{c} as the addressee of a newly discovered royal hymn at Wadi el-Höl; however, the king is not named (“A New Middle Egyptian Literary Text from the Wadi el-Höl”, JARCE 34 [1997], 85–100).
\textsuperscript{95} H. Winlock, JEA 10 (1924), 258 with n. 1 (taking up an idea of P. Newberry); W. Helck, “Der Aufstand des Tetian”, SAK 13 (1986), 126 (who erroneously refers to a spoon; the spoon from the burial of Aqhor came from a mayor Sobekwer). In favour of a placement in late Dyn. 17 (as traditionally conceived) is N. Dautzenberg, “Die Wahl des Königsnamens in der Hyksoszeit”, GM 159 (1997), 43–52, based on the titulary.
\textsuperscript{96} Ryholt, Situation, 270.
so that he becomes an ephemeral coregent of Inyotef Nebukheperre².⁹⁷

However, this “stock coffin” was certainly not originally intended for
Inyotef Nebukheperre⁵, and to infer from it any hypothetical coregency
is doubtful in the extreme.⁹⁸

Placing the three Inyotef kings together appears to be plausible, not
the least on account of their canopic equipment.⁹⁹ It seems possible
that the legend on Louvre E 3020 can be used to argue that Inyotef
Sekhemre⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻~-~-

⁹⁷ Cf. Ryholt, _Situation_, 267–268.; the earlier discussions will be found in Beckerath,
_Untersuchungen_, 267f.

⁹⁸ Dodson (n. 3), 50–51; Spalinger (n. 3), 300.

⁹⁹ A. Dodson, _The Canopic Equipment of the Kings of Egypt_ (London, 1994), 42; C. Bennett,
“The Date of Nubkheperre Inyotef”, _GM_ 147 (1995), 19–27 (22f.: all three Inyotefs
closely associated).

¹⁰⁰ The coffin was not originally manufactured for Inyotef Nebukheperre⁴ (A. Dodson).
When the coffin was reworked, the <y> of the name of Inyotef was replaced with
<ḏ>. An explanation can be found in assuming that the correction was an attempt at
specification: the proper name Inyotef, “The one who brings back his father” is an
_Ersatzname_ (a newborn child is believed to replace a recently deceased relative, in this
case the father). The insertion of <ḏ> and the addition of the throne name would
have adapted the meaning of the name to the contemporary situation: “he who brings
_back the elder, his father, Sekhemre⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻⁻~-~-

¹⁰¹ For the discussion, cf. Ryholt, _Situation_, 265–268 (who rejects the identification).

¹⁰² Ryholt, _Situation_, 170, opposes this order: “Likewise, it may be argued that
Raḥotep, whose restoration of the temple of Min at Coptos is described on a stela,
was a predecessor of the Inyotef kings, since such a claim could hardly have been
made in the years subsequent to the reign of Inyotef N[ebucheperre’] who built exten-
sively at this temple.”

¹⁰³ C. Bennett, “The First Three Sekhemre Kings of the Seventeenth Dynasty”, _GM_
not the same, then the chronological place of Sobekemsaf Sekhemre-wadjkhaw is completely uncertain; rather than placing him, with Ryholt, after the Inyotef kings, he could also precede them, perhaps after Sekhemre-shedtawy Sobekemsaf (I) or even in the lost entry at TC X, 31. A possible candidate for TC X, 31 or one of the other open places could, however, also be seen in Sekhemre-neferkhaw Wepwawtemsa (previously unplaced, assigned by Ryholt to the Abydos dynasty).

In principle, the block of the Inyotef kings and Ra-hotep could have stood in TC XI, 10–14 or else in TC XI, 18–21 (with the four following entries to be restored as Senakhtenre/Seqenenre/Kamose/total). In view of these possibilities, of particular interest are the two entries where the beginning is still preserved in TC XI, 16 and TC XI, 17, which Ryholt views as undocumented throne names of kings of his postulated Abydos dynasty. In TC XI, 16 Weser-. . . r is preserved, and in TC XI, 17 probably only Wsr without the solar disk, i.e., there is a proper name as in TC VIII (Ryholt: IX), 1 (Nḥy), TC XI, 5/6 Nḥ-ḥy-ṣw, and elsewhere. For both places, which have not hitherto been explained, a restoration can be suggested:

- In the tablet of kings from Karnak, the fourth row (no. 27) has a royal name Wsr-n-r along with Seqenenre, Senakhtenre and Inyotef Nebukheperre, who has usually been emended to the Swsr-n-r named in TC XI, 8. However, the kings to be placed in TC X, 31–XI, 14 (including Swsr-n-r) are certainly listed in other rows of the tablet of kings if the assignment of kings to the TC passage as proposed above can be accepted.
- A king who fits well with the notation beginning Wsr- at TC XI, 17 is the hitherto unsituated Senwosret (IV) Seneferibre, known from a colossal statue and a stela in Karnak as well as blocks from Tod and Edfu.

---

104 Ryholt, *Situation*, 266, 272 (the names display different endings: Amanja, Amana).
105 Decisive for Ryholt is the praise of a king Sobekemsaf for a Inyotefmose, whom Ryholt places after the Inyotef kings due to his basilophorous name.
107 The weser-sign follows on the cartouche more closely than in TC XI, 16.
109 Beckerath, *Untersuchungen*, 27; idem, *Handbuch*, 126. It is less probable that the Beni Hasan graffito (cf. Beckerath, *Untersuchungen*, 69) should be read as Weserre-neferkhaw.
In the lacuna between TC XI, 17 and XI, 26, I would propose placing the kings Senakhtenre, Seqenenre Tao, Wadjkheperre Kamose (and possibly others) as well as the total. The rulers named in the lower part of TC XI would thus be the kings of Ryholt’s “Dyn. 17” (whom he believes to have been listed on a lost * twelfth column). Their separation from those named in the upper part of the column could have been motivated by this family’s suggested provenance from Dendara and its struggle with the supplanted Inyotef family that continued until early Dyn. 18.111

Frag. 163 placed at the end of TC XI has a throne name ending in—ḥšb in line 2 6, and another in line 31 might be constructed with wbn. A parallel can be found in TC VIII, 4 (Šḥšb-Ỉ) and TC VIII, 11 (Wbn-缋), whereas there are absolutely no corresponding throne names in Dyns. 17–19.112

What follows is a listing of TC X, 31–XI, 26 with the hypothetical restorations proposed above in the right column:

| TC X, 31 | - - - | Sekhemre-neferkhaw Upuautemsaf ?? |
| TC XI, 1 | Sekhemre- | Sementawy Djehuti |
| TC XI, 2 | Sekhemre- | Seusertawy Sobekhotep VIII |
| TC XI, 3 | Sekhemre-Se- | *-anchtawy Neferhotep III |
| TC XI, 4 | Se’ankhenre | Montuhotpi |
| TC XI, 5 | Nebiriaw (I.) Sewadjenre | |
| TC XI, 6 | Nebiriaw (II.) | (proper name unknown; Sobek- ?) |
| TC XI, 7 | Semenenre | |
| TC XI, 8 | Seweserenre Bebiankh | Sobekemsaf (I) |
| TC XI, 9 | Sekhemre-shedwaset (< tawy ?) | Sekhemre-wadikhaw Sobekemsaf II |
| TC XI, 10 | Sekhemre-upimaat (“the elder”) | Inyotef (VI) |

(continued on next page)

Cf. also Beckerath’s “Sesostris V”. Improbable seems Weser[monthu] (?) (Beckerath, Untersuchungen, XIII, L).


112 From late Dyn. 17 there is only a titulary prince Sbk-m-hb attested in Esna; and the consort Sbk-m-hb of a prince Ameni. The next ruler with a name (but not the throne name) ending with -m-hb is Horemhab.
The lengths of the reigns are listed in the TC as follows: TC XI, 1: 3 years (rest lost); TC XI, 2: 16 years (rest lost); TC XI, 3: 1 year (rest lost); TC XI, 4: 1 year (rest lost); TC XI, 5: 26 years (rest lost); TC XI, 8: 12 years, x months, 12 days. Of those rulers who are hypothetically arranged here among their successors, a regnal year 7 is attested for Sobekemsaf II, and for Inyotef VIII (Ryholt: Inyotef VII) Nebukheperre a year 3. These eight kings produce a total of 69 years; for all 15 entries TC X, 31–XI,14 we might estimate 75–100 years. For the kings placed from TC XI, 16 onward, there are good reasons for assigning them a significantly shorter length of rule. Kamose will have died not long after his regnal year 3 (attested on the Kamose Stela), at a time when Ahmose was still quite young. As his mummy testifies, Seqenenre suffered an early death on the battlefield. Ryholt postulates 4 regnal years for Seqenenre, and one year for Senakhtenre, who is not recorded in contemporary documents. If Senosret IV is

---

114 Cf.—with a different succession—the estimates by Ryholt, Situation, 204.
115 For the coregency, cf. Ryholt, Situation, 273; otherwise, 172ff., 309.
116 Ryholt, Situation, 206.
to be placed here, a first year is attested in a biographical inscription.\textsuperscript{117} It follows that the rulers listed here were in power only very briefly; with a total of perhaps 15 years.

Despite various differences in the internal sequence of kings between Ryholt’s version and that presented here, both reach a relatively reliable estimate of the length of time to be assigned to the rulers between Dyn. 13 and 18: roughly a century. Ryholt has 67 years ("Dyn. 16") + 31 years ("Dyn. 17"). According to our reading TC X, 31–XI, 14 covers 75–100 years, and TC XI, 16 to Kamose amounts to 15 years (cf. below, final remarks, section 6).

5. Dynastie 15

The kings of Dyn. 15, or the “Hyksos” (\textit{Hk\textcircled{3}.w(h)\textcircled{3}.wt}, “Rulers of Foreign Countries”) were rulers of (at least remote) Syro-Palestinian descent whose power was based in the eastern Nile Delta where a high proportion of the population were of Palestinian origin. Establishing the relative chronology of this dynasty suffered from the inadequate documentation and the widely assumed discrepancy between the royal names in the epigraphic sources and the Manethonian tradition.\textsuperscript{118} Previously, moving beyond the Khamudi attested in the TC and the epigraphically recorded kings involved deciding which of the many scarabs named kings of Dyn. 15 and which did not. Hitherto, there were no generally recognized criteria for the attributions. The distribution and frequency of their scarabs often seemed to favour including Sheshi and \textit{Ja\textsuperscript{a}qubhaddu} (“\textit{Jaqobher}”) whereas Helck believed that “\textit{Semqen}” and \textit{\textsuperscript{An}athaddu} (“\textit{Anather}”) could be assigned a place among the “great Hyksos” (i.e. Dyn. 15 of the traditional approach). Ryholt proposed to include the \textit{Skr-hr} now attested in Tell el-Daba and to consider, from the three rulers whose scarabs include the title \textit{hqt-h\textcircled{3}.swt}, \textit{Sm\textcircled{5}n} and \textit{\textsuperscript{pr}-\textsuperscript{nt}} as the first two kings of Dyn. 15.\textsuperscript{119} None of these names can be equated with the Hyksos names such as preserved by Manetho, and this alleged dis-

\textsuperscript{117} W. Helck, \textit{Historisch-biographische Texte der 2. Zwischenzeit und neue Texte der 18. Dynastie} (Wiesbaden: KÄT, 1983), 41 [no. 56].
\textsuperscript{118} For the history of the debate from 1936–1997, see in detail, Schneider, \textit{Ausländer}, 58–70.
\textsuperscript{119} Ryholt, \textit{Situation}, 118–125. Moving the third—\textsuperscript{nt-hr}—to Dyn. 12 is apparently not correct, cf. Ben-Tor et al. (n. 3), 63.
crepancy seemed to indicate to most scholars that the Manethonian evidence has to be discarded despite of the close to complete lack of contemporary sources that might fill the gap. The situation was that summarized by W. A. Ward: “It is impossible to equate the names preserved in the various recensions of Manetho with these actually known from the monuments (...) It is clear that most of the names preserved in this tradition are too corrupted to have any value (...) The present discussion will therefore ignore Manetho as being unreliable.”

This traditional standpoint relies on the improper assumption that even if most of the documentary evidence on the Hyksos is lost, we nevertheless possess at least all their names, and does not accurately reflect on how their names were handed down and copied in the later chronographical tradition. Instead of rejecting Manetho, the author has tried to solve the issue by reckoning with kings absent from our contemporary documentation and by accounting for textual mistakes in the process of the copying of the king lists by late scribes who could solely rely on the written form of the names but were not aware of their original sounding. Our correlation of the traditions does not leave any lacunae which must be filled having recourse to scarabs. The nearly complete loss of the sequence of Dy. 15 kings in TC (where only the last one, Khamudi is preserved) gives priority to Manetho of whose epitomists those can be shown to be correct that place Apophis at the end of the dynasty (Africanus, Eusebius’s Armenian version, the scholion to Plato’s Timaios). The names of this sequence—1. Salitis, 2. Bnon, 3. Apachnan, 4. Iannas, 5. Archles/Assis, 6. Apophis—can all be equated with names attested epigraphically with one exception for which a postulated original name can be supplied.


121 Schneider, Ausländer, 33–56.70–75.

122 Striking examples are the two Hyksos Škr-Hr (architrave found in Tell el-Daba and first published in 1994) and Khamudi (attested only in TC) who could not possibly have been postulated by modern research. A late tradition of Škr-Hr seems to be preserved in pCarlsberg 642 where an impious ruler Saker is mentioned (cf. J. F. Quack, “Zwischen Sonne und Mond—Zeitrechnung im Alten Ägypten”, in: H. Falk, ed., Von Herrscher zur Dynastie. Zum Wesen kontinuierlicher Zeitrechnung in Antike und Gegenwart, Bremen 2002, 27–67: 47f), equated by Quack with Salitis, but Škr-Hr is certainly preferable.

123 For what follows see in detail Schneider, Ausländer, 50–56.
that the TC apparently once listed a total of 6 rulers of this dynasty, including one named Khamudi, the copyists of Manetho also name 6 rulers, but without Khamudi.\footnote{Cf. Schneider, Ausländer, 56 (if not in the name Chamois of the book of Sothis).}

\begin{tabular}{lll}
Hieroglyphic: & Copyists of Manetho: \\
\hline
a. Šarā-Dagan (Širk[n]) & 1. Salitis & > 36 years, 7 months \\
b. *Bin'-Anu & 2. Bnōn & > 44 years \\
c. (Apaq-) Ḫajran & 3. Apakhnan & > 19 years \\
d. Jināši'-Ad & 4. Iannas & > 50 years, 1 month \\
e. Sikru-Haddu\footnote{The interpretation of major elements of these names such as offered by Ryholt, \textit{Situation}, 126ff. (particularly ‘pr and hr) reflects older positions \cite{Albright} which are no longer supported.} & 5. Archlēs/Assis & > 49 years, 2 months \\
f. Apapi & 6. Apophis & > 61 years \\
g. Ḫalmu’di & & — (not in Manetho) \\
\hline
Total TC: 108 years & Manetho: 260 years \\
\end{tabular}

The total given at TC X, 21 for the entire Dyn. 15 is 108 years.\footnote{See Ryholt, \textit{Situation}, 118.—It must be noted at the outset, however, that in an unpublished communication made while this book was in its final stages of preparation, Ryholt announced that the traces on the actual papyrus did not confirm Gardiner’s reading and that another date, possibly of more than 140 years should instead be considered possible (editors’ note).} By contrast, according to Africanus’s version of Manetho, the dynasty would have lasted 284 years. Assigning reign lengths to individual rulers is at the present possible only in some cases. Beckerath proposed a hypothetical reign for all individual rulers,\footnote{Beckerath, \textit{Chronologie}, 137.} but this remains speculative since it is not clear which of the reigns have been lengthened by decades by Manetho and which not. On an unnumbered fragment of the TC (Ryholt’s “b”)\footnote{Ryholt, \textit{Situation}, 118–119.} are the remains of the totals of two reigns: “10 (or 20, or 30)” + x years and “40” + x years. The latter could hypothetically be assigned to Apapi, who according to the colophon on the Rhind Mathematical Papyrus must have reigned at least 33 years. The first reign might then be assigned to Škr-Hr.\footnote{Contra Ryholt, \textit{Situation}, 119.} Another reign length can be inferred from the note on the verso of the Rhind Mathematical
Papyrus whereby in the 11th regnal year of the ruling king, Heliopolis has been conquered, and “he of the South” has attacked and taken Sile. Since “he of the South” must denote the Theban ruler Ahmose, the regnal year 11 can only be assigned to the successor of the Hyksos king Apapi: Khamudi. The Hyksos capital Avaris will have fallen to Ahmose not much later. An inscribed spear point from the booty of Avaris which includes a dating criterion (orientation of the lunar hieroglyph) enables us to place the conquest of Avaris in the regnal year 18/19 of Ahmose. A possible check is provided by a graffito in the quarry at Tura whereby “oxen from Palestine” were used at the opening of the quarry in Ahmose’s regnal year 22. The cattle could have been brought to Egypt after the three-year siege of south Palestinian Sharuhen, which followed the conquest of Avaris. This link between the reigns of Khamudi and Ahmose means that the beginning of Dyn. 15 should be 90 years before the death of Kamose (108 years—provided this number from the TC is correct—minus the 18 years of the reign of Ahmose parallel with the last two Hyksos).

6. Total Length of the Period of Dyns. 13–17

Providing any exact figure for the total duration of the period of Dyn. 13–17 is impossible. The difficulties are not merely due to the inadequacy of the documentation of the various dynasties, but rather that these are exacerbated by our inability to establish their mutual relationships. In particular, it is far from certain that Dyn. 15 and the Theban dynasty (Ryholt’s “Dyns. 16/17”) followed immediately on Dyn. 13 as Ryholt proposes, with both starting in 1649 BC. It seems plausible that the transition was both spatially and temporally more complex in the final decades of the 17th century. The fact that the numerous ephemeral rulers of the last 25 years or so of Dyn. 13 were probably incapable of maintaining administrative control of the entire country

---


131 Kitchen (n. 130), 46 correctly stresses that this criterion is not well founded.

132 Franke, “Chronologie II”, 264.
suggests that there may have been a number of competing local dynasties at the time.\textsuperscript{133} It would be plausible to suppose that the origins of the power of these local dynasts lie in the period before the ephemeral end of Dyn. 13, and therefore that an approximate chronological fixpoint might be established at the end of the reign of Aya, at ca. 1650 BC.\textsuperscript{134} This linkage between Dyns. 13 and 17 finds some support in biographical information of the time.\textsuperscript{135}

Calculating back from the start of the reign of Ahmose (around 1539 BC) and suggesting that the Theban kings reigned for 90–115 years before Ahmose leads to a beginning of the Theban dynasty at ca. 1654/1629; based on the TC, the dates for Dyn. 15 would be 1639–1521 BC (cf. above). Given the uncertainties in the length of individual reigns here and in Dyn. 13, a conclusive judgment about the length of the SIP\textsuperscript{136} still needs further evidence.

\textsuperscript{133} Spalinger (n. 3), 297–298 assumes that an independent kingdom (= Dyn. 17) already appeared a few decades before the end of Dyn. 13, and poses the question of the possible coexistence of a truncated state in the North with the Hyksos.

\textsuperscript{134} Cf. still the remark of the Greek author Artapanos (2nd century BC), that under a king named “Chanephres” (Khaneferre Sobekhotep IV), Egypt was divided into various kingdoms (Schneider, \textit{Ausländer}, 158–159). Whether the pyramidion of Aya found at Faqus was removed there from Saqqara by the Hyksos, as Ryholt (\textit{Situation}, 147) and Dodson (n. 3; 50) assume is not certain; Beckerath (\textit{Untersuchungen}, 73) assumed the Ramesside era. Of the various possible synchronisations between the dynasties, Manetho’s remark about a supposed conquest of Egypt by the Hyksos under a “Toutimaios”, in whom one of the Dedumose kings of Dyn. 13 had earlier been suspected, is no longer tenable as the reference is clearly due to a misunderstanding of the Vorlage, or a textual error: cf. Schneider, \textit{Ausländer}, 159; for a different interpretation, see A. Bülow-Jacobsen in: Ryholt, \textit{Situation}, 327 ff.

\textsuperscript{135} The \textit{stèle juridique} records that an Aya received the governorship of el-Kab in regnal year 1 of Merhotepre Ini (successor of the king Aya) and that his grandson Kebsi sold it in regnal year 1 of Nebiriaw. In \textit{TC} XI, 1–5, the lengths of the reigns up to Nebiriaw I are preserved (21 years, with a few months missing), so that including the reign of the founder of the dynasty in \textit{TC} X, 31, some 25 years will have passed before regnal year 1 of Nebiriaw (cf. above, section 4). If the dynasty began between 1654 and 1629 BC, Merhotepre Ini (cf. above, section 3) should be placed around a century after the start of the dynasty, i.e., ca. 1656 BC. This would result in 27–52 years for the period during which the father and grandfather of Kebsi exercised the office, which appears plausible. Ryholt (\textit{Situation}, 197, 202) has a far larger margin of more than 70 years (1 Merhotepre Ini = 1677 BC; 1 Nebiriaw I = 1627 BC), assuming that the father and grandfather of Kebsi reached a very ripe old age of more than 70 years each.

\textsuperscript{136} Ryholt, \textit{Situation}, 191 opts for a long, of 254 years (as R. Parker proposed based on his absolute dates for the MK), and thus proposes the dates of 1803–1549 (Dyn. 14 from 1805; Dyn. 15 to 1540; similarly Kitchen (n. 130), 46. For a short chronology cf. E. Hornung (“Lang oder Kurz?” in: \textit{High, Middle, Low I}, 36; 1756–1539 BC, with Dyn. 15 down to 1521. Dodson (n. 3, 50–51) also concludes that a maximum chronology is not necessary, but is willing lower the beginning of the NK to 1500 BC.
II. 8 THE NEW KINGDOM

Erik Hornung

For some time there has been a consensus about the relative chronology of the New Kingdom. Since most reign lengths are well documented, they are not problematic. Nor does the sequence of kings pose difficulties—except for Akhenaten’s immediate successors (who are not mentioned in the cultic lists). However, the issue of coregencies for Thutmose III/Amenhotep II and Amenhotep III/Akhenaten continues to stimulate debate, as does the exact relationship between Amenmesses and Sety II, although otherwise dates important for relative chronology are particularly abundant for the Ramesside Period, leaving very little “empty space”.

This positive situation is enhanced by the fact that regnal years were counted from a king’s accession and appear in the dates of documents which allows precise calendar dates to be suggested for some reigns, the necessary first step leading to a “day-exact chronology” (Depuydt), as is in fact possible in the Late Period. The identification of the exact day of accession or the establishment of very precise possible limits allows additional checks through the months offered by Manetho via Josephus. A few problematic issues remain, especially the length of Haremhab’s reign which has been estimated at between 13 and 27 years. In this particular case, additional criteria, such as the number of monuments or the sequence of officials cannot solve the problem.

Nor do we have Haremhab’s mummy which could have provided a potential check based on his estimated age at death. But in fact, age estimates for royal mummies have not generally yielded satisfactory results. As Kitchen noted in his review of the basic work by Harris & Wente, their analyses offers an over-abundance of comparatively very young kings.¹ The cases of Thutmose III and Ramesses II are particularly revealing. The estimates provided by Wente and Harris for the ages of the unequivocally identified mummies of these kings (40 and 55 years, respectively) are glaringly at odds with the well-documented

¹ Harris & Wente, Atlas.
long reigns of both rulers (53 and 66 years). “Something somewhere is badly wrong”, as Kitchen remarked. In other cases, as with Amenhotep III, the identification of the mummy itself is not beyond doubt, which adds to the uncertainty.

The totals which the Manethonian sources cite include part of Dyn. 19 and thus provide only a limited control. For the period from ‘Ahmose to Merneptah, Eusebius and the Old Chronicle give 348 years while Africanus has 263 years. The tally resulting from the following list amounts to a minimum of 307 years and a maximum of 335 years for the same time span, effectively excluding Africanus’ total.

**Dyn. 18**


Josephus gives ‘Ahmose a reign of 25 years, 4 months; Eusebius rounds this off to 25 years. (The figure is missing in Africanus.) The autobiography of an anonymous Viceroy of Nubia covers the period from ‘Ahmose to Thutmose II (*Urk. IV* 39–41), and thus a maximum of 33 (21 + 12) years between the two rulers. For ‘Ahmose, the minimum reign length should be 21 years and the maximum 25 full years. His mummy (CG 61057) was estimated to be that of a man 25–30 years old (Harris & Wente, *Atlas*, 202), but a general uncertainty prohibits drawing any conclusions.

The precise date of the defeat of the Hyksos and thus the end of Dyn. 15 must lie in ‘Ahmose’s second decade. “Year 11” in the Rhind Mathematical Papyrus should probably be assigned to the last Hyksos ruler Khamudi (A.-F. el-Sabbahy, *GM* 133, 1993, 97–99, cf. above Schneider, Chapter II 7), but Kitchen still maintains that the date

---

belongs to ‘Ahmose (in SCIEM, 2000, 45). Since P. Rhind refers to the conquests of Heliopolis and Sile, the capture of Avaris could follow somewhat later.

*Amenhotep I* For the accession, W. Helck (in: *Fs S. Schott*, Wiesbaden 1968, 71–72) assumed that the festival dates and the months in Josephus indicated 29–30/I/ Akhet, as opposed to D. B. Redford (*JNES* 25, 1966, 115–116) who used the same festival dates to argue for 11/III/ Shemu while Krauss (*Sothis*, 115) considers the actual date of P. Ebers, 9/III/ Shemu, to be the accession date, as do U. Luft (*GM* 92, 1986, 69–77) and Beckerath (*Chronologie NR*, 110). G. Vittmann believes the title “Royal Mother” borne by ‘Ahmes Nefertari in the Turah inscription of year 22 (*Urk. IV* 25,4) supports a coregency; but he also stresses its chronological irrelevance, since Amenhotep I counted his regnal years from the death of his father (“Was there a coregency of Ahmose with Amenophis I?”, *JEA* 60, 1974, 250–251).


Josephus assigns ‘Ahmose 20 years 7 months; the other Manethonian sources round this up to 21 years, which accords well with the 21 years that the “astronomer” Amenemhat spent (*ḥnḥ*) under Amenhotep I (L. Borchardt, *Altägyptische Zeitmessung*, Berlin & Leipzig 1920, pl. 18). Wente & Van Siclen argue that this refers only to sole rule and add 6 years coregency with ‘Ahmose, but even this would not produce the 30 years necessary for a “real” *sed*-festival which they presume (“Chronology”, 225). The accession date of Thutmose I means fixes the death date of ‘Ahmose on 20/III/ Peret.

*Thutmose I* The accession on 21/III/ Peret is certain (*Urk. IV* 81,4). Further dates are 15/II/ Akhet year 2 (Tombos: *Urk. IV* 82,9), 22/I/ Shemu year 3 return from Nubia (*Urk. IV* 88,11; 89,6/16), year 4 on

---

3 On the problems of the Ebers date, see below Chapter III. 10.
a naos from Giza (Urk. IV 91,9; perhaps posthumous or modern: R. Krauss, Ä & L 3, 1992, 86), and year 8/9 on a block from Karnak (A. Mariette, Karnak, Leipzig 1875, pl. 32.f), with doubtful attribution (see Wente & Van Siclen, “Chronology”, 225–226, and R. Krauss, Ä & L 3, 1992, 86–87 with fig. 3). Perhaps the “11 years” on the stela of Nebwawy (Urk. IV 208,16) also refer to him, although D. B. Redford (JNES 25, 1966, 118–119) prefers Thutmose II.

With an estimated age of 18–22 years, the mummy (CG 61065) seems to be extremely young (Harris & Wente, Atlas, 202) for a reign of 12 years 9 months, according to Josephus.

Thutmose II Following Gardiner, Redford accepts 8/II/ Akhet (JNES 25, 1966, 117) as the accession date, whereas Beckerath (Chronologie NR, 117) assumes that it took place in III/IV Akhet, on account of the months assigned to his predecessor by Josephus. The only certain date is 9/II/ Akhet of year 1 (Aswan: Urk. IV 137, 9). A short reign is supported by the small number of scarabs (105 examples collected by B. Jaeger for Thutmoses II as opposed to 292 for Thutmoses I) and gaps in the succession of officials, e.g. the stewards of Karnak, as well as the lack of a mortuary temple (signalled by L. Gabolde, “La chronologie du règne de Thoutmosis II”, SAK 14, 1987, 61–81). However, Beckerath (SAK 17, 1990, 65–74; Chronologie NR, 121), W. Barta (JEOL 26, 1980, 33–34) and Wente & Van Siclen, “Chronologie”, 226–227) have argued for a 13-year reign on the bases of the age of his children at the end of the reign, the Ebers date, and the sed-festival of Hatshepsut, which is capable of different interpretations.

The “Year 18” which often appears in this context does not belong to Thutmose II but rather to Amenhotep II, according to L. Gabolde (SAK 14, 1987, 61–81), or to Maatkare Hatshepsut, according to Beckerath (SAK 17, 1990, 66, cf. R. Krauss, Ä & L 3, 1992, 86 with n. 3). The identification of the mummy (CG 61066) is uncertain and thus its age estimate of 25–30 years is not relevant. Manetho assigned “Chebron”, who is generally identified as Thutmose II, 13 years, but this could easily be an extension of 10 years; 3 years fit the sources, but they are

---

4 Cf. Ä&L 3 (1992), 88.
no more than a possibility. At present, we can assume perhaps 2 to 4 years for the reign of this king.

**Hatshepsut** When Hatshepsut seized power continues to be debated. The oracle of 29/II/ Peret year 2, initially postulated by Schott, is not sufficiently explicit (cf. Ch. Cannuyer, in: *Studies Lichtheim* I, 109–115). The queen counted her own years from her coregent’s accession, so that Thutmose III’s accession date is taken for hers, and confirmed through *Urk*. IV 367,3–5 on the creation of her obelisks in 7 months, from 1/II/ Peret year 15 to 30/IV/ Shemu year 16.

The first certain date is year 9 for the Punt expedition (*Urk*. IV 349,10). 12/III/ Peret year 12 in West Tangur (Hintze & Reineke, *Felsinschriften*, 172, No. 562) is linked to both kings, as is year 16 in Wadi Maghara (*Urk*. IV 393,15), as well as an inscription of the overseer of works Nakht in year 20$^6$ and a graffito at Saqqara of 2/III/ Peret year 20 (*Step Pyramid* I, 80, F). An inscription of 30/I/ Akhet year 17 in Karnak (*Urk*. IV 376,13) names Hatshepsut alone, and another of year 20 in Nubia (*Urk*. IV 1375,3) only Thutmose III. An ostracon of IV Peret year 20 from Deir el-Bahri should probably be assigned to Hatshepsut (W. C. Hayes, *JEA* 46, 1960, 38).

**Thutmose III** His accession occurred with certainty on 4/I/ Shemu (*Urk*. IV 180, 15–16). The earliest document thereafter is a graffito at Saqqara (*Step Pyramid* I, 80, D) which mentions a royal sojourn at Thebes for 5/IV/ Akhet of year 1. His sole rule could have begun on 10/II/ Peret year 22, recorded on a stela from Armant (*Urk*. IV 1244,14). Josephus gives Hatshepsut a reign of 21 years 9 months, which would cover her joint reign with Thutmose III. According to *Urk*. IV 895,16–17, Thutmose III died on 30/III/ Peret of his year 54. Before his sole rule, we have precise dates for a renewal of offerings in the Semna Temple on 8/II/ Shemu year 2 (*Urk*. IV 193,13), for the inauguration of the Vezier Useramun on 1/I/ Akhet year 5 (*Urk*. IV 1384,3), a mention of 26/II/ Akhet year 7 in the Akhmenu at Karnak (*Urk*. IV 1256,8), a renewal of offerings in Karnak on 27/I/ Shemu year 15 (*Urk*. IV 172,15); year 15 (without a royal name) is mentioned in the autobiography of Iamunedjeh (*Urk*. 940,5), year 16 in a rock inscrip-

---

$^6$ *Urk*. IV 1377,3.
tion at Abusir (Hintze & Reineke, *Felsinschriften*, 38 No. 64), and 16/IV/ Shemu year 18 at Shalfak (ibidem, 90 No. 365).

The stela of Senimes bears the date 25/III/ Peret year 21 (*Urk*. IV 1066,10). 25/IV/ Peret year 22 appears in the annals as the beginning of the first campaign (*Urk*. IV 647,12); the same year 22 also occurs in a reference to the restoration of a statue (*Urk*. IV 605,17). Dates from the Megiddo campaign include year 23, 4/I Shemu for arrival at Gaza (*Urk*. IV 648,9) and 16/I/ Shemu for the council of war at Yehem (IV 649,3ff). Year 23 is also documented from the temple in Wadi Halfa (IV 806,11), and the Akhmenu at Karnak records 2/I/ Shemu of a “year after 23” (IV 1252, 11, cf. A. H. Gardiner, *JEAI* 38, 1952, 9). On 30/II/ Peret year 24 a foundation ceremony in Karnak is mentioned (*Urk*. IV 836,2), and for year 24 also a list of tributes (IV 671,6). Year 25 occurs in the Botanical Garden in Karnak (IV 777,2) and on a stela at Serabit el-Khadim, Sinai (IV 886,5), year 27 on the statue of Sabastet (IV 1369,4), year 28 in the tomb TT 82 (IV 1043,15), year 29 in the annals for the fifth campaign (IV 685,3), and year 30 for the sixth campaign (IV 689,3).

3/I/ Shemu year 31 is mentioned in the list of booty for the seventh campaign (*Urk*. IV 690,14). An inscription of Sennefer at el-Bersheh (*Urk*. IV 597,12) cites 12/IV/ Shemu year 33 in relation to the sed-festival (a parallel inscription in Krakow gives 4/IV/ Shemu); year 33 is documented from the annals for the eighth campaign (*Urk*. IV 696,15), year 34 for the ninth campaign (*Urk*. IV 703,16), and year 35 for the tenth campaign (*Urk*. IV 709,15); year [38] can be restored for the thirteenth campaign (*Urk*. IV 716,12); year 39 for the fourteenth (*Urk*. IV 721,9) is also known from a graffito at Saqqara (13/III/?: *Step Pyramid I*, 80, E), and year 40 from a list of tribute (*Urk*. IV 668,4).

22/I/ Akhet year 42 is documented with the restoration of a statue in Karnak (*Urk*. IV 606,6), year 42 at the end of the annals (IV 734,14); 2/II/ Peret year 43 is known from an ostracon from the west bank of Thebes (IV 1374,8), and year 45 from the dedication for a Mnevis-bull (IV 1373,2); 10/III/ Akhet year 47 is the date of the Gebel Barkal stela (IV 1228,6), year 47 of the Mnevis-bull stela Cairo *JdE* 65830 (M. Moursi, *SAK* 14, 1987, 233–235), and of the stela Berlin 1634 concerning an enclosure wall in the temple of Heliopolis (*Urk*. IV 832,12); 22/I/ Shemu year 50 is from a rock inscription at Sehel (*Urk*. IV 814,10; cf. also J. Leclant & G. Clerc, *Or* 61, 1992, 299). 14/II/Shemu year 51 is the date of a rock inscription at Ellesia (*Urk*. IV 811,10), and 23/III/ Peret year 53 is found on a scribal palette in Hanover (W. Helck, *MDAIK* 48, 1992, 41–44).
The reign length which Josephus associated with Amenhotep II is 30 years 10 months (reduced by ten years by Theophilus), and this could be identified as the sole rule of Thutmos III, if one assumes a coregency with his son, but might actually be Amenhotep III, if his reign length be reduced by ten years.

Amenhotep II  The accession date (or the date when he was named coregent) was 1/IV/ Akhet (Urk. 1343,10). According to Bierbrier (Or 49, 1980, 108), who argues against a coregency, this is in error for 1/IV/ Peret. Many authors side with Redford (JEA 51, 1965, 107–122) and Parker (in Studies in Honor of John A. Wilson, Chicago 1969, 75–82), in favor of a coregency lasting 2 years 4 months. Despite P. Der Manuelian’s lengthy discussion in his Studies in the Reign of Amenophis II (Hildesheim 1987), 19–40, the matter remains unresolved, cf. R. Krauss, OLZ 90, 1995, 241–242.

The earliest date is 15/III/ Shemu year 3 (Amada stela: Urk. IV 1289, 1) which, in the event of a coregency, might mark the beginning of sole rule. To year 4 belong an inscription from the Turah quarries (IV 1448,4), and an addition to the duplicate of the Amada stela in Cairo (IV 1299,2), as well as the 10/I/ Peret graffito at Saqqara (Step Pyramid I, 80, G). The years 5, 6, 7 and 9 are documented by several dates on stelae from Memphis and Karnak (Urk. IV 1301–1314), but there follows a gap until at least year 17 (uncertain: L. Habachi, Kemi 18, 1968, 55 with fig. 5 on the graffito of Nakht in Aswan) or even until 1/IV/ Akhet year 23, the date of the stela of the Viceroy Usersatet from Semna, in Boston (Urk. IV 1343,10).

A jar label from the mortuary temple names year 26 (Ur. IV 1365,18–20), which suits the 25 years 10 months of Josephus, but unfortunately, it is not certain that this figure belongs to Amenhotep II, although it makes no sense for Thutmos III either. No available information suggests a longer reign. Only the upper limit for the estimated age of the mummy (CG 61069; Harris & Wente, Atlas, 202) at 35–45 years can be reconciled with the historical data.

Thutmose IV  There is no basis for determining the date of his accession, other than Josephus’ figure of 8 months which suggests the end of II or beginning of III Akhet. On this assumption the date of the sphinx stela, 19/III/ Akhet year 1 (Urk. 1540,2) is plausibly the earliest of the reign. Somewhat later in the first year would be 7/II/ Shemu from a stela in Luxor (El Sayed Higazy & B. M. Bryan, “A New Stela of Thutmose IV from the Luxor Temple”, VA 2, 1986, 93–100). Bryan
provides a list of documented years in the reign (The Reign of Thutmose IV, Baltimore & London 1991, 5–9).

An inscription on Sinai (Urk IV 1634,9) is dated to year 4, others to years 5 and 7 (IV 1564). A stela on the art market, probably from Medamud, names 10/I/ Shemu year 5 (R. G. Bigler & B. Geiger, “Eine Schenkungsstele Thutmosis’ IV.”, ΖÄS 121, 1994, 11–17), two Theban tomb inscriptions (LD Text III, 273 and Urk. IV 1618,5) year 6; year 7 (to be corrected to 8) appears on a stela from the island of Konosso (IV 1555–1556). The highest date is 2/III/ Peret year 8 on the Konosso stela (IV 1545,6), when the king is informed about a Nubian rebellion.

Josephus gives “Thmosis” 9 years 8 months. The other Manethonian sources round down to 9 years and the Book of Sothis has an inflated 39 years. Years 9–10, like years 2 and 3, are not documented in contemporaneous sources. This seems acceptable, whereas a longer reign results in difficulties, and certainly the extreme lengthening proposed by Wente & Van Siclen on the basis of their ideas about sed-festivals is precluded. The age at death of his mummy (CG 61073) was estimated at 30–40 years (Harris & Wente, Atlas, 202; cf. Bryan, Reign, 9–13). According to the inscription on the Lateran obelisk (Urk. IV 1550,5), it lay “on its side for 35 years” before being erected, which would include the entire reign of Amenhotep II and an unknown number of the years of Thutmose III and IV.

**Amenhotep III** Based on the date of the first sed-festival, Helck (Manetho, 67) argued for an accession on 3/III/ Shemu. An inscription from III Shemu year 1 was found in el-Bersheh (Urk. IV 1677–1678); in year 2 the quarries at Turah were opened (Urk. IV 1681,2) and the commemorative scarab of the wild bull hunt was issued (Urk. IV 1739,1). A graffito in the royal tomb WV 22, at the passage into the antechamber, is dated to 7/III/ Akhet year 3 (J. Kondo, in: R. H. Wilkinson (ed.), Valley of the Sun Kings, Tucson 1995, 29–30, fig. 3); a wine jar label from Deir el-Medina also mentions year 3 (Valbelle, Ouvriers, 23). Several dates in year 5 are linked to the Nubian campaign: 24/II/ Akhet on the island of Sai (Urk. IV 1595,11), 2/III/ Akhet near Aswan (Urk. IV 1665,15), I Shemu at Buhen (Urk. IV 1758,17) and a stela at Konosso on the return from Kush (Urk. IV 1662,7). The lion-hunt commemorative scarab dates to year 10 (Urk. IV 1740,12), as does the scarab commemorating the wedding with Gilukhepa (Urk. IV 1738,6), and a graffito of 13/III/ Shemu at Saqqara (Step Pyramid I, 81, H).
The second decade of the reign is poorly documented. The series of commemorative scarabs ends with that relating to the excavation of a lake for Queen Teye, dated 1–16/III/ Akhet in year 11 (Urk. IV 1737,8). Labels on wine jars from Deir el-Medina document years 14, 17 and 19 (Valbelle, *Ouvriers*, 23); a papyrus fragment in Turin mentions IV Peret year 14 (GLR II 310, XI). For II Akhet year 20 the statue of Nebunefer in Brussels records a royal visit to Memphis (Urk. IV 1885,10), and 2/I/ Peret (without royal name) is documented in an historical inscription from the mortuary temple of Amenhotep-son-of-Hapu (A. Varille, *Inscriptions concernant l’architecte Amenhotep fils de Hapou*, Cairo 1968, 96–97).

The third decade is likewise sparsely documented. A jar-label from Amarna of year 21 should belong to this reign (JEA 67, 1981, 2), as should the dates of 20/III/ Shemu year 27 of P. Berlin 9784 (A. H. Gardiner, ZÄS 43, 1906, 28–35) and O. Cairo CG 25242 of 20/IV/ Akhet year 29. Many dates are associated with the first *sed*-festival in year 30, beginning on 27/II/ Shemu (Kheruef: Urk. IV 1867,2) and extending through III Shemu (Urk. IV 1869,2; 1837,9); these are supplemented with numerous labels from Malqata, some from year 29, but generally mentioning year 30 and the first *sed*-festival (W. C. Hayes, JNES 10, 1951, 35–56, 82–112, 156–183, 231–242, and additional labels in M. A. Leahy, *Excavations at Malkata and the Birket Habu 1971–1974. The Inscriptions*, Warminster 1978).

Further deliveries at Malqata are dated to year 31, along with the hieratic stela BM 138 with the decree for Amenhotep-son-of-Hapu (6/IV/ Akhet: Varille, *Inscriptions*, 67–85; D. Wildung, *Imhotep und Amenhotep*, Munich & Berlin 1977, § 182). A contract from Gurob is dated 5/I/ Akhet year 33 (P. Gurob II,1: A. H. Gardiner, ZÄS 43, 1906, 35–37), and the second *sed*-festival of year 34 is documented with numerous labels from Malqata (Hayes, in JNES 10, 1951). 1/I/ Shemu year 35 is the date of two stelae at Silsileh (Urk. IV 1920,3; 1678,8); the third *sed*-festival of year 36 is documented in the tomb of Kheruef (Urk. IV 1860,2–7), and 9/II/ Peret of year 36 on a Sinai stela (Urk. IV 1891,4). Labels from Molkata mention year 37 for the third *sed*-festival (Urk. IV 1954,12), stretching through 1/III/ Shemu of year 38 (Hayes, JNES 10, 1951, fig. 11, no. 142). So at least 37, and perhaps 38 full years should be assumed for Amenhotep III; Manetho’s copyists give 38 years 7 months, as well as 36 and 37 years (Helck, *Manetho*, 67).

A long coregency with Akhenaten has been posited time and again since 1899 (Petrie, *A History of Egypt II*, London, 208), but it has been
challenged by W. Helck (MIO 2, 1954, 196–209), and many others, most recently by Gabolde, Akhenaton, 62–98, who discusses most of the arguments. Gardiner’s remark years ago (Egypt of the Pharaohs, Oxford 1961, 213) still stands: “the much canvassed co-regency must be an illusion”.

*Amenhotep IV/Akhenaten* Analysis of the sequence of dates on the later boundary stelae at Amarna, Akhenaten’s newly founded capital, places the accession in the time span 1/I Peret—8/I Peret (see W. J. Murnane, “On the Accession Date of Akhenaten”, in Studies in Honor of George R. Hughes, Chicago 1976, 163–167; Murnane & Van Siclen, Stelae, 155; Beckerath, Or 63, 1994, 123; Gabolde, Akhenaton, 14–16).

One of the earliest dates of the reign is the hieratic docket on the Amarna letter EA 27, from 5?/I/ Peret year 2 (Urk. IV 1995,16, cf. W. Fritz, SAK 18, 1991, 207–214). 27/?/Peret year 2 and epagomenal day 4 of year 3 are mentioned in P. Berlin 9784 (Murnane, Texts, 44), 7/II/ Akhet year 4 in P. Berlin 9785 (Murnane, Texts, 46), 11/III/ Akhet year 4 with the expedition of the High Priest May in the Wadi Hammamat (Murnane, Texts, 68), 19/III/ Peret year 5 in the letter of Ipi to the king (Murnane, Texts, 51). The earlier series of boundary stelae is dated 13/IV/ Peret year 5, the later series exactly a year later, with repetition of the oath on 8/I/ Peret year 8 and a colophon of 30/IV/ Akhet year 8 (Murnane & Van Siclen, Stelae, 73–86). There is a reference to “Year 9 of the heretic” in a letter from the reign of Ramesses II (P. Berlin 3040: KRI III 5).

The later years are less well documented in monumental inscriptions.

8/II/ Peret year 12 is mentioned in the tribute scenes in the tombs of Meryre and Huya (Urk. 2003,5; 2006,11); 20/III?/ Akhet year 12 is the date of the Nubian campaign on a stela in Buhen (Murnane, Texts, 101–102); 27/II/ Peret year 14 of a graffito at Saqqara (J. Malek, DE 32, 1995, 105–106). Wine jar labels from the site of Amarna document Akhenaten’s regnal years 4 through 17 (Hornung, Untersuchungen, 90–91; Krauss, MDOG 129, 1997, 227–229), so that he could have died at the earliest during the sealing of the wine jars in year 17 (II Akhet, corresponding to August 22 to September 20 [Julian] in 1336 BC) or just before the sealing in year 18 at the latest. Akhenaten does not seem to have been preserved in the Manethonian tradition. The conventional identification of ΩΡΟΣ (Horos) with Akhenaten is problematic.
**Smenkhkare** and **Ankh(et)kheperure** It is now certain that not only a man ‘Ankhheperure’, but also a woman ‘Ankhetkheprure’ ruled between Akhenaten and Tut’ankhamun. The king is first known as ‘Ankhkheprure’ (throne name) Smenkhkare dšr-bḥmw (personal name), later as ‘Ankhheprure’ mrjj /Neferkheprure/’/Waenre’/and Nefernefruaton mrjj Waenre’. The two names of the queen, i.e. ‘Ankhetkheprure’ mrjj/Neferkheprure’/Waenre’/ and Nefernefruaton šḥt n ḫ.s, are nearly the same as the king’s later set of names and epitheta. The “funerary” epitheton šḥt n ḫ.s (beneficial for her husband) is hers alone and indicates that she succeeded her husband ‘Ankhkheprure’. Her identity remains problematic; Kiya, Nefertiti, and Merytaton have been proposed. Items of her funerary equipment were adapted for Tut‘ankhamun (M. Gabolde, Œgypte Afrique & Orient 33, 2004, 19–26). Josephus lists three rulers named AXENXERRSS < ‘Ankh(et)kheperure’, i.e. two male rulers (one of which might be due to a corruption in the text) and a female, described as a king’s daughter. In its transmitted form the Manethonian tradition ascribes 12 years and some months to either of the kings named Akhenkherres. Possibly the figures reflect an original 2 years and some months. The mummy of King ‘Ankhheprure’ is identifiable as the occupant of KV 55; his age at death was 18–22 years (W. J. Murnane, OLZ 96, 2001, 22).

The wine jar labels from Amarna attest sixteen successive wine vintages during the occupation of the site, 13 corresponding to years 5 through 17 of Akhenaten, whereas 3 vintages correspond to regnal years of his successors. The vintage of Akhenaten’s year 4 occurred in the year before the foundation of the city; wine of year 4 was consumed at the site before the vintage of year 5 became available. Thus altogether seventeen successive vintages are attested at Amarna.

Up to year 13 of Akhenaten the chief vintners held the title hṛj kḥmrw. The title hṛj bṣḥ is attested from year 13 through 17 and its use continued in year 1 and 2 of King ‘Ankhkheprure’. The last vintage that is documented at Amarna dates to a regnal year 1; in that year the vintner’s title hṛj kḥmrw was reintroduced and continued to be used as wine jar labels in the tomb of Tut‘ankhamun show (see below). Regnal year 1 of the last vintage at Amarna could belong either to the queen ‘Ankhetkheprure’ or to Tut‘ankhamun. The only inscription from this period that is dated by a regnal year with a royal name is the graffito in the Theban tomb of Pairy: 10/III/Akhet year 3 of ‘Ankhkheprure’ mrjj /// Nefernefruaton mrjj /// (Urk. IV 2024, 14). The date seems to relate to the king, but the queen is not excluded (Gabolde, Akhenaton,
If the graffito relates to her, then she continued the year count of her husband and the last vintage that is attested at Amarna dates to year 1 of Tut’ankhamun. If the graffito relates to the king, then the queen started a regnal year count of her own; year 1 of the last vintage belongs to her and there would be no dated material of Tut’ankhamun at Amarna.

A regnal year 3 is also attested at Amarna in the labels on vessels for various commodities. Year 3 continues year 1 and 2 of King ‘Ankhkhpeprure’ as labels of year 2 and 3 belonging to a single delivery of olive oil prove (Hornung, Untersuchungen, 88–89). There are only 3 wine jar labels of year 3 which cannot represent a complete vintage, because the yearly mean number of wine jar labels is 50 to 60. The disproportion is explicable if the change from regnal year 2 to 3 occurred during the sealing of the wine jars. Thus King ‘Ankhkhpeprure’ would have counted his reign from a day in ca. II Akhet (Krauss, MDOG 129, 1997, 238), which may have coincided with the occurrence of Akhenaten’s death.

Tut’ankhamun There are no plausible proposals for his accession date, nor by dated inscriptions for his first three years. A graffito at Saqqara is dated 2/IV/ Shemu year 4 (Step Pyramid I, 78); year 4 is also attested on a donation stela (W. Kaiser et al., Ägyptisches Museum Berlin [1967] no. 776); a label on a textile from his tomb cites year 6 (Urk. IV 2062,4); the decree for the Overseer of the Treasury Maya is dated 22/III/ Peret year 8 (Stela Liverpool E. 583: A. A. M. A. Amer, “Tutankhamun’s Decree for the Chief Treasurer Maya”, RdE 36, 1985, 17–20). Wine jar labels from the tomb document years 4, 5, 9 and 10 (J. Cerný, Hieratic Inscriptions from the Tomb of Tut’ankhamun, Oxford 1965, 1–3), but the last could also have been Akhenaten’s (R. Krauss, OLZ 90, 1995, 245–246, and P. Tallet, BIFAO 96, 1996, 369–383).

Analysis of botanical remains from the funeral show that the burial took place in March/April, and thus the death in January, III or IV Peret (R. Krauss, “Nochmals die Bestattungszeit Tutanchamuns”, SAK 23, 1996, 227–254). The age of the mummy was estimated at ca. 18 years (F. Filce Leek, The Human Remains from the Tomb of Tut’ankhamun, Oxford 1972).

Aya The death of Tut’ankhamun in III or IV Peret should date the accession of Aya. A wine jar label from Deir el-Medina mentions Aya’s mortuary temple and a year 2 (KRI VII 65,9), but the date could belong
to Haremhab’s reign. A donation stela of the king is dated to 1/III/ Shemu year 3 (Urk. IV 2109,8), and two others bear the date 1/IV/ Akhet year 4 (Urk. IV 2110,13), the highest date known, which accords well with Josephus’ 4 years 1 month.

**Haremhab**  The accession may have been in II Akhet, provided it was related to the king’s participation in the Opet Festival (Hornung, *Untersuchungen*, 38–39). But the change of year from 26 to 27 in O. IFAO 1254 leads Krauss to conclude that the accession may be placed in the interval between 28/IV/ Peret and 13/I/ Shemu (DE 30, 1994, 73–85). However, it is not certain that these dates should be assigned to Haremhab.

Festival foundations of 22/IV/ Akhet year 1 are known from Karnak (Urk. IV 2132,4); the rewards of Neferhotep in TT 50 (Urk. IV 2177,6) date to year 3; 1/I /Akhet year 6 is attested on a stela from the mortuary temple of Amenhotep III (G. Haeny, BÄBA 11, 1981, 65–70); year 7 is mentioned in O. BM 5624 (IV 2162,10); and Maya’s graffito in the tomb of Thutmose IV is dated in III Akhet year 8 (Urk. IV 2170,15). Helck compiled a number of additional dates from years 1 to 13 (Ä & L 3, 1992, 64), and the highest certain date at present is III Akhet year 13, in a wine jar label from Saqqara (Martin, JEA 65, 1979, 15; cf. Murnane, *Texts*, 107 C 2). Hari (Horemhab, 392) wanted to assign a year 20(?) in El Kab (Capart, ASAE 37, 1937, 10) to Haremhab. Krauss argues that O. IFAO 1254 supports a longer reign (DE 30, 1994, 73–85), and a longer reign is also favored by Beckerath (SAK 6, 1978, 43–49) and van Dijk (GM 148, 1995, 29–34: 15–17 years).

The interpretation of the graffito in the royal mortuary temple referring to the “day of entering of King Haremhab”, dated to 9/IV/ Shemu year 27, is contentious. Beckerath (Tanis und Theben, Glückstadt 1951, 104) argued that this was the date of death (better: burial); the use of the expression *jyt ʿkw n* with the meaning “burial” is occurs in the contemporaneous TT 50 (Hari, *La tombe thébaine du père divin Neferhotep*, Geneva 1985, pl. X), and ʿkw is also used for the burial of the Apis-mothers (Smith, in Lloyd, ed., *Studies J. G. Griffiths*, London 1992, 203–204). Thus it seems legitimate to understand this date as a reference to the burial of Haremhab, which suggests that he died at the end of II Peret. O. IFAO 1254 also points to year 27, and this in turn is compatible, without any emendation, with the year 58 or 59 of the Mes inscription, including the reigns of all the proscribed kings of the Amarna Period.
Dyn. 19

With the exception of the relationship between Sety II and Amenmesses, the royal succession of this dynasty is not a matter of debate, and, excluding some minor details, the lengths of the various reigns are likewise relatively certain. Helck provided a list of the confirmed regnal years from Ramesses I to year 10 of Ramesses II (Ä & L 3, 1992, 64), and Wente & Van Siclen compiled another covering the time span from year 32 of Ramesses II through Ramesses X ("Chronology", 251–261). Kitchen’s index (KRI VIII 70–84), supplemented by Helck, Ostraka, is more comprehensive for Ramesses I through Ramesses XI. However, as many dates are not linked to a royal name, assignment to particular reigns are subject to change. Demarée has supplied an overview of accession dates from Sety I through Ramesses XI (GM 137, 1993, 52).

The surviving portion of Manetho’s list for the later phase of the dynasty is problematic since only Twosre’s ("Thoeris") reign is correct at 7 years, including the coregency with Siptah and her sole rule. Africanus provides a total of 209 years, and Eusebius 194, but both are too high as the actual sum cannot be more than 104 years.

Ramesses I  A possible date for his accession can be deduced using Sety I’s accession date in combination with the months indicated by Josephus (neither of which is certain, however), resulting in III, or possibly IV Peret. On this basis, the only certain date of the reign, 20/II/ Peret year 2 on the stela Louvre C 57 from Buhen (KRI I 2,9), would lie at the end of the second year of the reign. The king may have died at the beginning of his third year, which would allow for two full years. (For dates from his reign see also Krauss, DE 30, 1994, 83, n. 13.) Josephus assigns him 1 year 4 months which Africanus rounds down to one year, allowing for an estimate of one or, alternatively, two years.

Sety I  Utilizing the date of a later processional festival celebrating Sety I (KRI VI 249,7), Helck (CdE 41, 1966, 233–234; SAK 17, 1990, 207–208) and Krauss (OLZ 90, 1995, 246; SAK 24, 1997, 168) propose 24/III/ Shemu (cf. KRI VIII 70) for the accession. Basing his analysis on palace accounts in Memphis, Murnane identified a period between 18/III to 23/IV/ Shemu, and favored the festival date of 2/IV/ Shemu (Serapis 3, 1975–1976, 23–33). Using pRollin 1889 Redford (King-Lists, 113 with n. 46) chooses 23/IV/ Shemu, or the interval between 30/II/ Shemu
and 2/I/ Akhet, which is compatible with the festival date. For Brand (The Monuments of Seti I, Leiden 2000, 302), 24/III/ Shemu is “the most likely solution”, but the date cannot be considered certain.

Analyzing the inscription of Bakenkhons, Bierbrier reckons the length of the reign at 15 years (JEA 58, 1972, 303), and Kitchen (JNES 39, 1980, 170–171; High, Middle or Low I, 3, and III, 153–154) concurs. However, Jansen-Winkeln argues (JNES 52, 1993, 221–225) that the autobiographical details of the high priest’s career do not allow for such extrapolations. Spalinger suspects that 10 years and a fraction is more appropriate, given the data from the campaigns (JARCE 16, 1979, 41 n. 106). The abundance of sources for years 1–11 suggests that Sety I died in year 11; only year 10 is missing (KRI VIII 70), while 13/IV/ Shemu year 11 is known from Gebel Barkal (KRI I 75,8). The limited production of the Aswan quarries which were opened in year 9 (Brand, JARCE 34, 1997, 101–114) favors 11 years, as does the extended sum of 51 regnal years in Africanus (Josephus gives 59). After discussing the sources, Brand favors 11 full years, or perhaps 10 years (Monuments of Seti I, 305–309), and Kitchen now suggests 11–15 years (in SCIEM, 2000, 42–43).

Arguments for a coregency between Sety I and Ramesses II (Murnane, Ancient Egyptian Coregencies, Chicago 1977, 57–87, 183–185) have been criticized by Kitchen (JNES 39, 1980, 169–171), and Brand also comes to a negative conclusion (Monuments of Seti I, 312–332). Regardless, Ramesses II’s regnal year count did not begin under Sety I. Clearly, the kings of the Ramesside period found a way for the designated successor to share in sovereignty other than using a titulary and separate dating system.

Ramesses II Helck suggested 27/III/ Shemu for the accession of Ramesses II (AnBib 12, 1959, 118–120); Krauss (SAK 5, 1977, 146–148), Valbelle (Ouvriers, 167) and Demarée (GM 137, 1993, 52) concur with this date which is that of a regularly documented festival. An alternative suggestion made by Larson and Wente & Van Siclen was countered by Helck (SAK 17, 1990, 205–207). After exhaustive discussion, both Beckerath (Chronologie NR, 68–70) and Brand (Monuments of Sety I, 302–305) agree with Helck and Krauss.

The king certainly ruled for 66 full years (66 years 2 months according to Josephus), and every year of his reign is documented (KRI VIII 70–73), with the highest date being 18/I/ Akhet of year 67 (RAD 30,10), soon followed by 19/II/ Akhet of a year 1 (RAD 30,14). There
is an indication that he died after 29/I/ Akhet (Valbelle, Ouvriers, 176 with n. 4).

Merenptah  O. Cairo CG 25504 shows that the accession occurred between 19/I and 13/II/ Akhet. Peden (“A Note on the Accession Date of Merenptah”, GM 140, 1994, 69) narrows this interval to 3–13/II/ Akhet, on the basis of a Theban graffito from 2/II/ Akhet year 1 (but cf. Krauss, OLZ 90, 1995, 246–247). Other options are 19/I/ Akhet (Demarée, GM 137, 1993, 52, opposed by Kitchen, BiOr 60, 2003, 586) and 5–7/II/ Akhet (Beckerath, GM 191, 2002, 5–6). The highest date is IV/ Shemu year 9 (O. Gardiner 197: KRI IV 159,5). The report of his death reached Deir el Medina on 16/??/ Peret (HO 64,1,1); presumably he died during year 10. 7/IV/ Akhet year 10 is mentioned in P. Sallier I, 3,4 (LEM 79), and KRI IV 160 also assigns two Theban graffiti of 7 and 13/II/ Akhet year 10, announcing the inundation, to the reign of Merenptah. The 19 years 6 months given by Josephus can thus be reduced by a decade. Sety II was his immediate successor, without any intervening rule by Amenmesses (Krauss, SAK 24, 1997, 174–177).

Sety II  Helck calculated that the accession took place between the end of I Peret and the beginning of III Peret (AnBib 12, 1959, 123). He is followed by Janssen (Varia, 101 with n. 21), whereas Krauss posits an interval of 29/II/ Peret through 3/III/ Peret (extended up to 6/III/ Peret by Beckerath, Chronologie NR, 71). For Demarée (GM 137, 1993, 52), it is 29/II/ Peret, announced on 16/??/ Peret in HO 64,1,1. According to O. Cairo CG 25560 (KRI IV 302), the king was in Thebes on 10/II/ Akhet year 1.

The king’s death was reported in Thebes on 19/I/ Peret year 6 (O. Cairo CG 25515: KRI IV 322); O. CG 25516 from 17/I/ Peret is still dated to his reign (KRI IV 328). A graffito above the tomb of Twosre dates his burial to 11/III/ Peret in year 1 (of Siptah; Altenmüller, in Reeves, ed., After Tut’ankhamun, London & New York 1992, 148, fig. 19). The mummy (CG 61037) suggests that Sety II died young.

Amenmesses  Janssen (Varia, 99–109), Krauss (SAK 24, 1997, 161–181) and Beckerath (Chronologie NR, 70–73) have recently discussed the relationship between the reigns of Amenmesses and Sety I. We know from HO 64,1 that the Foreman Neferhotep was absent from work after the accession of Sety II; thus his murder by “the enemy” can only have
taken place later if the enemy be identified with Amenmesses or, rather, his followers. The date of accession can be placed between 27/I/Shemu and 18/III/ Shemu (O. Cairo CG 25783 & 25784: KRI IV 227,6). He was in power in Thebes during years 3 and 4 (perhaps earlier in Nubia), which are unaccounted for in the dates of Sety II, but are followed by a great “clean-up” in Deir el-Medina by Sety II. Treating Amenmesses as a rival king provides the best explanation for the various phases in the decoration of Sety II’s tomb, as pointed out by Dodson (“The Decorative Phases of the Tomb of Sethos II and their Historical Implications”, JEA 85, 1999, 131–142), and also for the interruption of work in the tomb of Twosre (Altenmüller, in After Tut’ankhamun, 141–164, esp. 149, 159). The last date of the rival king is 29/III/ Shemu year 4 (O. Cairo CG 25784, 15—the only ostraca from this year!). Assigning ostraca from Deir el-Medina dated in years 1 and 2 to Amenmesses (so Helck, Ostraka, 97) cannot be justified.

Siptah Helck’s suggestion that O. Cairo CG 25521 allows the accession to be placed between 28/IV/ Akhet and 3/I/ Peret (AnBib 12, 1959, 123–124) presumes a scribal error, but is supported by the year change in P. Greg between 28/IV/ Akhet and 11/I/ Peret (Janssen, Varia, 116, and Beckerath, Chronologie NR, 74). Following Helck (Studies Kakosy, 270), Demarée sets the date as 2/I/ Peret (GM 137, 1993, 52). Given the report of the death of Sety II on 19/I/ Peret (see supra), the accession must have taken place early in I Peret.

The execution of the “Chancellor” Bay was announced on 27/III/ Shemu year 5 (Grandet, BIFAO 100, 2000, 339–342); therefore he cannot have been buried on 22/IV/ Akhet in year 3, as Altenmüller suggested (SAK 23, 1996, 1–9, and GM 171, 1999, 13–18). This date (without year) is better linked to the burial of Siptah by the Vizier Hori (O. Cairo CG 25792: KRI IV 414–415). To year 6 belongs a graffito found in Buhen (KRI IV 365 [2]). Siptah died between 9 and 12/II/ Akhet and was buried on 22/IV/ Akhet year 7, according to Beckerath (Chronologie NR, 74, following Helck, in Studies Kakosy, 270). Alternatively, Krauss (OLZ 90, 1995, 247–248) and Schneider (ZAIS 130, 2003, 144, 146) suggest year 6.

Twosre Work in her tomb began in year 2 of Sety II (W. Helck, ḫĀK 17, 1990, 208–210), but was interrupted for a time (see Amenmesses). After her debut as sole ruler, the queen counted her years as a continuation of the deceased Siptah’s reign.
A graffito in Deir el-Bahri mentions a “visit” of Amun to the mortuary temple of the reigning pharaoh Twosre on 28/II/ Shemu year 7 (Marciniak, Inscriptions, 59–60, No. 3). A date 5/III/ Peret year 8 (O. Deir el-Medina 594: KRI IV 407,16) is assigned by Krauss (SAK 4, 1976, 191, and OLZ 90, 1995, 248 n. 29) to Merenptah’s reign instead of hers. For IV [Peret?] of year 8 on O. Cairo 25293 see Altenmüller, JEA 68, 1982, 114 who suggests that she died in I Shemu year 8, which would correspond to the reign of 7 years recorded by the Manethonian copyists.

Dyn. 20

The ancient compilers who excerpted Manetho’s history did not record any names for this dynasty, simply citing “12” (actually 10) kings who reigned for 135 (Africanus), 172 (Eusebius) or 178 years. Only Africanus’ total could be correct, provided it follows directly on the sum down to Merneptah and so includes the last rulers of Dyn. 19. The actual length of the various reigns is both certain and precise, thanks to an abundance of dated documents. The only significant change resulting from recent scholarship is a shortening of the reign of Ramesses X. Parker assigned him 9 full years based on a presumed lunar date, whereas contemporaneous sources do not justify more than 3 years. Problems were also created by a hypothetical “interregnum” at the inception of the dynasty, but again, our sources preclude such a proposal; there is simply no space available.

Demarée (GM 137, 1993, 49–52) and Helck (Ostraka) have discussed the accession dates, which are in general clearly restricted. Documented regnal years are listed in KRI VIII.

Sethnakhte His accession date is not known, but Beckerath proposes the beginning of II Shemu (Studies Kakosy, 63–67; Chronologie NR, 75–76). Dates are only known from year 2, on 10/II and 24/III/ Shemu, but possibly also (without month) from year 3 on Sinai (Beckerath, Studies Kakosy, 63–67). He probably died on 25/I/ Shemu, at the start of his year 3 (Altenmüller, GM 145, 1995, 29–36). If his year count subsumes the sole rule of Twosre, he will have ruled for only a year; however, the graffiti Deir el-Bahri 3 and 10 are linked to the Festival of the Valley, and imply an interval of 10 years between year 7 of Twosre and year 7 of Ramesses III (Krauss, Sothis, 139), so that Sethnakhte must be assigned some 3 years.
Ramesses III  His accession was on 26/I/ Shemu (Beckerath, *Chronologie NR*, 77, with n. 431). Every year of the reign is documented, except for the first, down through year 32. His death occurred on 14?/III/ Shemu year 32. The burial equipment was transported into the Valley of the Kings on 4/I/ Akhet, and the burial will have taken place on 24/I/ Akhet (O. Deir el-Medina 40: KRI VI 106, see Cerny, ZÄS 72, 1936, 113, and Helck, *Studies Kakosy*, 269). According to information provided by O. Chicago 12073 (Allam, *Ostraka*, No. 40, 73–76) 18 years elapsed between year 17 of Ramesses III and year 3 of Ramesses IV.

Ramesses IV  His accession on 15/III/ Shemu is certain (O. Deir el-Medina 44); word reached the workers at Deir el-Medina on the following day (O. Deir el-Medina 39 and P. Turin 1949 + 1946), as the accession took place in Thebes. For the accession dates of Ramesses IV, V and VI see Janssen, *Varia*, ch. VIII. Dates extend to 23/III/ Akhet year 7 (O. Deir el-Medina 207: KRI VI 149), and the Turin Indictment Papyrus (RAD 80,8–9) indicates that Ramesses IV must have died before the harvest of his year 7, i.e., before May (Gregorian), probably in IV Peret. The estimated age of the mummy (CG 61041) was at least 50 years.

Ramesses V  Beckerath calculated the accession at around 1/IV/ Peret (ZÄS 122, 1995, 98; GM 157, 1997, 7–10); Gutgesell (*Die Datierung der Ostraka und Papyri*, Hildesheim 1983, 227–229), followed by Helck (*Ostraka*, 411), prefers 29/III/ Peret, and Janssen (GM 155, 1996, 62) tries to set the date between 29/IV/ Peret and 7/I/ Shemu, but this remains uncertain. Recently, Beckerath put the accession before I Peret (GM 188, 2002, 16–17), supported by Demarée’s new interpretation of P. Turin 2044.

O. Cairo CG 25247 (without royal name) documents 25/II to 17/IV/ Shemu of year 4; a year 5 is not attested. The accession date of his successor indicates that he will have died between the middle of I Peret and the start of II Peret of his year 4. His mummy (CG 61042) shows him to be the victim of a smallpox epidemic, who was probably just over 30 years of age (Harris & Weeks, *X-raying the Pharaohs*, London 1973, 166–167). Krauss assigns him a reign of 3 years 10 months (OLZ 90, 1995, 249).

Ramesses VI  His accession can be restricted to between 28/I and 11/II Peret (Beckerath, *GM* 79, 1984, 7, based on O. IFAO 1425); arguments for 8/II/ Peret are given by Janssen (*Varia*, 131–138). The
announcement followed on \( ?/II/ \) Peret (\textit{KRI} VI 36 4). The highest date of the reign is 11/II/ Peret year 8 (Janssen, “Year 8 of Ramesses VI Attested”, \textit{GM} 29, 1978, 45–46), and a reign of 7 years 9 months can be deduced from Theban graffito 1860a (Krauss, \textit{OLZ} 90, 1995, 249).

The earlier literature reflects confusion about the sequence (and thus names, numbers, dates and chronology) of the next two kings, but it is now clear that Ramesses VII (Itiamun) preceded Ramesses VIII (Sethherkhepeshef).


\textit{Ramesses VIII}  The accession date has been fixed between 2/I/ Peret and 13/I/ Akhet (Amer, \textit{GM} 49, 1981, 9–12) and, according to Beckerath (in: \textit{Deir el-Medina in the third millenium AD}, Leiden 2000, 4–5), must lie before 13/I/ Akhet. Only year 1 is documented, but the calendar provides a basis for arguing a year 2 if he reigned a full year, as his death must have occurred on 20/I/ Akhet because of the accession date of his successor.

\textit{Ramesses IX}  His accession probably occurred on 21/I/ Akhet (Beckerath, \textit{GM} 79, 1984, 7–8), but in any case on or after 18/I/ Akhet (Beckerath, \textit{ZÄS} 127, 2000, 112; Janssen, \textit{GM} 191, 2002, 59–65). He died in his year 19 with III and IV Akhet documented (Botti, \textit{JEA} 14, 1928, 48–51, without royal name), and Beckerath suggests more precisely the end of I Peret (\textit{ZÄS} 127, 2000, 112).

\textit{Ramesses X}  The accession was between 25 and 27/I/ Peret (Beckerath, \textit{GM} 79, 1984, 8–9, based on Turin Cat. 2075 + fragm. = \textit{KRI} VI 653,
and ZÄS 127, 2000, 112, followed by Valbelle, Ouvriers, 43, n. 3, and Demarée, GM 137, 1993, 50). IV Akhet year 3 is documented in the Giornale, followed by 24/I/ Akhet year 1 (Helck, GM 70, 1984, 32). Krauss allows for a year 4 (GM 70, 1984, 42–43), but a year 8 proposed by Bierbrier (JEA 61, 1975, 251) is quite uncertain, and Parker’s astronomical arguments for 9 full regnal years can be discarded (Krauss, Sothis, 151–154, and Jansen-Winkeln, ZÄS 119, 1992, 32–33).

Ramesses XI According to Helck (SAK 17, 1990, 211–212), his accession date was 27 or 28/IV/ Shemu, but 20/III/ Shemu according to Gardiner (JEA 26, 1940, 23–29) and others (Cannuyer, Studies Lichtheim I, 98–105; Ohlhafer, GM 135, 1993, 59–72; Demarée, GM 137, 1993, 50), but not between 26/III/ Shemu and the 4th epagomenal day (Beckerath, OLZ 85, 1990, 657 n. 1). His year 27 is documented (8?/IV/ Shemu: KRI VI 701,15). The Renaissance (wrm-mswt-) era counted 10 years and thus lasted into his 28th year (25/I/ Shemu year 10 in the letter BM 10326 = LRL no. 9). This means that a 29–year reign as given in the Book of Sôthis is possible. Dates from the Renaissance era are listed by Thijs, GM 173, 1999, 190–191. Years of this era are to be correlated with the regnal years of Ramesses XI and do not accord with calendar years (Ohlhafer, GM 135, 1993, 59–72). Thijs’ proposal that Ramesses IX–XI were contemporary (GM 167, 170, 173; SAK 31, 2003, 289–306) has been countered by Beckerath (ZÄS 127, 2000, 114–116, and GM 181, 2001, 17).
II. 9 RELATIVE CHRONOLOGY OF DYN. 21

Karl Jansen-Winkeln

At the beginning of Dyn. 21 Egypt was split in two, with two centres of power, each ruled individually. UE, whose northern frontier was located in the region of Herakleopolis, was governed by a military commander who, at the same time was HPA of Thebes.¹ In texts and depictions some of these UE regents (Herihor, Pinudjem I and Menkheperre) assume in varying degrees attributes which are reserved for a king. Kings reigned in LE, but at least two of them (Psusennes and Amenemope) occasionally bear the title of “HPA”. Contemporaneous documents of which only a small number survived do not give any direct indication as to the reason for this partition of Egypt.² The only large group of finds are the graves of the kings in Tanis and the collective interments in the Theban necropolis (including replacements and re-interments of older mummies). Among these Theban funeral sites various dated objects can be found, but unfortunately most dates are anonymous and not ascribed to any explicit regent. Of this twofold line of regents, Manetho lists only the kings of LE, namely (1) Smendes, (2) Psusennes [I], (3) Nepherkheres, (4) Amenophthis, (5) Osochor, (6) Psinaches, (7) Psusennes [II]. Contemporary documents contain ample reference of the kings Psusennes (Ps-sbḥ-j-f-m-mt; only in LE), Amenemope (Jmn-m-Jph) and Siamun (Zjn-Jmn) (both in LE and UE). The first two kings can be straightforwardly identified as Manetho’s Psusennes (I) and Amenophthis. A king named Smendes (Ns-bḥ-nb-ddt) is attested by only a few, undated inscriptions, but the history of Wenamun shows clearly that he was a contemporary of Herihor and thus the first king of Dyn. 21. The identification of the remaining four kings, on the other hand, has caused some problems.

The Nepherkheres of Manetho is not attested as the personal name of any king. Two bow caps from the grave goods of Psusennes I dis-

¹ The first two rulers also called themselves Viceroyes of Nubia; the first three had the title Vizier.
² For an attempted explanation, see K. Jansen-Winkeln, Orientalia 70 (2001), 153–182.
play the throne-name and the personal name of Psusennes opposite the throne-name \( Nfr-k3-R^c \) \((hq^i \ W^3st)\) and the personal name \( MrjJmn \ Jmn-m-njswt.\)\(^3\) Obviously the throne-name \( Nfr-k3-R^c\) has been handed down as Nesperkeres by Manetho. The proper name Amenemnisut \((Jmn-m-njswt)\) is attested only a second time on the relief Berlin 23673 from the reign of Shoshenq V, on which a long line of ancestors of the owner is named, sometimes together with the reigning king. On this relief, Amenemnisut is the predecessor of Psusennes I, whereas Manetho names him as the successor. His true position has not yet been identified. The Berlin genealogy was compiled only about 250–300 years after the reign of Amenemnisut and should, therefore, be given greater consideration than Manetho’s frequently garbled tradition. But the fact that Psusennes and Amenemnisut appear together on one funeral object, strengthens the idea that Amenemnisut was the successor of Psusennes and that he donated the object.\(^4\) Nevertheless, Amenemnisut (Nesperkeres) was without question an ephemeral king.

The Osochor of Manetho is attested contemporarily only by one inscription from Karnak, which registers the inauguration of a priest in year 2 of a king with the throne-name \( q-hpr-R^c \ Stp.n-R^c\) (the personal name is missing in a lacuna).\(^5\) E. Young has demonstrated\(^6\) that this king cannot be Psusennes I, as believed in the past, because he always bears the epithet \( Stp.n-Jmn.\) Furthermore, a few lines further down, the text refers to the inauguration of the priest’s son in the year 17 of Siamun. If \( q-hpr-q \ Stp.n-R^c\) really were identical with Psusennes I, then the inaugurations of father and son had to have been almost three generations apart. Therefore this otherwise unknown throne-name from Dyn. 21 may well be that of Manetho’s Osochor. In this case the second inauguration would have taken place only 21 years, or about one generation, later, if Manetho’s 6 years for Osochor be accepted.

Actually, the personal name of the king is mentioned once, but not contemporarily.\(^7\) An inscription (no longer traceable) from the roof of

---

\(^3\) Montet, *Tanis II*, 105; 108, Fig. 44; pl. 72 (No. 413/414).

\(^4\) See also Kitchen, *TIP*, 70–71. An alternative to this could be that the bow was made during a co-regency of the two kings, cf. *TIP*, 70–71 and Beckerath, *Chronologie*, 101. However the reign of Nesperkeres only lasted for a few years, and a co-regency is more likely at the end of a long reign. For the Berlin genealogy see Bochardt, *Mittel*, 96–112; Bl. 2/2a.

\(^5\) No. 3B of the “Annals of the Priests”, see G. Legrain, *RT* 22 (1900), 53; Kruchten, *Annales*, pl. 2; 17.

\(^6\) *JARCE* 2 (1963), 100–101.

\(^7\) Concerning the following see J. Yoyotte, *BSFE* 77–78 (1976/77), 39–54; cf. also Kitchen, *TIP*, § 437.
the temple of Khonsu from year 9 of Takelot III\(^8\) mentions, among the author’s ancestors, a king Osorkon and his mother \(\text{M}^\circ\text{j}t\text{-}m\text{-}w\text{s}\text{h}t\). This Osorkon cannot be identical with one of the kings named Osorkon from Dyns. 22–23, because their mothers had different names.\(^9\) A king’s mother called \(\text{M}^\circ\text{j}t\text{-}m\text{-}w\text{s}\text{h}t\) is known from Dyn. 21; on the stela of \(P^3\text{-}sn\text{-}Hr\) from the Serapeum the grandmother of Shoshenq I is named likewise.\(^10\) The two texts complement each other optimally and indicate the existence of a king Osorkon in Dyn. 21, the uncle of the later Shoshenq I, who can be identified as Manetho’s Oschor. They also match in time: Psusennes II, father-in-law of Osorkon I, is assumed to have been a contemporary of Shoshenq I. Because “Oschor”\(^11\) was the older brother of Shoshenq I’s father, he might well have been the second predecessor of Psusennes II.\(^12\) The identification of Manetho’s Oschor by Young and Yoyotte has gained general acceptance.

Manetho’s last king but one, Psin(n)aches, cannot be found in any Egyptian sources whatever. The only name that could be considered (with some modifications), would be \(P^3\text{-}sb\text{-}\bar{h}^\circ\text{j}\text{-}m\text{-}n\text{wt}\),\(^13\) but that name has already, and rightly so, been identified as Psusennes. On the other hand, contemporary documents reveal a King Siamun (\(\bar{N}^\circ\text{j}r\text{-}R^\circ\text{pr}\text{-}R^\circ\text{stp.n-Jmn}\)) bearing the throne-name \(N\text{tg}\text{-}\text{hpr}\text{-}R^\circ\) as the last but one king of Dyn. 21, who does not appear in Manetho’s history. It is tempting, therefore, to identify Manetho’s Psinaches with Siamun,\(^14\) even though the lengths of their reigns do not match: Manetho’s Psinaches is supposed to have reigned for nine years, Siamun, by contrast, for at least 17 years. A solution would be to amend the number 9 to <1>9. This identification and emendation have become traditional, as the most obvious. Anyway, we should always bear in mind that this identification originates only

\(^8\) *LD*, III, 258c; G. Daressy, *RT* 18 (1896), 51–52.
\(^9\) Nor can Osorkon III and IV be considered, for chronological reasons.
\(^11\) This form of the Egyptian-Libyan word \(W_s(j)rkn\) (“Osorkon”) is attested elsewhere in Manetho.
\(^12\) F. Payraudeau, “Remarques sur l’identité du premier et du dernier Osorkon”, *GM* 178 (2000), 75–80, is of the opinion that two objects of a king ‘\(h\text{-}\text{hpr}\text{-}R^\circ\text{stp.n-Jmn}\) \(\text{M}^\circ j\text{j}\text{-}\text{fnn}\) \(W_s(j)rkn\), which until now have been ascribed to Osorkon IV (whose throne-name is unknown), originally belonged to Oschor. If this is correct, Oschor would have taken turns using the epithets \(\text{stp.n-R^\circ}\) and \(\text{stp.n-fnn}\) in his throne-name.
from the fact that we can neither find a king from the end of Dyn. 21 who is named in contemporaneous documents in Manetho’s work, nor can we find Manetho’s last but one king Psinaches on Egyptian monuments. The remaining two criteria for the identification have not been met: neither name nor length of reign being the same.

The identification of Manetho’s second king called Psusennes with a \((Hr-) P\textsuperscript{3}-sb\textsuperscript{3}-h\textsuperscript{3j}-m-nwt\) is, on the one hand, unequivocal and undisputed. On the other hand, however, there is the question as to whether the last king of Dyn. 21 is identical with the last HP of Thebes who has the same name.\(^{15}\) Actually, the evidence weighs heavily in favour of his being one and the same man, who was first HP and then successor to King Siamun in Tanis, without giving up his Theban office.

The only reference for the HP Psusennes can be found on shrouds and mummy-braces (etc.) from the priests’ mummies in the so-called second Cachette (Bab el-Gusus).\(^{16}\) From 10 references, 8 name him HP, whereas on the other 2\(^{17}\) his name appears in a cartouche. No other titles are mentioned, which for H. Kees meant that he—in contrast to his predecessors—no longer possessed military power.\(^{18}\) But this conclusion was perhaps overly hasty, because the HP Menkheperre, who held the highest offices,\(^{19}\) is referred to on mummy wrappings from the second Cachette as only a HP,\(^ {20}\) his name otherwise appearing in a cartouche;\(^ {21}\) his military titles are not mentioned at all, and in the filiations of his descendants his name is often cited without any titles.\(^ {22}\)

It can be established that the HP Psusennes’ name is sometimes written in a cartouche like the names of Herihor, Pinudjem (I) and Menkheperre, whilst his father and predecessor Pinudjem II never used any royal

---

\(^{15}\) In Kitchen, \textit{TIP} they are distinguished from one another as Psusennes II (≡ the king) and III (≡ the HP).

\(^{16}\) Burials A.17; 43; 48; 58; 65; 66; 125; 132; 133; 148, see G. Daressy, \textit{ASAE} 8 (1907), 23–37.

\(^{17}\) A.58 and 66, see Daresssy (n. 16).

\(^{18}\) H. Kees, \textit{Die Hohenpriester des Amun von Karnak von Herihor bis zum Ende der Äthiopenzeit} (Leiden: PÄ 4, 1964), 79: “In contrast to all of his predecessors in Thebes he did not style himself supreme commander of the UE army.”


\(^{20}\) Burials A.2; 13; 96; 105; 109; 113, see Daresssy (n. 16), 22–31.

\(^{21}\) A.11 and 64, Daresssy (n. 16), 22; 27.

\(^{22}\) A.12; 26; 32; 38; 81 (Daressy [n. 16], 22–28) and elsewhere.
attributes. A graffito from the Temple of Abydos reveals the complete titles of a king $Tjt-hpr-R' Stp.n-R' P3-sb2-hj-(m)-nwt Mrjj-Jmn$, who is simultaneously HPA and supreme military commander. Actually, the elements of the titles of his kingship, his duties as HP and his military titles blend into each other in a peculiar manner, not to be found elsewhere. He is called

$$njswt-hjt \text{ nb } tjw'j Tjt-hpr-R' Stp.n-R' \langle ? \rangle Jmn-R' njswt ntraw$$

$$hm-ntr tj n Jmn-R' njswt ntraw$$

$$z3 R' \text{ nb } hjw$$

$$hjtwj P3-sb2-hj-(m)-nwt Mrjj-Jmn ntj (r)-hst n3 ms'[w n Kmt dlew]$$

$$hm-ntr tj n Jmn-R' njswt ntraw$$

$$jyj hjw ntraw n Kmt$$

$$hjtwj pr-z3 P3-sb2-hj-(m)-nwt Mrjj-Jmn.$$  

The military title, $hjtwj pr-z3 P3-sb2-hj-(m)-nwt ntj (r)-hst n3 ms'[w n Kmt dlew]$, is very informative. It reveals distinctly that this is the HP Psusennes, the successor of Pinudjem II, and not a king who has adopted the additional title of HP (as Psusennes I and Amenemope did). The reason is that this title is only to be found in connection with Theban HP and military commanders, but never in connection with a Tanite king. The throne-name of Psusennes in this graffito also appears with slight variation ($Tjt-hprw-R'$) on a vessel fragment from Abydos. A king bearing almost the same name, $Tjt-hpr-R' Stp.n-R' Mrjj-Jmn Hr-P3-sb2-hj-m-nwt$, can be found outside Abydos on two Theban statues: (1) Cairo CG 42192, on which he is named as an ancestor of his grandson $Mrj'-hpr-R' Stp.n-R' Mrjj-Jmn S[nq (Shoshenq II)];$ (2) the Nile-statue London BM 8 of that particular grandson which also mentions the

25 See GM 99 (1987), 19. No. 8 is to be crossed out of this list, see JEA 81 (1995), 130; instead, the HP $jwlt$ is attested a second time on an altar-stand in Moscow, see S. Hodjash & O. Berlev, *The Egyptian Reliefs and Stelae in the Pushkin Museum of Fine Arts, Moscow* (Leningrad, 1982), 157/161 (No. 105).
daughter of Psusennes and mother of Shoshenq II, MB’t-k3-Rc.\textsuperscript{28} The additional Hr(-P3-sb˘-h˘f˘-m-nwt)\textsuperscript{29} is not a distinctive feature, but appears with reference to one and the same person\textsuperscript{30} as demonstrated by the Decree for Maatkare.\textsuperscript{31} Here the very same Psusennes and father of Maatkare is solely called Mr˘j˘-jm˘n P˘-sb˘-h˘f˘-m-nwt. The obvious conclusion is that all these cartouches refer to the same person.\textsuperscript{32} The graffito from Abydos also demonstrates that he was king and at the same time HP in Thebes; he had clearly not resigned this office.\textsuperscript{33} He was probably buried in Tanis (and later re-buried in the Antechamber of the tomb of Psusennes I).\textsuperscript{34} A limestone-fragment with his name has been found near Tell el-Daba.\textsuperscript{35}

Dodson drew the conclusion that Psusennes did not have a reign of his own at all, but was only an UE ephemeral King next to Shoshenq I,\textsuperscript{36} from the fact that many of his attestations are posthumous and that he is often mentioned together with Shoshenq I.\textsuperscript{37} This is not at all convincing: on CG 42194 and BM 8 he is only mentioned in his grandson’s genealogy, and together with Shoshenq I he only appears in the tomb TT A.18.\textsuperscript{38} By contrast the latter inscription provides

\textsuperscript{28} C. R. Lepsius, Auswahl der wichtigsten Urkunden des Aegyptischen Alterthums (Leipzig, 1842), pl. XV.

\textsuperscript{29} Another reference is an inscription on a bead of unknown provenance, see GLR III, 300 (IV). The ivory stick-handle, which in Gauthier’s opinion also belonged to Psusennes II (GLR III, 302[IV]), more probably belonged to Psusennes I.

\textsuperscript{30} In contrast to Bonhême (n. 24), 60, who inexplicably would like to recognize up to four different persons in Tjt-hpr-Rc (Hr-)P3-sb˘-h˘f˘-m-nwt; cf. also J. Yoyotte, BSFFT 1 (1988), 46(1).

\textsuperscript{31} J. Winand, Cahiers de Karnak XI (2003), 672ff.; 707 (Fig.4), l.3, 5.

\textsuperscript{32} Beckerath’s distinction (GM 130 [1992], 18) between a Tanite king (Hor-) Psusennes with the throne-name Tjt-hprw-Rc Stp.n-Rc and a HP who, in the role of a (mock-) king (on the graffito in Abydos) bore the throne-name Tjt-hprw-Rc Stp.n-Jmn is not correct. The epithet is Stp.n-Rc in this graffito, too. Furthermore he is also called Tjt-hprw-Rc Stp.n-Rc on a vessel fragment from Abydos (n. 26, above) which cannot be connected to any other Psusennes than the one from the graffito.

\textsuperscript{33} It is inexplicable why Beckerath (GM 130, 1992, 18) writes that if the HP Psusennes had inherited the crown from Siamun he would have had to appoint a new HP. A HP’s and a king’s office do not exclude each other in dynasty XXI.

\textsuperscript{34} Cf. Yoyotte (n. 30), 41–53; idem, Tanis, L’or des pharaons. Exhibition-catalogue (Paris, 1987), 136–137.


\textsuperscript{37} The statues Cairo CG 42192; CG 42194 (name destroyed), London BM 8 and the Decree for Maatkare.

\textsuperscript{38} A. Dodson, JEA 79 (1993, 267–268; pl. 28. On Cairo CG 42192, on the other hand, Psusennes does not appear together with Shoshenq I, but with another king called Shoshenq, see above, footnote 27.
weighty evidence that Shoshenq I was Psusennes’s successor: someone is promoted by Psusennes (šnbj-f), and is promoted once again during the reign of Shoshenq (wjm hnty-f). There is no reference that the two kings reigned in parallel. Considering the fact that Psusennes II was buried in Tanis and appears in Manetho’s list of kings, we cannot say that he was only an UE ephemeral king.39

There is thus evidence of the following LE kings in Dyn. 21: (1) Smendes, (2/3) Psusennes/Amenemenisut (Nepherkeres), (4) Amenemope, (5) Osorkon (“the Elder”, Osochor), (6) Siamun (“Psinaches” in Manetho’s work) and (7) Psusennes II (at the same time HP in Thebes). We do not know much about the familial relationships of these kings. There is nothing to be said about the origin of Amenemenisut, Amenemope and Siamun. Smendes I’s wife, Tentamun,40 is mother of Henuttawy, wife of Pinudjem I and mother of Psusennes I.41 Consequently Smendes I would be father-in-law of Pinudjem I and grandfather of his successor(?) Psusennes I. Osochor, being son of Nimlot I and of Mḥjت-m-wsḥt, is uncle of Shoshenq I. Psusennes II is son of HP Pinudjem II and father-in-law of Osorkon I; the latter already concerns the relationship to the kings of Dyn. 22.

Nine UE rulers are known as belonging to Dyn. 21. Eight of them are part of a lineage of fathers and sons:

Payankh

Pinudjem I

Masaharta  Djedkhonsiuëfankh  Menkhepperre

Smendes II  Pinudjem II

Psusennes (II =) III

40 Herself being the daughter of a man without any important titles, called Nebseni.
41 Under the probable circumstance that the King’s Mother who is mentioned on some funerary objects, Henuttawi is identical with Pinudjem’s wife. Kitchen’s postu-
Only Herihor does not belong to this lineage; his position as a predecessor or successor of Payankh is the only one disputed (see below). The order of the others is clear, even though some overlap. There is evidence of the HP (and king) Pinudjem I until a year 15, and of his son Masaharta in the years 16 and 18 following. His son Menkheperre who is clearly younger takes up the duties of the HP in a year 25 and from then holds office for almost five decades. A third son of Pinudjem I, called Djedkhonsiuefankh, is recorded only once as a HP on a coffin which is at present missing; he most probably held office for a very short time between Masaharta and Menkheperre. However, Pinudjem survived his son’s term of office and died in that of Menkheperre (see below). Evidence of Smendes II is, admittedly, somewhat better than that of Djedkhonsiuefankh, but his term of office can only have been very short, either as Menkheperre’s successor or as his “co-regent” (see below). His brother Pinudjem II came next in office, followed by his own son Psusennes, who is probably identical with King Psusennes II (see above). Consequently we have the following order: (1/2) Payankh and Herihor (see below), (3) Pinudjem I, (4) Masaharta, (5) Djedkhonsiuefankh, (6) Menkheperre, (7) Smendes II, (8) Pinudjem II, (9) Psusennes III.

Some of the UE regents are related by blood or marriage to those of LE: Smendes I seems to be the father-in-law of Pinudjem I, Pinudjem himself is Psusennes I’s father (see above). HP Psusennes himself becomes king in Tanis.

Concerning the succession of the first two HP, Herihor was on account of a copying error believed for a long time to be father and predecessor of Payankh. Since this error has been corrected,
the succession has had to be explained by other means. The term of office of both HP or at least part of it can be said to have taken place in the later years of the reign of Ramses XI. Records mention Herihor’s years 5 and 6 (without any explicit relation), and Payankh’s year 7 of the whm-mswt-era and a year 10. At first sight it would be logical if Herihor had held office in the first half of the whm-mswt-era and Payankh in the second. Even so, a series of arguments favour a reverse order:\footnote{\textit{ZÄS} 119 (1992), 22–25.}

1) The form of the titles: We can recognise Payankh’s origin from the rank of officers much more clearly than that of Herihor. He is mostly referred to simply as “The General”, his military titles being much more prominent and detailed than those of Herihor. His titles are in general similar to those of Pinhasi, who was in charge of UE from the beginning of the whm-mswt-era. The titles of Herihor on the other hand are more related to those of the later HP. Furthermore, Payankh’s titles almost always refer to the king (\ldots n pr-\textcircled{5}), as was usual in the Ramesside period, whereas those of Herihor no longer do so. (2) Payankh never assumes any royal titles or attributes, whereas Herihor and the later HP do. (3) Herihor and Pinudjem I are both recorded as builders in Thebes, and Pinudjem directly succeeds Herihor with regard to the decoration of the temple of Khonsu. Payankh on the other hand is not recorded as a builder. A similar situation is to be found regarding the (re-)burials in the Theban necropolis. On shrouds, bandages etc. of these mummies, every single HP of Dyn. 21 is recorded, except Payankh. Thus these burials must have taken place after his term of office. (4) The genealogical information corresponds more to a Payankh-Herihor succession. The order of these HP is still being discussed,\footnote{The following authors do not agree with the thesis published in \textit{ZÄS} 119 naming Herihor as Payankh’s predecessor: A. Niwinski, \textit{BIFAO} 95 (1995), 346–47; J.v. Beckerath, in: D. Kessler & R. Schulz, eds., \textit{Gedenkschrift für Winfried Barta} (Frankfurt: MAU 4, 1995), 49–53; A. Gnirs, \textit{Militär und Gesellschaft} (Heidelberg: SAGA 17, 1996), 199–201; Kitchen, \textit{TIP} 1995, XIV–XIX (A–N). For a response see K. Jansen-Winkeln, \textit{GM} 157 (1997), 49–74. In favour of the succession Payankh—Herihor are A. Egberts (\textit{GM} 160 [1997], 23–25; \textit{ZÄS} 125 [1998], 93–108) and J. Taylor (see above, footnote 42).} but in my opinion the order Payankh-Herihor is the more probable solution. At any rate, this problem has a direct influence on the chronology of the whole dynasty.

Most of the dates preserved from Dyn. 21 are from Thebes, and most do not refer to a specific ruler. Breasted presupposed that all
those dates were related to the LE kings\textsuperscript{48} and in recent times this opinion has found general acceptance. The opinion is supported by some explicit dates which almost always mention the name of a Tanite King: There is a date which is explicitly related to Amenemope,\textsuperscript{49} another one is related to Osochor,\textsuperscript{50} and six are related to Siamun.\textsuperscript{51} Furthermore Amenemope and Siamun are quite well documented in Thebes. On the other hand there is only one date which is explicitly related to a HP.\textsuperscript{52} Under that condition, the following years would be recorded:\textsuperscript{53}

\begin{itemize}
  \item \textit{Whm-mswt-era}: 4; 5; 6; 7; 10
  \item Smendes I: 1; 4(?); 6; 9; 10; 11; 12; 13; 15; 16; 18; 19; 20; 21; 25
  \item Amenennisut: –
  \item Psusennes I: 6; 7; 8; 19; 27,\textsuperscript{54} 30; 40; 48; 49
  \item Amenemope: 1; 3; 5; 10(?)
  \item Osochor: 2
  \item Siamun: 1; 2; 3; 5; 6; 7; 8; 9; 10; 12; 14; 16; 17
  \item Psusennes II: 5; 13(?)
\end{itemize}

The currently recorded dates can be made compatible in this order with Manetho’s lengths of reign as preserved by Africanus. He gives Smendes 26 years, Nepherkheres (Amenennisut) 4, Psusennes 46 (41 according to Eusebius), Amenemope 9, Osochor 6, Psinaches (that means Siamun [?]) 9 and Psusennes (II) 14 (35 according to Eusebius).

At the end of Psusennes I’s reign there was supposedly a co-regency with Amenemope. On condition that this dating system was used, the famous linen-bandage with the inscription “King Amenemope; year 49” can be restored beyond doubt to “[year X under] King Amenemope; year 49 [under King Psusennes; linen made by HP NN . . .]”,

\textsuperscript{48} \textit{BAR} IV, § 604–607.

\textsuperscript{49} Kitchen, \textit{TIP} § 388, no. 54.

\textsuperscript{50} Kitchen, \textit{TIP} § 388, no. 56.

\textsuperscript{51} Kitchen, \textit{TIP} § 389, no. 73; 74; 77; 82 (from LE); 83; 84.

\textsuperscript{52} Kitchen, \textit{TIP} § 387, no. 46. This latter record must be interpreted differently if we adhere to a continuing dating by LE kings, cf. e.g., E. Young, \textit{JARCE} 2 (1963), 102–103, n. 21; Kitchen, \textit{TIP} § 377.

\textsuperscript{53} With reference to the evidence listed in Kitchen, \textit{TIP} § 379–381. Only the underlined dates are connected explicitly with the king.

\textsuperscript{54} A. Dodson & J. J. Janssen, \textit{JEA} 75 (1989), 128, 134.

\textsuperscript{55} This date may also refer to Siamun, cf. Kitchen, \textit{TIP} § 388, no. 55.

\textsuperscript{56} Possibly referring to Shoshenq I, cf. Kitchen, \textit{TIP} § 391, no. 86; 87.
the juxtaposition of the years being evidence of a co-regency.\textsuperscript{57} As a result, Amenemnisut must have been the predecessor of Psusennes, and the only contemporary record of this king would indicate a co-regency Amenemnisut—Psusennes\textsuperscript{58} at the beginning of Psusennes I’s reign. Various suppositions have been made concerning the length of these two (hypothetical) co-regencies,\textsuperscript{59} almost all of them deriving from Manetho’s information: Only 46 of the 49 recorded years were to be taken into consideration.

On the other hand, in the case of Psinaches/Siamun, Manetho has to be emended. Siamun’s attested 17 years mandates the emendation 9 > 19 (\( \theta > \vartheta \)). Altogether Dyn. 21 would have lasted 124 years which is the result of adding the lengths of reign according to Africanus and this emendation. The difference between these 124 years and Manetho’s sum of 130 years (indicated in all versions, regardless of the actual, correct total) might be explained by suggesting that Manetho calculated those years in which there was a co-regency for both rulers.\textsuperscript{60}

According to this hypothesis, the lengths of reign for the UE rulers would be as follows:

- Herihor until year 6 (or 7) of the \( \text{w\textasciitilde}m\text{-mswt} \)-era;
- Payankh from year 6 (or 7) until year 1 of Smendes I at most;
- Pinudjem at the earliest from year 10 of the \( \text{w\textasciitilde}m\text{-mswt} \)-era onward, until year 15 (year 16 at most) of Smendes I in his position as HP, after that at least until year 8 of Psusennes I as king;
- Masaharta from year 16 (15 at the earliest) until year 25 of Smendes I as a HP at the latest;
- Djedkhonsiuankh only for a very brief period between Masaharta and Menkheperre;
- Menkheperre from year 25 of Smendes I until (at least) year 48 of Psusennes I.

Smendes II for a brief period between Menkheperre and Pinudjem II;
- Pinudjem II from year 1 of Amenemope or shortly thereafter;\textsuperscript{61} Psusennes “III” from year 10 of Siamun on.

If, however—which seems probable—Payankh is not the successor but the predecessor of Herihor, this system cannot easily be maintained.

\textsuperscript{57} Kitchen, \textit{TIP} § 29.
\textsuperscript{58} See above, footnote 4 and Kitchen, \textit{TIP} § 56.
\textsuperscript{59} Cf. for example Kitchen, \textit{TIP} § 29, 465 (table I) or Beckerath, \textit{Chronologie}, 101–102.
\textsuperscript{60} Cf. Beckerath, \textit{Chronologie}, 101–102; idem (n. 47), 54–55.
\textsuperscript{61} Kitchen, \textit{TIP} § 388 (51).
The highest recorded date for Herihor is a year 6, 15/III/Peret. This date could only refer to Smendes if Herihor followed Payankh and if the dates refer exclusively to the LE kings. But Pinudjem I was already recorded in year 6, 7/III/Peret (of Smendes after this system). The above given dating-system could only be retained if Herihor’s date was to be read 7/III/Akhet instead of 7/III/Peret (or emended accordingly), but that would be an unhappy solution.

Even so, there is some information for Theban dates of the UE kings. There is a record of a year 48 of HP Menkheperre; moreover, a closer look reveals a complementary distribution of the records concerning the rulers of that time. In the first half of Dyn. 21, HP Herihor, Pinudjem I and Menkheperre have royal attributes and titles to differing extents. On the other hand, the LE kings of that time are virtually not recorded at all in UE: there is a graffito mentioning Smendes and a rock-stela, and nothing for Amenemnisut and Psusennes I, even though the latter reigned for a long time. Subsequently, however, Amenemope and Siamun are well documented in Thebes, and Osocbor at least once, whereas HP Pinudjem II (who held office parallel to them), does not adopt any royal attributes or titles. It is, therefore, likely that the HP who called themselves kings counted their own years of reign whereas during the second half of the dynasty the dates refer to the LE kings. This would mean that the beginning of Amenemope’s reign might have implied a change in the dating-system and concurrently a change in the political structures.

A possible, but very hypothetical explanation would be that a new family or a new branch of the same family gained power in Tanis and

---

62 Kitchen, *TIP* § 379, no. 3
63 Cf. ZA 119, 26; Beckerath (n. 47), 51.
64 Kitchen, *TIP* § 387, no. 46.
65 This does not, of course, apply to Masaharta and Djedkhonsiuefankh since their period is equal to that of Pinudjem I.
66 A. Varille, *Karnak(-Nord)* I (Cairo 1943), 36, Fig. 26, pl. 98 (71); L. A. Christophe. *Karnak-Nord III* (Cairo 1951), 77.
67 G. Daressy, *RT* 10 (1888), 135f. Already in Daressy’s time part of the text was gone; in the meantime everything has been destroyed. The genre of the text (Königsnovelle) normally requires a date, but the structure of the text does not require a date in that part which was already missing in Daressy’s time.
68 P. Brooklyn 16.205 might contain some information with regard to a critical situation in UE, referring to a year 49 of Dyn. 21 as a “bad time” (ḥitw hiñ); concerning the dating of the papyrus to Dyn. 21, see J.v. Beckerath, *GM* 140 (1994), 15–17; Kitchen, *TIP* 3, XXVI (Y).
then successfully laid claim to supremacy over the whole of Egypt. We know that Smendes and Psusennes I were closely related to the UE family of HP (see above). No family relationships whatsoever are known for Amenemope and Siamun, but Osochor, who held office between them, was a son of the Libyan great chief of the Meshwesh, Shoshenq A, and the uncle of the later Shoshenq I. We do not know if this family was in any way related to the descendants of Payankh, although it is possible that Amenemope, Osochor and Siamun all belonged to this family, or to a branch of it. It is also striking that HP Pinudjem II, son of Menkheperre is not only called his son (z3 Mn-hpr-Rc), but also, sometimes even on the same object, the son (= descendant) of King Psusennes (I). Thus it seems to have been important to stress his being part of this half of the royal family. A change of royal family with Amenemope could explain a change within the dating-system.

Assuming that the UE regents Herihor, Pinudjem I and Menkheperre counted their own regnal years, we can draw some conclusions. For the period of the LE kings Smendes I, Amenemnisut and Psusennes I just one single date would have been recorded in Egyptian sources, and even that from later times: Year 19 of a king Psusennes is mentioned in retrospect on a stela from the Dakhla Oasis dated to year five of Shoshenq (I). Under these conditions only the regnal years as given by Manetho could be used as evidence for the dates of these kings—which is precisely what scholars have done.

Uncertainty prevents us from precisely calculating regnal years for the first three UE rulers. Herihor reigned for at least 5 whole years (year 6 is recorded), possibly slightly longer (up to 8 years). In year 25 of Pinudjem, his son Menkheperre was installed as HP, and soon after that a new count of years begins. As a result we have to calculate at

---

69 Daressy (n. 16), 23 (no. 24); 27 (no. 61); 28 (no. 81, no. 82); 31 (no. 113); 32 (no. 119, 120); 36 (no. 139).
70 If the linen-band with the regnal year 49 (cf. above) is not to be associated with Psusennes but rather with Menkheperre, there is no need to propose a co-regency for Psusennes and Amenemope. As a result, the question of whether Amenemnisut was predecessor or successor of Psusennes reappears (see above, footnote 4).
73 In line 7/8 of the Banishment Stela a lower date follows (*RdE* 20, 10–11; 33). The two events described in the text should not lie too far apart from each other.
least 24 years for Pinudjem, at most 25 years. The highest date recorded for Menkheperre is the year 49 and in that year (his last?) Amenemope may have already reigned in Tanis.\textsuperscript{74}

At first sight this seems to be contradicted by the fact that Smendes II, son of Menkheperre would have had to be HP at the latest when Psusennes I died,\textsuperscript{75} because he donated goods for the burial. For this reason he cannot have been Menkheperre’s successor if the reign of Menkheperre overlaps with that of Amenemope and even less so if Amenemnisut was Psusennes’s successor. Niwinski presumed that Smendes II was only HPA in Tanis at that time, later becoming Menkheperre’s successor for a short time.\textsuperscript{76} This is possible, but in my opinion it is more probable that Smendes—like Masaharta previously—held office parallel to his father at the end of his father’s reign, while the counting of regnal years continued to follow Menkheperre’s reign. However that may be, 48 years is the most likely calculation for Menkheperre.\textsuperscript{77}

Consequently, the first three UE rulers could be reckoned to have held office for at least roughly as long as the LE kings, namely 77 years (5 + 24 + 48), possibly 1 or 2 years less, if the overlap between Menkheperre and Amenemope is greater. A slightly longer period seems to be more probable, including some leeway for Herihor, altogether perhaps 80 years, hardly significantly longer. In other words, the dates we have from Manetho’s tradition, 124 years (the sum of the lengths of reign according to Africanus with emendation 9 to 19 for Psina-ches) and 130 years (sum total in all versions), set the limits of what is possible. Most likely is a total of about 126–8 years. If there is a difference in the lengths of the reigns of the HP Herihor, Pinudjem I

\textsuperscript{74} The linen-band with the inscription “[Year X under] King Amenemope; Year 49 [under NN]” (see above) under this circumstance would contain a common date of Amenemope and the HP Menkheperre.

\textsuperscript{75} Cf. Kitchen, \textit{TIP} § 25.

\textsuperscript{76} A. Niwinski, \textit{JARCE} 16 (1979), 59–60; idem, \textit{21st dynasty Coffins from Thebes} (Mainz: Theben 5, 1988), 50–51 (§ 43).

\textsuperscript{77} Less only if the overlap with the era of Amenemope lasted longer. But if the “bad time” for year 49 (footnote 68) is connected with the change of regency to Amenemope, year 49 of Menkheperre could be the same as year 1 of Amenemope.
and Menkheperre and the parallel reigning LE kings (from the reign of Amenemope onwards there is no difference in the two dating-systems anyway) it would only amount to a few years. And we do not know if Smendes and Herihor started their reign at the same time or whether the Manethonian numbers are all correct.78

At the beginning of Dyn. 22 there is a certain fixed point which links Dyn. 21 to absolute chronology, i.e. Shoshenq I’s campaign in Palestine. According to the OT,79 the Egyptian King Shishak besieged Jerusalem in year 5 of Rehabeam, king of Judah. On the Egyptian side, the campaign is attested by a victory scene in Karnak. Year 5 of Rehabeam can be pinned down to about 926/925 BC with the aid of the known lengths of reign of the kings of Israel and Judah and their synchronisms—although there are some inconsistencies—as well as by means of two synchronisms with the Assyrian chronology.80

From Egyptian sources we do not know when Sheshonq’s campaign took place. Construction work on the pylon and the court, on whose exterior walls the scene of triumph is depicted, began in his year 21 (possibly his last year but one), as recorded on a rock-stela.81 The majority opinion is that the construction work and the campaign were connected to each other and that the campaign did not take place very long before construction work started, in year 20 at the earliest. An essential point for the temporal connection between the campaign and the construction work could be that of the whole decoration which was planned in Karnak only this triumphal scene has been completed. So if this campaign really took place in year 20 or 21, Shoshenq’s reign would have begun in 946 or 945 BC. However, we can in no way be certain that the campaign took place immediately before the construction work started.82 There is no reason why it could not have

78 When dating according to the High Priests’ years of office, we nevertheless have to consider the necessity of adding a few (possibly 2–3) years to Herihor’s term of office under Ramesses XI subsequent to Payankh’s term of office. Anyway, Ramesses XI’s absolute length of reign (or the length of the ḫm-mswt-era) is uncertain.
79 Kings I 14,25; II Chronicles 12,2.
80 Cf. Hornung, Untersuchungen, 24–29; Kitchen, TIP § 59; Beckerath, Chronologie 68–70. This fixed point is only valid if we work on the assumption that the information concerning the kings’ lengths of reign in the OT has been taken from reliable sources.
82 Almost unanimous in the literature: presumably supported by the wish for at least one fixed point.
taken place several years earlier.\textsuperscript{83} In that case, the beginning of Shoshenq’s reign would have to be set slightly later, and thus the entire Dyn. 21.

\textsuperscript{83} Even if we could establish that there was a causal relationship between the campaign and the construction work, the work in Thebes could still have been begun long after the campaign. One could argue that the first priority was the enlargement and decoration of the LE temples and that simultaneous work in LE and UE was beyond the capacity of both the labour force and the architects. At least the temple of El-Hibeh in Middle Egypt had a depiction of the triumph, cf. \textit{ASAE} 2 (1901), 85–87; 154–156; H. Ranke, \textit{Koptische Friedhöfe bei Karâra und der Amontempel Scheschonks I. bei el Hibî} (Berlin & Leipzig, 1926), 50–52; pls. 19–21; E. Feucht, \textit{SAK} 9 (1981), 105–117; pl. 2.
II. 10 THE CHRONOLOGY OF THE THIRD INTERMEDIATE PERIOD: DYNS. 22–24

Karl Jansen-Winkeln

The prevailing conditions and patterns of rule during Dyns. 22–23 were basically similar to the state of Egypt during Dyn. 21. UE—with the important centers Thebes and Herakleopolis—was administered by a military governor who was simultaneously the High Priest of Amun; LE was directly governed by the king with residences in Memphis and Tanis (and in Bubastis as well, since Osorkon I). With the aid of their sons, the first kings of Dyn. 22 maintained their rule over the entire country. However, since the reign of Osorkon II at the latest, they gradually lost out to the powers of decentralisation, when (due to a divided inheritance?) clearly defined and separate spheres of power and local potentates appeared, particularly in LE.1 In the same fashion, the separation of UE and LE remains tangible under Libyan rule.2

The most important chronological sources for UE are the records of the Nile levels,3 the annals of the priests at Karnak,4 the “Chronicle of Prince Osorkon”,5 and the statues (and other objects) belonging to dignitaries from certain families which permit detailed and extensive genealogies;6 for LE, we only have the donation stelae7 and the stelae from the Serapeum.8 Altogether, there are relatively few actual dates

---

1 It is not clear whether this regionalisation only came into existence at this time, or whether it existed earlier, i.e., already perhaps in Dyn. 21, but only became clear in the sources at this time (the most important sources are the donation stelae, and these only become abundant from later Dyn. 22, being totally absent in Dyn. 21). It is probable that there were at least incipient developments in this direction, which became more strongly expressed later.
2 In fact, this division led to different cursive scripts used in the administration: the “anormal” hieratic in UE, and “Demotic” in LE.
4 PM II², 108; G. Legrain, RT 22 (1900), 51–63; Kruchten, Annales.
5 PM II², 35–36; Reliefs III, pl. 16–22; Caminos, Chronicle.
6 Cf. TIP, §§ 157–205; Bierbrier, LNK, passim.
7 See Meeks, Donations.
8 See CSSM; PM III², 780ff.
surviving from this period. As a rule—in contrast to the NK\textsuperscript{9}—we lack a continuous series (or even relatively complete chain) of dates for any given sovereign, and thus by no means can we confidently suggest that the highest known date for any reign reflects its actual length. Given this paucity of dates, the chronology of this era is imprecise and uncertain in many respects.

The actual means of dating was presumably the same as that of the NK,\textsuperscript{10} as is suggested by the dates from one Serapeum stela.\textsuperscript{11} These affirm that an apis bull, born in year 28 of Shoshenq III, was introduced on 1/II/Akhet of the same year: if the year began on 1/I/Akhet, the Apis would have been a month old at the most—and this is highly unlikely.\textsuperscript{12} Furthermore, his predecessor was buried in the same year,\textsuperscript{13} and there are generally several months between the burial of the previous Apis and the introduction of the new one.\textsuperscript{14} It follows that the reignal year still began with the accession of the king; unfortunately, there are no surviving accession dates for the TIP.

1. *The Rulers of Unified Egypt of Early Dyn. 22*

According to Manetho, following Africanus, Dyn. 22 consisted of 9 kings from Bubastis who ruled for 120 years: Sesonchis (21 years), Osorthon (15), three others (25), Takelotis (13) and three more (42).\textsuperscript{15} The family tree in the Serapeum stela of Pasenhor from year 37 of Shoshenq V (\textsuperscript{3-\textordmasculine}pr-R)\textsuperscript{16} includes a reference to a King Osorkon who ruled six generations earlier, whose father, grandfather and great-grandfather were kings named Takelot, Osorkon und Shoshenq, while their forefathers were not kings, but rather Libyan princes. The non-royal origins of the earliest named king, Shoshenq, the exact correspondence of the names of the kings with those listed by Manetho for

\textsuperscript{9} Cf. *KRI*, VIII, 70–84.
\textsuperscript{10} Thus also Beckerath, *Chronologie*, 10. It is a priori probable that the MK concept of “predating” was among the anachronisms introduced during Dyns. 25–26.
\textsuperscript{11} Louvre SIM 3697, cf. CSSM, 21–22; pl. VIII (no. 22). R. Krauss drew my attention to the importance of these dates.
\textsuperscript{12} Cf. E. Winter, *Der Apiskult im Alten Ägypten* (Mainz, 1983), 18.
\textsuperscript{13} Stela Louvre SIM 3749, CSSM 19–20; pl. VII (no. 21).
\textsuperscript{15} According to Eusebius only 3 kings in 49 years, namely Sesonchosis (21), Osorthon (15) und Takelothis (13).
\textsuperscript{16} Louvre SIM 2846, cf. CSSM 30–31; pl. X (no. 31).
this dynasty, and the period of time separating Pasenhor (nine generations to year 37 of Shoshenq V) clearly reveal that these were the first kings of Dyn. 22. In addition, the grandparents of this oldest Shoshenq link him to Dyn. 21, as he is the nephew of the third to the last king of that dynasty, Osorkon (Osochor). This gives a sequence of 4 kings, each pair being father and son, for the start of Dyn. 22: Shoshenq I (Hd-hpr-R'), Osorkon I (Shm-hpr-R'), Takelot I (Hd-hpr-R') and Osorkon II (z Bistt Wsr-mst'-R').

Although each king is the son of a former king, this does not necessarily mean that each son immediately followed his father in office. It is entirely possible that other sovereigns can be fitted into the sequence. According to Africanus, Manetho inserts three other kings, and the following are candidates for this:

a) On his own documents, and in the patronymic of his son (a priest of Amun named Osorkon), the HPA, Shoshenq, son of Osorkon I and grandson of Psusennes II is designated as HP and Generalissimo and not as king. Only on the London statue BM 8 does he enclose his name (in the titulary of HP) in a cartouche, adding the epithet mj'-Imn.

b) The statue Cairo CG 41292 from Karnak was re-inscribed by a king Shoshenq with the throne-name Mb'-hpr-R' Stp-n-R', and to the benefit of his “begetter” (mj sw) Psusennes II. It is entirely possible that this is an otherwise completely unknown son of Psusennes II, but it seems more reasonable to assume that this is the (earlier?) high priest and son of Osorkon I, who could easily have designated himself as “begotten” by Psusennes, his grandfather.

18 The throne-names were not listed on the stela of Pasenhor. Assigning the kings with these throne-names to the first kings of the dynasty results from a (i.a.) comparison with the kings appearing in the family tree of the Theban Nakhtefmut family, cf. TIP, § 88. For the throne-name of Takelot I, cf. VA 3 (1987), 253–258; TIP, XXII–XXIII.
20 S. PM II, 289.
21 G. Legrain, Statues et statuettes de rois et de particuliers, III (Cairo, 1914), 1–2; pl. 1; J.v. Beckerath, Orientalia 63 (1994), 84–87; K. Jansen-Winkeln (n. 19), 147–148; pl. XIII.
22 G. Broekman, GM 176 (2000), 39–46, considers Shoshenq Mb'-hpr-R' to be a son of Psusennes II who was able to assert his claims to be the royal successor of his father in Thebes at least, while Shoshenq I was recognized in LE (and dates in Thebes followed his reign).
23 Thus also Beckerath (n. 21), 86; N. Dautzenberg, GM 144 (1995), 21.
24 As jtj and z' can mean “grandfather” and “grandson”.

c) A number of kings were subsequently interred in the antechamber of the tomb of Psusennes I at Tanis, including two anonymous mummies\textsuperscript{25} and a Shoshenq $Hq^2$-hpr-R$^c$ $Stp$-n-R$^c$\textsuperscript{26}, who was presumably already more than 50 years of age\textsuperscript{27} and whose throne-name bore a form reminiscent of early Dyn. 22 (before Osorkon II),\textsuperscript{28} and the same applies to the iconographic details of his shabtis.\textsuperscript{29} The interment also included a pectoral of the great chief of the Ma, Shoshenq A, and a bracelet of Shoshenq I\textsuperscript{30}—and thus the same person before and after the accession. As the individuals interred in the royal tombs often bore objects belonging to their parents,\textsuperscript{31} this king is probably a son of Shoshenq I.\textsuperscript{32} The commonly assumed identification of this king with the (earlier) HP and son of Osorkon I\textsuperscript{33} does not appear to be very probable.

d) A king Shoshenq with the throne-name $Twt$-hpr-R$^c$ is known from the sherd Louvre E.31886 from Abydos,\textsuperscript{34} and apparently also from a fragmentary relief from Tell Basta.\textsuperscript{35} This is evidently a king of the entire country and not a minor UE king or a local ruler. The form of the throne-name implies that he too belongs near the start of Dyn. 22.

\textsuperscript{26} Montet, \textit{Tanis II}, 36–51
\textsuperscript{27} D. E. Derry, \textit{ASAE} 39 (1939), 549–551.
\textsuperscript{28} \textit{TIP}, § 93.
\textsuperscript{30} Montet (n. 26), 43–45 (219; 226/227); fig.13.
\textsuperscript{32} In addition he also bore the ring of a $Dd$-Pth-jw-$f$-nh (Montet [n. 26], 44, fig. 13; 46 [228]), perhaps his brother: a prince und 2nd/3rd Prophet of Amun of this name was interred in the cachette of Deir el-Bahri in year 11 of Shoshenq I (G. Maspero, \textit{Les momies royales de Deir el-Bahari} (Paris 1889), 572–574; \textit{GLR}, III, 284, n.2). He was presumably a son of Shoshenq I.
\textsuperscript{33} \textit{TIP}, §§ 93–94; 452; most recently with new arguments Broekman (n. 29), 27–37. Rather than identifying Shoshenq $Hq^2$-hpr-R$^c$ with the son of Osorkon I and grandson of Psusennes II, and thus being obliged to reckon with yet another new and hitherto unknown son of Psusennes, it appears more reasonable to identify the grandson of Psusennes II with the donor of \textit{CG} 42192 and to identify Schoschenk $Hq^2$-hpr-R$^c$ as a son of Shoshenq I, based upon his grave goods.
\textsuperscript{35} E. Lange, \textit{GM} 203 (2004), 65–72. The arrangement of the cartouches does not allow one to deduce a coregency of $Twt$-hpr-R$^c$ (= Psusennes II) and Shoshenq (I) as Dodson does (\textit{BES} 14 [2000], 9–10). Aside from this, Osorkon I is thus far considered to be the first sovereign of the TIP documented in Bubastis.
The HP Shoshenq (“II”) is presumably identical with Shoshenq *Mehen-\textit{hpR}*, but most certainly did not have an independent reign, but rather was responsible for UE during the reign of his father. Shoshenq *Hq\textit{hpR}* may have ruled briefly after his father, if Shoshenq I was his father, or perhaps after his brother Osorkon I. He could thus have been one of the “three other kings” Manetho places between Osorkon (I) and Takelot (I). The same applies to Shoshenq *Tw\textit{hpR}*. who should most probably be put between Osorkon I and Takelot I. In contrast to his father and his son, not one single royal monument is known for Takelot I; his brothers in UE probably dated according to his reign (cf. below), but they do not name him. This could indicate that his rule was undisputed.

For the first part of Dyn. 22 we would thus have the following kings, and dates:

1. Shoshenq I; documented years 2, 5, 6, 10, 11, 13, 21
2. Osorkon I: regnal years [1]-4, 6, 10, 11, 12, 23, 33
3. Shoshenq *Hq\textit{hpR}*; no dates
4. Shoshenq *Tw\textit{hpR}*; no dates
5. Takelot I: years: 9, dubious 5, 8, 13/14, 14 (cf. below)
6. Osorkon II: years 12, 16, 21, 22, 23, 29(?)

For Shoshenq I, Manetho’s 21 years appear to be possible, and a reign of 35 years is quite probable for Osorkon I. Only a year 9 is certain for Takelot I. The Nile level records nos. 16–21 are generally assigned to his reign: nos. 16 (year 5) and 20–21 (years lost) belong to the HP

---

36 Takelot II cannot be implied, as he was an UE sovereign, cf. below.
37 Cf. also *TIP*, §§ 95; 270.
38 The highest regnal year on the rock stela of Gebel Silsila, cf. *JEA* 38 (1952), pl. XIII.
39 Of these, only the year 10 in lines 2–3 of the “stèle de l’apanage” (*ZIS* 35 [1897], 14) and year 12 of the Nile level record no. 2 (Beckerath [n. 3], 49) are explicitly related to Osorkon. Regnal year 33 is on the mummy wrappings of a burial, which also had a “counterweight” bearing the name and throne-name of Osorkon I, cf. J. E. Quibell, *The Ramesseum* (London 1998), 10–11; pl. XVIII.
40 G. Daressy, *RT* 18 (1896), 52–53, earlier ascribed to Takelot II, cf. now Aston (n. 31), 144; *TIP*, XXIII.
41 Serapeum stela Louvre SIM 3090, s. CSSM, 17; pl. VI (no. 18).
42 Nile level record no. 14, cf. below.
43 Were one to follow Manetho here, we would still be obliged to emend 15 years to 35. Aside from the 33 which should in all probability to assigned to Osorkon I (cf. above), there are further indications of a long reign, cf. *TIP* § 89.
Iuwelot who was still a youth in year 10 of the reign of his father, Osorkon I.44 The year 5 must therefore relate to a successor of Osorkon I.45 The records nos. 17–19 are from the HP Smendes III, doubtless the brother and successor of Iuwelot;46 no. 17 is from year 8, no. 18 from year 13 or 14. A block, presumably from the Serapeum, bears the names of Takelot I and the HP of Memphis, Merenptah;47 Mariette noted that this was found together with a stela from a year 14.48 This might be a stela in Alexandria dated to a year 14 (without a royal name), and originally came from the Serapeum, as the inscription suggests.49 This would thus support Manetho’s 13 (full) years for Takelot. His possible predecessors (see above) have not left many traces and assuredly did not reign for a long period.50 Thus for Takelot and the others, 15 years is a reasonable suggestion.51 One can therefore adopt Kitchen’s suggestion of 21 + 35 + 15 years for the first 3 to 5 kings of Dyn. 22. However, these dates should be viewed as the minimum to which a few more years might be added.

The length of the reign of Osorkon II is a matter of debate, and Manetho cannot aid here. The highest date which can with certainty be assigned to his reign is year 23 (see above), linked to an Apis burial, where his son, the Crown Prince and HP of Memphis, Shoshenq D apparently also took part.52 Shoshenq D will thus have died after that time, but apparently before his father,53 and thus Kitchen assigned Osorkon II 24–25 full years, to allow a margin for these events.54

---

44 Lines 2–3 of the “stèle de l’apanage”, cf. ZÄS 35 (1897), 14.
45 But certainly not to Osorkon II, whose Nile level records take a different form, cf. Broekman (n. 3), 171.
46 These records have exactly the same form as those of Iuwelot and differ from all others, cf. most recently Broekman (n. 3), 164; 170–171.
47 CSSM, 18; pl. VII (no. 19).
48 Mariette’s remarks are, however, rather doubtful, cf. n. 47.
49 G. Daressy, ASAE 5 (1904), 121 [XXIV]. The stela Louvre SIM 2810 (CSSM, 18–19; pl. VII [no. 20]) of a Dd-Pth-jjc.f-‘nh of a year 10 [+ X] (without royal name) dates to a later epoque, cf. A. Leahy, ŚAkk 7 (1979), 149.
50 If there was a conflict over the throne, it is conceivable, that some of them ruled parallel to Takelot.
51 If there really was an Apis burial in year 14 of Takelot, and the Apis buried in year 23 of Osorkon II was the successor of this bull (which is, of course, uncertain) it would favour placing year 14 towards the end of the reign of Takelot, as 26 years are the longest documented life of an Apis bull.
52 Can no longer be verified, cf. TIP, § 81, with n. 77; GM 207 (2005), 76, n. 16.
53 This was generally assumed because he is also designated as Crown Prince (ıp’t wr tpj n hm.f) in his tomb.
54 TIP, § 87.
This logic is no longer tenable since Shoshenq D did in fact outlive his father. In his undisturbed burial was a chain of 8 $W\ddot{b}t$-amuletttes (Cairo JE 86786), and one of them bore the name of Shoshenq III ($Wsr-m\ddot{s}t-R\acute{e} Stp-n-Jmn M\ddot{\text{j}}j-Jmn z\ddot{e} B\ddot{s}t\ddot{t} S\ddot{\text{\textsc{\textacuten}}}$).\textsuperscript{55}

On the other hand, Aston has produced arguments that Osorkon II’s reign was clearly longer than previously assumed, and perhaps even 40–45 years.\textsuperscript{56} Aston’s argument is based on the family trees of two Theban families which reveal that several generations lived in the reign of Osorkon II; other genealogical data likewise allegedly favours a longer reign; furthermore, there would be a whole series of HPA belonging to the reign of Osorkon II, and his three known sons would all have predeceased him. Of these arguments, only the family tree of the Nakhtefmut family\textsuperscript{57} is really reliable, but this actually supports a relatively long reign for Osorkon II. Whether the genealogy of the Nebneteru-family\textsuperscript{58} must also be understood in this sense is more debatable: the statue Cairo CG 42225 was erected after the death of its owner, so that the name of the king and the high priest there could relate to the date of erection and not necessarily hint at the lifetime or term of office of the statue’s owner. The other genealogical data which Aston introduces does favour a long life, but not necessarily a long reign for Osorkon II. As HPA under Osorkon II only his son Nimlot C, his grandson Takelot F\textsuperscript{59} and Harsiese B are documented.\textsuperscript{60} Of the sons of Osorkon II, Harnakht C died as a child, Shoshenq D probably did outlive his father (see above), and thus effectively only Nimlot C predeceased him.\textsuperscript{61} Nevertheless, I consider the basic sense of Aston’s arguments to be correct. There is a Nile level record (no. 14)

\textsuperscript{55} K. Jansen-Winkeln, “Der Prinz und Hohepriester Schoschenk (D)”, GM 207 (2005), 77–78. It is conceivable (although rather improbable) that Osorkon II died immediately after his son, and thus his successor may have been able to arrange for a gift for the burial. In this case, it would be certain that Shoshenq III was the immediate successor of Osorkon II (cf. below).

\textsuperscript{56} Aston (n. 31), 145–148.

\textsuperscript{57} Ibidem, 145.

\textsuperscript{58} Ibidem, 146.

\textsuperscript{59} Presumably the later Takelot II, cf. K. Jansen-Winkeln (n. 19), 138–139; Dautzenberg (n. 23), 24.

\textsuperscript{60} Jansen-Winkeln (n. 19), 135–139.

\textsuperscript{61} It is interesting to note incidentally that this HPA did leave hardly any traces in Thebes, being almost exclusively recorded in the genealogical records of his descendants there, and even there he is consistently designated as HPA and General of Herakleopolis.
from the year 29 of an $Wsr-m3t-R'$, who is most probably Osorkon II and not Shoshenq III or Osorkon III. At the very least, the family tree of the Nakhtefmut-family clearly supports a reign for Osorkon II of more than the 24 or 25 years Kitchen allows him. In addition, it must be recalled that it is precisely from the reign of Osorkon II that we have comparatively numerous monuments, both royal and private: far more than from the eras of Shoshenq I, Osorkon I and Shoshenq III who are otherwise the best documented of the TIP. It is therefore not too bold to suggest a reign of at least 30–40 years for Osorkon II. In this era, it is hardly surprising that we do not have any dates from the final decade of the reign.

The king Harsiese (A) also belongs to the period of Osorkon II: on the stelaphoric statue Cairo CG 42208 we see the complete titulary of Osorkon II, but the statue was dedicated “by the grace” of Harsiese. This Harsiese is known only from UE, and was buried in Thebes. There are no known regnal years relating to him, and dating in his era presumably followed Osorkon II. His reign should probably be assigned to the beginning of the reign of Osorkon II; in any case, it is not chronologically relevant.

The period from Shoshenq I to Osorkon II should have lasted about 100–111 years ($21 + 35 + 15 + 30–40$), and would be ca. $945/40–844/29$.

---

64 Jansen-Winkeln (n. 19), 133–5. He is only documented as king, contrary to the common view, he is not documented as HPA even one single time. Earlier, he was viewed as the son of the HPA Shoshenq (II); but since it became evident that this was based on a mistaken reading (ibidem, 129–132), he has become an orphan. In the necropolis of the TIP at Herakleopolis was the burial of a woman named $T\#-nt-Jmn$, in Tomb 4. According to the inscriptions of the tomb and grave goods (M. Perez-Die/P. Vernus, Excavaciones en Ehnasya el Medina (Madrid 1992), 50–59; 128–132; 156–159; Docs. 21–26), she was $wrt\ hnt\ n\ Hsj±f$, her father was the $hm-ntr\ tpj\ (n)\ Jmn\ mr\ m3t\ htwj\ Ns-hs-nb-Dah$, and her mother was $bst\ hbj$ or $fhy$ (shortened version) and she is designated as $mct\ ntr$. Represented together with $T3-ntr-Jmn$ was a man named Osorkon, who was $wrt\ ?\ n\ <prm>-Shm-hpr-R$. It necessarily follows that the HP Smendes, the father of $T3-ntr-Jmn$, cannot have been Smendes II of Dyn. 21. If this is not an HP Smendes unknown from other sources, the only candidate is Smendes III of Dyn. 22. As his wife is designated a “king’s mother” ($mct\ ntr$ cannot be a sacerdotal title here), Smendes III must have had a son who became king, and who belongs to the generation of Osorkon II. Harsiese is the obvious candidate.
65 However, the lack of dates could simply be the result of the type of documents which are preserved.
66 Jansen-Winkeln (n. 19), 135.
2. Takelot II

Related to the length of the reign of Osorkon II and equally controversial is the question of the identity of his successor; the stela of Pasenhor has nothing to say on the matter. The HP Osorkon (B) who left a long inscription (“The Chronicle of Prince Osorkon”) was a son of Takelot II (throne-name Hd-hpr-R as with Takelot I), his mother was a daughter of the HP Nimlot (C) and a granddaughter of Osorkon II. In the inscription, the donations are at first dated according to the reign of Takelot II (until year 24), and then according to the reign of Shoshenq III (years 22–29), and thus a sequence of Osorkon II—Takelot II—Shoshenq III was deduced.67

D. Aston has dismissed this long established chronology for several reasons:68 (1) Takelot II is only known in UE; (2) he has the epithet ntr hq3 W3st in his throne-name; (3) his consort and children do not reveal any known links to LE either; (4) the genealogical details of his dependents hint that he belonged to the generation of the grandchildren of Osorkon II; (5) in the “Chronicle of Prince Osorkon”, the years 22–29 of Shoshenq III follow years 11–24 of Takelot II: were Takelot the predecessor of Shoshenq III, we would face a lacuna of more than two decades. Aston thus assumes that Takelot was a “Theban” ruler whose realm was restricted to UE, and thus that he ruled parallel to a LE sovereign. This would have major chronological consequences.

K. A. Kitchen has strongly rejected this approach by attempting to disprove or disarm Aston’s arguments:69 Takelot II left relatively few traces in Thebes; other kings who definitely lived in a Delta residence had relations with Thebes; the epithet ntr hq3 W3st was also borne by Shoshenq V (in Tanis); other kings of the TIP, such as Osochor, Psusennes II or Osorkon IV were rarely or not attested in LE, although they actually resided there. On the other hand, he suggests that the scenario leading to this “Theban” Takelot II is historically excluded: the Thebans would hardly have accepted a king in Thebes but rejected

67 TIP, § 86; as noted already in principle by R. Lepsius (Über die XXII. ägyptische Königsdynastie, Berlin 1856, 271–274), who inserted yet another Shoshenq (“II”, our Shoshenq D) between Osorkon II and Takelot II.
68 Aston (n. 31), 140–144.
69 TIP, XXIII–XXIV; JEA 85 (1999), 247; BiOr 53 (2001), 383.
and opposed his son as HP, and they would never have tolerated this HP as the later king Osorkon III. This argumentation is not convincing. Takelot II and his son definitely belonged to a common “party” in the civil war; had Osorkon B been expelled from Thebes, the same would be true of his father. And it is rather doubtful that the opinion of the people (the “Thebans”) would have had any role to play. Kitchen’s replique does not dispose of the really decisive point: Takelot II and his entire family are attested only in UE and not at all in the Delta, and this point cannot be dismissed by references to such ephemeral rulers as Osochor, Psusennes II or Osorkon IV. The period from Osorkon II to Shoshenq III is the best documented of the TIP and both kings are demonstrably present in LE. That anyone else reigned in the same place for a quarter of a century, of whom (and whose dependents) no trace can be found, must be excluded. The genealogical connections of Takelot II and the sequence of years in the “Chronicle of Prince Osorkon” are likewise very clear. In addition, the HP Osorkon B disappears at the very moment (year 39 of Shoshenq III) when an otherwise unknown Osorkon appears as a new king; this is the only sovereign of Dyn. 22 who occasionally uses the title of HP in his royal name, and his mother has the same name as the mother of the HP. It therefore follows that Osorkon B and Osorkon III are the same person, and that also demands that Takelot II must be placed parallel with Shoshenq III. There is thus a whole set of reasons supporting Aston’s assumption, and nothing which contradicts it. Therefore, I consider the point to be certain.

3. The LE Sovereigns of Dyn. 22 to Shoshenq V

This would thus mean that Shoshenq III was the immediate successor of Osorkon II, and there is not the slightest hint of any other hitherto unknown king between them. With Shoshenq III and his successors until Shoshenq V, we stand on firmer ground chronologically. For

---

70 The Paleological Association of Japan, Akoris. Report of the Excavations at Akoris in Middle Egypt 1981–92 (Kyoto, 1995), 301–305; pl. 116; idem, Preliminary Report. Second Season of the Excavations at the Site of Akoris, Egypt 1982 (Kyoto, 1983), 14–15; pl. 11. No other HPA is known from the period before Osorkon III with this name, aside from Osorkon B.

71 Cf. also Aston (n. 31), 144.
Shoshenq III, recorded years include: 3, 5(?), 6, 12, 14, 15, 18(?), 22, 23, 24, 26, 28, 29, 30, 31, 32, 33, 38, and 39.\(^{72}\) An Apis-bull was buried in his year 28, and a stela commemorating the event\(^{73}\) was erected for the great chief of the Ma and HP of Memphis\(^{74}\) ḫḥ-ḫꜣj-fpr-Bṣṭt, who was the grandson (through his mother ḫṣ-Bṣṭt-prt) and at the same time the great-grandson (through his father ṣfr-hkn ḫkrjt) of Osorkon II. The successor of this Apis bull (introduced in the same year, 1/II/Akhet) in turn died in year 2 (II/Peret) of Pami, after reaching the age of 26 years.\(^{75}\) Year 2 of Pami thus lies 26 years after year 28 of Shoshenq III. Were Pami the successor of Shoshenq III, the latter would have had a reign of no less than 52 years. In fact, however, it would appear highly probable that another king Shoshenq with the throne name ḫḥ-hfr-Rḫ should be inserted here,\(^{76}\) who was buried in the tomb of his predecessor. The most important piece of evidence here is a donation stela of year 10 from a King Shoshenq ḫḥ-hfr-Rḫ,\(^{77}\) mentioning a Great Prince of the Libu named Niumateped, and a man apparently bearing the same name and title is documented from year 8 of Shoshenq V.\(^{78}\) If, as would appear reasonable, this is the same person, then a king Shoshenq ḫḥ-hfr-Rḫ should be placed here, who reigned not long before Shoshenq V, but after Shoshenq III. As Shoshenq V probably reigned immediately after or following a very short interval after his father Pami, yet 13 years lay between year 39 of Shoshenq III and year 2 of Pami, for which we have no dates for Shoshenq III, then everything favours placing a 10–13 year reign of this Shoshenq ḫḥ-hfr-Rḫ into this period.\(^{79}\) The precise length of his reign is chronologically not very important since the total for the period between year


\(^{73}\) Louvre SIM 3749, cf. CSSM, 19–20; pl. VII (no. 21).

\(^{74}\) His son ḫṣ-fmj-fjw-(m-fmj-Bṣṭt likewise bears the title of HP of Memphis on this stela.

\(^{75}\) Louvre SIM 3697, CSSM 21–22; pl. VIII (no. 22); cf. also the Stelae Louvre SIM 3736 and 4205, ibidem, 22–24; pl. VIII–IX (nos. 23/24).

\(^{76}\) A. Dodson, GM 137 (1993), 53–58; TIP*\(^5\), XXV–XXVI.

\(^{77}\) Meeks, *Donations*, 666 (22.1.10).

\(^{78}\) While in year 31 of Shoshenq III, yet another great chief by the name ḫmj-Ĵmn-nj-fnw is documented, cf. J. Yoyotte, in: Mélanges Maspero I, Orient ancien 4 (Cairo 1961), 145 (§ 31).

\(^{79}\) Numbered variously in the literature: Ib, IIIa, IV or “quartus”; IIIa would be preferable, as this would eliminate all possible sources of misunderstanding.
28 of Shoshenq III and year 2 of Pami is certain. For this king Pami, the years 2, 4, 5, and 6 are documented; from the structure of the text on his “annals” in Heliopolis, the presence of the years 3 and 7 can be deduced. Were these “annals” to have covered the entire reign of Pami, this would confirm Kitchen’s assessment of 6 full years for the reign. This assumption of a rather short reign for Pami is supported by the paucity of monuments he has left, and further by the fact that the reign of his son was quite long. However, the assumption of a mere 6–7 years is not really certain. His son Shoshenq V followed Pami, probably as his immediate successor: a stela from the Serapeum from year 37 of Shoshenq V bears the name of the same (still living) donor as in year 2 of Pami. It is thus improbable that this long period can be stretched any further. But, it cannot be excluded that another king (e.g., an older son of Pami) may have ruled between Pami and Shoshenq V, but then if at all, only very briefly.

For Shoshenq V, the years 7, 8, 11, 15, 17, 19, 22, 36, 37, and 38 are documented, and the interval between year 28 of Shoshenq III and year 2 of Pami is 26 years long. If 6 full years are assigned to Pami, and Shoshenq V was his immediate successor, the period from Shoshenq III to year 38 of Shoshenq V would be 27/28 + 26 + 4/5 + 37 years, and thus 94–96 years depending upon exactly when that Apis which died under Pami was introduced under Shoshenq III and when it died under Pami. The interval is probably 95 years.

4. The Successors of Shoshenq V

Shoshenq V is not among the rulers named on Piye’s victory stela. He was probably already dead at the time. Appearing on a dedicatory stela

---

82 Cf. ibidem, 42.
83 *TIP*, § 83.
84 Louvre SIM 3441 and 3091, cf. CSSM, 24–25; pl. IX (no. 25); 41; pl. XIII (no. 42), cf. *TIP*, § 84, n. 97.
85 However, the documented lifetime of the Apis-bulls do allow a somewhat longer period between Pami and Shoshenq V. A bull was buried in year 11 of Shoshenq V; between this one and the last known predecessor, buried in year 2 of Pami, are only 15–16 years if Shoshenq V immediately followed Pami.
86 PM III², 787–789.
of his year 36\textsuperscript{87} is Tefnakhte, the Great Chief of the Ma, commander and prince of the Libu, and again on another of year 38, that same Tefnakhte is called “Great Prince of the entire land”\textsuperscript{88} The extension of this prince’s power, which later obliged Piye to intervene, was thus already apparent at this time. It thus follows that the interval between the last years of Shoshenq V and Piye’s campaign was not long. Shoshenq V is documented in Memphis and in diverse areas of the Delta, including Tanis, Bubastis, Buto and Kom Firin. On Piye’s stela, Tefnakhte is lord of Memphis, Buto and Kom Firin; Iuput II rules in Leontopolis,\textsuperscript{89} Osorkon IV in Bubastis and the region of Tanis.\textsuperscript{90} Osorkon IV would thus be spatially and temporally the successor of Shoshenq V, and the contemporary documents do not provide any reason to assign him to another dynasty.\textsuperscript{91}

On the issue of the identity of Shoshenq’s immediate successors, the temporal and spatial position of Manetho’s Dyn. 23 could play a role. If Petubaste I and Osorkon III were UE rulers (cf. below, section 5), then Manetho certainly did not take them into consideration. Thus they could not be those kings whom he assigned to his Dyn. 23 of Tanis (consisting of Petubaste, Osorkon, “Psammus” and “Zet”). Priese\textsuperscript{92} thus suggested that Osorkon IV (rather than III) be assigned to Manetho’s Dyn. 23, A. Leahy has further elaborated on this idea.\textsuperscript{93} Thus, Osorkon IV would be the successor of the ephemeral Petubaste, $Shtp-fb(-n)-R^c$.

\textsuperscript{87} From Buto (former collection Farouk), cf. Yoyotte (n. 78), 153, § 48; Meeks, \textit{Donations}, 670 (22.10.36).

\textsuperscript{88} From Tell Farain (in the storeroom?), cf. S. Sauneron, \textit{BSFE} 24 (1957), 51; 53–54, figs.1–2. The cartouches were left blank, but it unquestionably concerns the year 38 of Shoshenq V, cf. \textit{TIP}, § 84. The king is omitted on the other stela as well, which only has the year.

\textsuperscript{89} A regnal year 21 is documented (J.-L. Chappaz, \textit{Genawa} 30 [1982], 71–81), but neither predecessors nor successors are known and thus he cannot be linked to any dynasty.

\textsuperscript{90} If $R^c-nfr$ is to be understood in this way, cf. Yoyotte (n. 78), 129, n. 2; F. Gomaa, \textit{Die libyschen Fürstentümer des Deltas} (Wiesbaden: Beihete TAVO B, 6, 1974), 132–134. If not, then it means that, astonishingly, Tanis—one of the most prominent cities of the TIP—was not mentioned on the stela of Piye. This could only be explained if the rulers of Tanis declined to submit to the Nubian king.

\textsuperscript{91} Leahy’s interpretation, that “there is nothing to warrant his inclusion in . . . Manetho’s Twenty-second Dynasty” (\textit{Libya}, 189) is thus not entirely convincing. Incidentally, Osorkon IV is only documented with certainty on the stela of Piye: the other references could also be assigned to Oschor of Dyn. 21, cf. Leahy, \textit{Libya}, 189; F. Payraudeau, \textit{GM} 178 (2000), 75–80.

\textsuperscript{92} \textit{ZAS} 98 (1972), 20, n. 23.

\textsuperscript{93} \textit{Libya}, 186ff.
who is known from Memphis and Tanis (among other places), and otherwise identified with Putubišti of the annals of Assurbanipal, Aston and Beckerath have both followed him. At the very least, this would be a means of integrating Manetho’s Dyn. 23 into the previously known, although identifying Petubaste Shtp-jb-R² with the Putubišti of the Assyrians is at least equally plausible. In any case, the result would be that Manetho’s Dyn. 23 would be nothing but a continuation of Dyn. 22.

As regnal years have not been preserved from the reign of either Osorkon IV, nor of his supposed predecessor, Petubaste Shtp-jb-R², and the transition from Shoshenq V (—Petubaste)—Osorkon IV is to be dated to before Piye’s campaign, this possible insertion of a Petubaste (Manethonis gratia) is not of chronological significance. Osorkon IV is only dated through the campaign of Piye. Were he the king Shilkanni who paid tribute to Sargon II (cf. below), then he will still have been in office around 715/716.

5. UE Kings and Dynasties from Takelot II to Dyn. 25

Along with two Lower Egyptian rulers, the stela of Piye names two Upper Egyptians: Nimlot D of Hermopolis and Peftjawybast of Herakleopolis. At this time, Thebes itself will have already been under Nubian control, but before this time we find Harsiese A and Takelot II (cf. above, section 2) as UE kings who ruled Thebes. Of Kitchen’s Dyn. 23 (Petubaste I, Iuput I, Shoshenq IV, Osorkon III, Takelot III, Rudamun und Iuput II, as well as perhaps also Shoshenq VI; Residence:

95 Cf. TIP, § 357.
96 Aston (n. 31), 140.
97 Chronologie, 99.
98 This could have been another branch of the family, with deeper roots in Tanis than Bubastis. In any case, according to our present knowledge, Manetho’s king list of Dyn. 23 is more or less useless for the historical [and chronological] reconstruction: the last two of his four kings are virtual phantoms, the first two cannot be identified with certainty, and the note that the first Olympiad took place during the reign of Petubaste is generally dismissed as a later invention, calculated by the Christian chronographers who used Manetho, cf. TIP, § 419, n. 134; Redford, King-lists, 311–312; Beckerath, GM 147 (1995), 9.
99 Shoshenq VI (Wis-ntr-R², cf. TIP, §§ 67; 110; 146; 336; M.-A. Bonhême, Les noms royaux de l’Égypte de la Troisième Période Intermédiaire [Cairo: BdE, 98, 1987], 140–141) is not considered in the following, since his very existence is debatable, and there is in any case no indication of where he should be placed chronologically.
Iput II is only documented in LE, Petubaste I mainly in UE, but a few times in LE; the others are known exclusively from Upper and Middle Egypt. Osorkon III is the father of Takelot III and Rudamun, and the later is the father-in-law of Peftja[wert. All of the members of this family are known exclusively from UE sources. They are doubtless UE rulers in the tradition of Harsiese A and Takelot II, and thus are not Manetho’s Dyn. 23. The issue is thus the temporal relationship of those kings known from UE sources to one another and to the kings of Dyn. 22. The sources allow for the following synchronisms:

a) In the “Chronicle of Prince Osorkon”, years 22–29 of Shoshenq III follow year 24 of Takelot II. This suggests that Takelot II became king in UE during the reign of Osorkon II (as Harsiese A before him, but with his own count of regnal years) and that in his year 4, Shoshenq III became the successor of Osorkon II (in LE).

b) The year 12 of a king who can only be Shoshenq III corresponds to the year 5 of Petubaste I, with Harsiese (B) as HPA. Petubaste I thus began his reign in year 8 of Shoshenq III (= year 11 of Takelot II) and HP Harsiese (B) is linked to this regency. Harsiese (B) is subsequently documented in the years 18 and 19 of Petubaste (= years 25 and 26 of Shoshenq III), and previously in year 6 of Shoshenq III, and already under Osorkon II. A Takelot (E) was HP at the latest from year 23 of Petubaste, who then assumes Harsiese’s post.

It is therefore highly probable that the “rebellion” of year 11 of Takelot II mentioned in the “Chronicle of Prince Osorkon” was the accession to the throne of Petubastis, which was understood as a usurpation, as he thus became a kind of rival king to Takelot II. The

---

100 TIP, §§ 102; 297; 519; p. 588.
101 And the same applies, as described above, to Takelot II, the father of Osorkon III.
102 Reliefs, III, pl. 22, Z.7–22.
103 Nile level record no. 24, cf. Beckerath (n. 3), 51. On the identification of the unnamed king as Shoshenq III, cf. TIP, §§ 106–107. On purely technical grounds, following the chronology proposed by Aston, Takelot II could also be considered, but historically, he is out of the question, as an opponent of Petubaste and Harsiese B.
104 Nile level record nos. 28 and 27, cf. Beckerath (n. 3), 52.
105 Nile level record no. 23, cf. Beckerath (n. 3), 51.
106 On the statue, Cairo CG 42225, for this, cf. Jansen-Winkeln (n. 19), 135–6.
107 Nile level record no. 29, cf. Beckerath (n. 3), 52.
HP Osorkon B is documented for years 11 and 12 in Thebes, whereas Petubaste I and Harsiese B are not, but another revolt erupts in year 15 of Takelot, and exactly in this year, Petubaste and Harsiese B reappear in the Theban sources. In year 24 and 25 of Takelot (= 14 and 15 of Petubaste I), Osorkon B donated offerings in Thebes, and at this time Petubaste and Harsiese are not documented here. Evidently, there were two parties in this civil war: Osorkon B and his father Takelot II on the one hand, and Petubaste I and the HP Harsiese B, later Takelot E, on the other. This Takelot is also mentioned in the year 6 of a king Shoshenq Wsr-m2't-Rc Mjīj-Jmn, who cannot be Shoshenq III, but must rather be an another (certainly UE) King Wsr-m2't-Rc Shoshenq (IV).

c) The highest documented regnal year for Takelot II is year 25, and as in the donation lists of the “Chronicle of Prince Osorkon”, year 24 of Takelot II is followed by year 22 of Shoshenq III, it was apparently his last. Despite publicly announced claims, the successor of Takelot II was not his son Osorkon B: the latter is still General and HP in year 39 of Shoshenq III. It was presumably Iuput I who was

---

109 The son of Takelot II who commissioned the Chronicle of Prince Osorkon.
110 Chronicle of Prince Osorkon, B.7, s. Reliefs, III, pl. 21.
111 Nile level record no. 24, cf. Beckerath (n. 3), 51.
112 The role played by Shoshenq III in these events is not evident.
113 Nile level record no. 25, cf. Beckerath (n. 3), 52.
114 Cf. Aston (n. 31), 151: Shoshenq III does not use the epithet Mjīj-Jmn in his throne-name, and there is already a Nile level record (no. 23) for his year 6, naming HPA Harsiese.
115 The latest documented date for him is year 6, cf. Beckerath (n. 3), 52. (Nile level record no. 25); Jacquet-Gordon, Graffiti, 40–41 (no. 100).
116 Donation stela Cairo JE 36159, cf. ASAE 4 (1903), 183.
117 The years 24 and 26 (without the king’s name, cf. Capart, BMRAH, 3. série, 13, 1941, 26), are recorded on the mummy wrapping Brussels E.7047b/c of a mjīj-ntr named Ns-p'-ntr-n-R var. Ns-ntr-p'-R. As the father of this man is Ns-r-Jmn (Cartonage Berlin 30, cf. AIB II, 381–382), Kitchen (TIP § 86, n.115; 294) and Bierbrier (LNK, 71) have both identified him as Ns-p'-R', son of Ns-r-Jmn (I), the donor of the statue Cairo CG 42221, whose family tree (TIP, § 166) suggests that he belongs roughly in the period of Takelot II, and they have thus deduced a year 26 of Takelot II. Since, however, both the name (Ns-p'-ntr-n-p'-R vs. Ns-p'-R', cf. M. Thirion, RdE 46 [1995], 181–182) and the title (mjīj-ntr vs. hm-ntr n Jmn-R Rc sisti nthw jmn=f n pr Jmn hr z ty g) of these individuals differ, this identification (and thus a possible source for a year 26 of Takelot II) cannot be maintained.
the successor, for year 16 of Petubaste I corresponds to year 2 of a king Iuput (I), and thus his year 1 (corresponding to year 15 of Petubaste and year 22 of Shoshenq III) follows immediately on the last full year of Takelot II. As these dates match, it is more probable that Iuput I was the successor of Takelot, and not a “short-lived coregent” of Petubaste. On the other hand, Shoshenq IV may have been the successor of Petubaste as Petubaste appears initially together more frequently with the HP Harsiese B, and then with Takelot E, who himself is then named likewise together with Shoshenq IV (cf. above). These synchronisms produce the relations presented in Fig. II. 10.1.

King Petubaste is documented in Thebes with the throne-name Wr-mš’t-R en Slt-n-ţmn and with the unique epithet z3 3st. A king with the same prenomen and throne-name, but with the epithet z3 Bšt is known from a donation stela from Memphis (year 6), from Herakleopolis or the eastern Delta (?), and Bubastis (year 23), as well as on a statue of uncertain provenance. This has been interpreted as being two different kings with the same prenomen and throne-name, but this is hardly plausible. The idea that both the UE and LE Petubaste would have the same highest known date of 23 years appears rather suspicious. In addition, one of the Theban retainers of Petubaste, the

---

120 Nile level record no. 26, cf. Beckerath (n. 3), 52.

121 In TIP, § 448; cf. also Aston (n. 31), 151. Against this, one could argue that all of the other synchronisms in the Nile level records give only the links between the rulers of one “party” to the LE king (Shoshenq III). If Iuput I was the successor of Takelot II, he should have belonged to the foes of Petubaste. However, from the Chronicle of Prince Osorkon (B,7ff.) it is evident that at this time, there was a temporary unity among the various rivals in the civil war (cf. Jansen-Winkelen [n. 19], 140–141 on this).

122 Abbreviations: NLR, Nile Level Records, cf. Beckerath (n. 3), 43–55; OC = Caminos, Chronicle; OC, A = Reliefs, III, pl. 16–19; B = ibidem, pl. 21; C = ibidem, pl. 22; AP = Annals of the Priests at Karnak, cf. Legrain (n. 4), 51–63; Kruchten, Annales; Stela 22.8.26 = Meeks, Donations, 669 [22.8.26]. Years in brackets are postulated.

123 Nile level record no. 24; Beckerath (n. 3), 51.


125 Copenhagen Ny Carlsberg AEIN 917, cf. O. Koefoed-Petersen, Recueil des inscriptions hiéroglyphiques, pl. 5; J. Yoyotte, BIFAO 58 (1959), 97 (2); Meeks, Donations, 671 (23.1.00).


<table>
<thead>
<tr>
<th>Dyn. 22</th>
<th>Dyn. 23 (UE)</th>
<th>Rival Kings</th>
<th>High Priests</th>
<th>Sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Osorkon II</td>
<td>Takelot II</td>
<td>Shoshenq III</td>
<td>Harsiese B</td>
<td>CG 42225,a</td>
</tr>
<tr>
<td>6</td>
<td>(9)</td>
<td>Petubaste I</td>
<td>Harsiese B</td>
<td>NLR, no. 23</td>
</tr>
<tr>
<td>(8)</td>
<td>11</td>
<td>(1)</td>
<td>Osorkon B</td>
<td>OC, A 18–53: 1st “rebellion”</td>
</tr>
<tr>
<td>(9)</td>
<td>12</td>
<td>(2)</td>
<td>Osorkon B</td>
<td>OC, B 1–6</td>
</tr>
<tr>
<td>12</td>
<td>15</td>
<td>5</td>
<td>Osorkon B/ Harsiese B</td>
<td>NLR, no. 24; OC, B 7: 2nd “rebellion”</td>
</tr>
<tr>
<td>(14)</td>
<td>(17)</td>
<td>7</td>
<td>Osorkon B</td>
<td>AP, no. 1, 1.1</td>
</tr>
<tr>
<td>(15)</td>
<td>(18)</td>
<td>8</td>
<td>Harsiese B</td>
<td>AP, no. 1, 1.2; no. 2, 11.1/3</td>
</tr>
<tr>
<td>22</td>
<td>25</td>
<td>(15)</td>
<td>Osorkon B</td>
<td>OC, C 7 (cf. B 7–C1)</td>
</tr>
<tr>
<td>23</td>
<td>2</td>
<td>16</td>
<td>Osorkon B</td>
<td>NLR, no. 26 (y. 2/16); OC, C 12</td>
</tr>
<tr>
<td>24</td>
<td>(3)</td>
<td>(17)</td>
<td>Osorkon B</td>
<td>OC, C 13–16</td>
</tr>
<tr>
<td>25</td>
<td>(4)</td>
<td>18</td>
<td>Osorkon B/ Harsiese B</td>
<td>NLR, no. 28; OC, C 1–2; 17: 3rd “rebellion”</td>
</tr>
<tr>
<td>26</td>
<td>(5)</td>
<td>19</td>
<td>Harsiese B</td>
<td>NLR, no. 27; Stela 22.8.26</td>
</tr>
<tr>
<td>28</td>
<td>(7)</td>
<td>(21)</td>
<td>Osorkon B</td>
<td>OC, C 12; 17</td>
</tr>
<tr>
<td>29</td>
<td>(8)</td>
<td>(22)</td>
<td>Osorkon B</td>
<td>OC, C 22</td>
</tr>
<tr>
<td>(30)</td>
<td>(9)</td>
<td>(23)</td>
<td>Takelot E</td>
<td>NLR, no. 29</td>
</tr>
<tr>
<td>(33)</td>
<td>12</td>
<td>(?)</td>
<td>Takelot E</td>
<td>NLR, no. 25</td>
</tr>
<tr>
<td>(?)</td>
<td>(?)</td>
<td>6</td>
<td>Takelot E</td>
<td>NLR, no. 22; PA, no. 7, 11.1–3</td>
</tr>
<tr>
<td>(39?)</td>
<td>Osorkon III</td>
<td>(1)</td>
<td>Osorkon B</td>
<td></td>
</tr>
</tbody>
</table>

*Fig. II. 10.1*
prophet of Amun and royal scribe Hr (IX), is unexpectedly documented at Memphis,\textsuperscript{130} and perhaps also in Tell el-Balamun.\textsuperscript{131} There can only be one single king Petubaste, who used the epithet $\ddagger$ B\textit{stt} in LE. He may have been a rival king who attempted to re-establish a unified kingship over the entire land, a situation which had ceased to exist at the very latest by Takelot II. Regardless, the “dynasty” of Petubaste is not chronologically relevant. It is not known when Shoshenq IV succeeded Petubaste, the length of whose reign is likewise unknown. This dynasty presumably ended in year 39 of Shoshenq III, at the latest.\textsuperscript{132} By contrast, the dynasty of Takelot II can be followed: a year 12 is documented for his presumed successor, Iuput I (cf. above),\textsuperscript{133} and his successor can only have been Osorkon B/III. He appears for the last time in year 39 of Shoshenq III, as High Priest. As he had this office since year 11 of Takelot II (= year 8 of Shoshenq III), and then reigned for 28 years as king, he must have become king in or shortly after year 39 of Shoshenq III. If he, as is probable, followed immediately after Iuput I, the latter must have reigned for at least 17 years.

For Osorkon III, the regnal years 1(?), 3, 5, 6, 14(?), 15, x + 6, 23(?) and 28 are documented, with his regnal year 28 being equal to year 5 of his son Takelot III,\textsuperscript{134} the only completely unambiguous coregency in the TIP.\textsuperscript{135} For Osorkon III, 23 full years can be accounted for, and for Takelot III, years 5, 6, and 7 are clearly attested.\textsuperscript{136} If Osorkon

\textsuperscript{130} K. Jansen-Winkeln, \textit{SAK} 27 (1999), 123–139; pls. 1–4.
\textsuperscript{132} In this year, the HPA Osorkon B claimed that he and his brother defeated all of those with whom they fought, cf. Legrain (n. 4), 55–56; Kruchten, \textit{Annales}, pl. 4; 19. It would still be conceivable that the later “dynasty” of Hermopolis (Nimlot D and Thotemhat) continued that of Petubaste, as Hermopolis could have been a major center in Petubaste’s “rebellion”, cf. Jansen-Winkeln (n. 19), 142. However, there does not appear to be any trace of a temporal link between these regents.
\textsuperscript{133} Aside from the graffito of year 9 of Iuput, the same priest also left graffiti from years 9 and 12 (without the name of a king), cf. Jacquet-Gordon, \textit{Graffiti}, 84–85 (nos. 244–245).
\textsuperscript{134} Nile level record no. 13; Beckerath (n. 3), 50. For the uncertain numbers, cf. Jacquet-Gordon, \textit{Graffiti}, 41 (nos. 101: year 1); 68–9 (no. 190: year 14); 69 (no. 191: year 23).
\textsuperscript{135} This coregency is also confirmed by the statue Cairo CG 42211, dated by the cartouches of $\ddagger$\textit{mjtt-jmn $\ddagger$ s$t$ Tkr} and $\ddagger$\textit{R Mjtt-jmn $\ddagger$ s$t$ Wsrkn}, cf. Jansen-Winkeln (n. 63), 470.
\textsuperscript{136} Daressy (n. 40), 51–52.
III ascended the throne in year 39 of Shoshenq III, then the temporal relationship between Dyn. 22 and the UE rulers of the line of Takelot II will have been that presented in Fig. III. 10.2. If he became king at a later date (year 40 or 41), then the dynasty must be pressed down a bit, but this can hardly be a matter of more than a few years.\textsuperscript{137} Of his successors, only his well documented son Takelot III spatially and temporally anchored in Thebes. The length of the reign remains unclear: he is occasionally assigned a reign of more than 6 full years, and not least because several of his children were still alive shortly before 700 as the family trees of their descendents and the style of their tombs reveal.\textsuperscript{138} F. Payraudeau has recently attempted to link a year 14 of a Takelot $z^2$ \textit{III} in P. Berlin 3048 to Takelot III rather than Takelot II.\textsuperscript{139} This is possible but by no means certain.\textsuperscript{140} However long he reigned, the problem of the “generation shift” does not disappear: perhaps Takelot III and/or Osorkon III only became fathers late in their lives.

At the very latest, after the reign of Takelot III the situation in UE becomes quite obscure. At the time of the Piye campaign, the Nubians ruled the Thebaid, while other UE kings were in Hermopolis and Herakleopolis. The later successors of Osorkon III were thus driven out of Thebes. There is no clear indication of when this happened, but at the very latest the inauguration of Amenirdis I as the adoptive daughter and heir of the Divine Wife Shepenupet I marks that Thebes was definitely governed by the Nubians. According to Kitchen, it was Piye, the brother of Amenirdis, who ordered the adoption,\textsuperscript{141} but Morkot

\textsuperscript{137} On the condition that the HPA Osorkon B and Osorkon III were in fact one and the same person, cf. above, section 3.
\textsuperscript{140} The palaeography can hardly aid with the date as there are already very cursive texts in Dyn. 21, cf. M. Malinine, in: \textit{Textes et langages de l’Égypte pharaonique} I (Cairo, 1973), 31. The identification of some ancestors of the scribe with individuals from dated contexts is unreliable in the extreme, or would even favour a date under Takelot II (as with the vizier \textit{Hjf}). Nor can an argument be made using the Overseers of the Treasury, as four of them appear in this one Papyrus (cf. Donker van Heel [n. 139], 143).
\textsuperscript{141} \textit{TIP}, § 122.
Fig. III. 10.2 (Abbreviations: see Fig. III. 10.1)

<table>
<thead>
<tr>
<th>Shoshenq III</th>
<th>Takelot II</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Year 1</strong></td>
<td><strong>Year 4</strong></td>
</tr>
<tr>
<td>21</td>
<td>24</td>
</tr>
<tr>
<td>22</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Iuput I</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>33</td>
<td>12</td>
</tr>
<tr>
<td>39</td>
<td>(18)</td>
</tr>
<tr>
<td></td>
<td>Osorkon III</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Shoshenq IIIa</td>
<td>2</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>13</td>
<td>14</td>
</tr>
<tr>
<td>Pami</td>
<td>15</td>
</tr>
<tr>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Shoshenq V</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>21</td>
</tr>
<tr>
<td>3</td>
<td>23</td>
</tr>
<tr>
<td>4</td>
<td>24 = 1</td>
</tr>
<tr>
<td>8</td>
<td>28 = 5</td>
</tr>
<tr>
<td>10</td>
<td>7 (sole rule)</td>
</tr>
</tbody>
</table>

has convincingly shown that it was probably her father Kashta who installed her.\textsuperscript{142} This would mean that the successors of Osorkon III were swiftly removed from Thebes. If Piye’s campaign (in his year 20) took place within five years of the death of Shoshenq V (see below, section 7), then his reign must have begun at the latest in year 25 of Shoshenq V, and probably somewhat earlier. The inauguration of Amenirdis could thus have taken place in years 20–24 of Shoshenq V. As year 28 was probably the final year of Osorkon III, and corresponds to year 8 of Shoshenq V, at the earliest (cf. above), his successors have a mere 10–15 year in Thebes, before they had to withdraw to the North. All of their dated sources from Thebes must be assigned to this short period.

\textsuperscript{142} In: S. Wenig, “Studien zum antiken Sudan”, \textit{Meroitica} 15 (1999), 194–196.
Aside from Takelot III, the following UE kings are known from the period after Osorkon III.

- Rudamun, the brother of Takelot;\(^{143}\) no known regnal years.
- Peftjau‘awybast, the son-in-law of Rudamun, king of Herakleopolis at the time of Piye’s campaign;\(^{144}\) regnal year 10 is documented.\(^{145}\)
- G. Broekman has recently shown that it is highly probable that there was an UE king Shoshenq (“VII”) with the epithet \(\text{ḥḥ}'\tht\) and the throne-name \(\text{ḥḥ}-\text{ḥḥ}pr-R\) \(\text{Stp.n-R}\);\(^{146}\) who was recognized as king in Thebes in his regnal year 5,\(^{147}\) and who is to be inserted after Shoshenq III and thus also after Takelot III.
- Another candidate would be the king Iny who is documented several times in Thebes (including a regnal year 5) and perhaps also in Abydos.\(^{148}\)
- In addition, there is a dynasty residing in Hermopolis, whose most prominent member, Nimlot D, is chronologically anchored in the stela of Piye. His predecessor or (more probably) successor could have been Thotemhat,\(^{149}\) and a later successor may have been Padinemti(?).\(^{150}\)

\(^{143}\) Cf. O. Perdu, \textit{RdE} 53 (2002), 157–178, for this person.
\(^{144}\) Even if his power was restricted to the Herakleopolis region, during this period when the Nubians controlled the Thebaid and there appeared yet another UE kingdom, he could still have been the heir of an UE dynasty with a much larger realm. In Herakleopolis and the surrounding area at least, the dynasty of Takelot II is well documented, e.g., the HPA Osorkon B (cf. Caminos, \textit{Chronicle}, §§ 28–30) and the later Takelot III (\textit{ASAE} 37 [1937], 16–24). Payraudeau’s ([n. 139], 79–81) attempt to distinguish the general of Herakleopolis from the son of Osorkon III, who bears the same name, cannot be accepted in view of the fact that both are HPA and had a mother with the same rather uncommon name.
\(^{145}\) Donation stelae Cairo \textit{JE} 45948 and 11/9/21/14, cf. G. Daressy, \textit{ASAE} 17 (1917), 43–45; \textit{ASAE} 21 (1921), 138–139.
\(^{146}\) Broekman (n. 3), 163–78, esp. 176–177.
\(^{147}\) The only certain document is the Nile level record no. 3; Beckerath (n. 3), 49, hitherto assigned to Shoshenq I. However, one cannot exclude a possible reference to Shoshenq III; his predecessor Shoshenq III is in fact mentioned in his last (or next to last) year in the Nile level records, cf. Broekman (n. 3), 176. It is conceivable that there was still resistance after Osorkon III ascended the throne, and that one of his enemies was able to establish himself briefly in Thebes, and dated according to the LE king. It is highly probable that the Nile level record no. 45 does not belong to Shoshenq VII (cf. Broekman [n. 3], 177); there does not remain any time for a year 17/19/25 of a sovereign in Thebes before the Nubians after Osorkon III (cf. above).
As the brother of Takelot III, Rudamun was most probably his successor, as is generally assumed. It is, however, remarkable, that he is better documented in Hermopolis than in Thebes.\textsuperscript{151} It is thus also conceivable that Rudamun became king in Hermopolis after the death of his father, alongside his brother Takelot in Thebes (and Herakleopolis?). The Libyan period does reveal a tendency to multiply both rulers and principalities. The line of Takelot would then have been reduced to Herakleopolis after the Nubian intervention. Shoshenq “VII” is only documented in Thebes, with a year 5. He too can belong only to the dynasty of Osorkon III (as a son of Takelot III?). If Rudamun was the successor of Takelot III (in Thebes), Shoshenq VII would most probably have been a successor of Rudamun, although a sequence of Takelot—Shoshenq—Rudamun cannot be excluded.\textsuperscript{152} If Rudamun was a local ruler in Hermopolis, then Shoshenq VII would have followed immediately after Takelot. The year 5 of king Iny should be situated roughly two generations after year 4 of a king Shoshenq,\textsuperscript{153} and this may have been Shoshenq III, IV or VII. Were it Shoshenq III, the reign of Iny would fall under the reign of Osorkon III, and that is improbable. Otherwise, he should be assigned either to the period after Takelot III (successor of Shoshenq VII?), or indeed placed in Dyn. 25. Unusually his name was effaced, and thus he might have been a pretender (during the reign of Osorkon III or Dyn. 25),\textsuperscript{154} in which case the reign would be of no chronological relevance.

In any case, the rulers of the house of Osorkon III were swiftly evicted from Thebes. The Peftjau’awybast of Herakleopolis named on the stela of Piye is the last of this line. The “dynasty” of Hermopolis (whether from Rudamun or by another line) may have been founded by descendents of Osorkon III, but it could equally easily have been the late revival of the rival dynasty of Petubaste.

\textsuperscript{151} Cf. Perdu (n. 143), 169–170.
\textsuperscript{152} Cf. G. Broekman, “The Chronological Position of King Shoshenq Mentioned in Nile Level Record No. 3 on the Quay Wall of the Great Temple of Amun at Karnak”, \textit{SAK} 33 (2005), 75–89.
\textsuperscript{153} Graffito no. 11 from the roof of the temple of Khonsu, cf. H. Jacquet-Gordon, in: \textit{Hommages à la mémoire de Serge Sauneron I} (Cairo, 1979), 174–183; pl. 27–28; Yoyotte (n. 148), 115.
\textsuperscript{154} Cf. Yoyotte (n. 148), 131. A “reign” of at least 4 years for a rival king could be possible, but it would be quite unusual, and particularly so in Dyn. 25.
The chronology of the UE kings after Osorkon III thus remains quite uncertain: there are only a few (low) dates, and it is unclear which kings reigned in parallel and which in succession. Of the kings attested on the stela of Piye, Nimlot D cannot be linked to either a predecessor or a successor, and Peftjau‘awybast can only be identified genealogically as the son-in-law of Rudamun.

The familiar “graffito” from Wadi Gasus could offer a chronological connection with the following Dyn. 25. To the right is the cartouche of the Divine Adoratrice Amenirdis (I), above which is regnal year 12, to the left the cartouche of the Divine Wife Shepenupet (I), above which is regnal year 19, both names have the epithet “living” (nh.jy). It is today agreed that the year 12 of Amenirdis can only be related to Piye, and thus the year 19 should be assigned to one of the UE rulers recognized by Piye. It is thus immediately clear that Takelot III cannot possibly be the king designated by the year 19 of the graffito since his year 19 must have corresponded to year 22(–25, or so) of Shoshenq V (cf. above, Fig. III. 10. 2), and thus clearly before year 12 of Piye in whose year 20 the campaign to the North took place, Shoshenq V, who reigned at least 37 years, no longer in office.

Rudamun would only be a candidate for the year 19 if he was not the predecessor of Shoshenq VII, as they were certainly not dating in Thebes according to the dynasty of Osorkon III 19 + 5 years after Takelot III (cf. above). The year 19 can also be linked to Shoshenq VII or Peftjau‘awybast. In any case, it should certainly be someone relatively close to Piye’s house: an ally. Nimlot D of Hermopolis would thus also be a candidate. He appears in an ambivalent fashion on the stela of Piye: on the one hand the Nubian king expresses his particular irritation over the alliance with Tefnakhte of Sais, while on the other, he is given preferential treatment. This can be most easily explained by the fact that he was an ally of the Nubians who then

---

155 No regnal year is preserved, and the same is true of several other members of this dynasty: Rudamun, Thotemhat, and Padinemti; for the latter two, not even the exact position in the sequence of the “dynasty” is known.


157 TIP, §§ 143–145.

158 Thus Payraudeau (n. 139), 85–86.

159 He is the only prince admitted into the Palace to Piye, cf. the great stela of victory, ll. 148–53 (Urk. III, 54) and is the only one pictured standing, but actually like a woman, with a sistrum in his hand.
switched sides. As an ally before these events, he would have been a suitable candidate for the double dating, and in fact he does appear a second time with the Divine Wives Shepenupet I and Amenirdis I. Nimlot D thus appears to me to be a particularly suitable candidate for the year 19 in this graffito. Chronologically, however, this does not aid at all: in temporal terms, neither Nimlot D nor the other possible candidates can be pinned down to sufficiently narrows slots in time so as to allow a direct link with between the house of Osorkon III and Dyn. 25.

A somewhat more precise knot making a temporal link between the Libyan and Nubian periods is possible only via Dyns. 22 and 24, and possible fixpoints can only be gained for Dyn. 25.

6. The Chronological Framework for Dyn. 25

The beginning of the reign of Taharqa lies in year 690 BC, and this is not disputed. For a long time, his predecessor Shebitku (highest date is year 3 was assigned a reign of 8–12 years, and at the most 13 regnal years. However, the inscription of Sargon II at Tang-i Var reveals that Shebitku was already (at the latest) king in 706, and thus reigned for at least 16 years. As his predecessor Shabaka ruled for at least 14 full years (cf. below), the beginning of his reign would be at the latest in 720 BC. Since one had once assumed that there were good reasons for believing that the Nubian rule in Egypt could not have begun before 716 or indeed 712 (cf. below), it was suggested a number of times that Shebitku was only (co)regent in Nubia while his senior partner, Shabaka (with dates according to his reign) ruled in Egypt. This is historically quite improbable, aside from the fact that there has never been the slightest hint at any form of coregency of the

162 Cf. TIP, §§ 130–131; Beckerath, Chronologie, 91.
164 TIP, §§ 126; 468; Beckerath, Chronologie, 92.
Nubian kings of Dyn. 25. Had Shabaka been ruler of Egypt in the year 707/706 and Shebitku his “viceroy” in Nubia, one would definitely expect that the opening of diplomatic relations with Assur as well as the capture and extradition of Yamani would have been part of Shabaka’s responsibility. Sargon can also be expected to have named the regent of Egypt and senior king, rather than the distant viceroy Shebitku. If, on the other hand, Shebitku was already Shabaka’s successor in 707/706, the reports of the Yamani affair become clearer and make more sense. It had hitherto been assumed that the Nubian king (Shabaka) handed over Yamani more of less immediately after his flight to Egypt. Now it appears to be certain that Yamani was only turned over to the Assyrians a couple of years later. It then becomes much more probable that Shabaka awarded him asylum, but that Shebitku did not feel bound by his predecessor’s word and that he desired to make a gesture of good will towards the Assyrians at the start of his reign, and that he extradited Yamani. “This interpretation also matches with the peculiar insertion into Sargon’s large “ceremonial inscription” in Khorsabad where the king of Nubia is described as residing in a very distant, inaccessible land. The formulation of his Nile level record (no. 33) also supports the idea that Shebitku only came to Egypt in his year 3.

Shabaka must, therefore, have already been dead in 707/706. The “international” reasons which have hitherto been used to justify placing his reign in Egypt after 716 or even 712 cannot therefore be correct, and in fact they are wrong. The events of the years (around) 725 (when Hosea of Israel addresses an appeal for aid to a “So, King of Egypt”) and around 720 (when an unknown Egyptian sovereign sends a general named Re’e leading an army into Palestine to support a revolt against the Assyrians only to be defeated at Raphia), are not

---

167 Cf. e.g., TIP, § 341.
169 Had Shabaka himself extradicted Yamani after having granted him asylum for years, that would have been an inconvertible sign of weakness.
170 A. Fuchs, Die Inschriften Sargons II. aus Khorsabad (Göttingen 1994), 221–222; 348–349; Frame (n. 165), 53.
171 Cf. Beckerath (n. 163), 7–9.
172 2 Kgs. 17,4.
173 Annals of Sargon II from Khorsabad, ll. 53–5, cf. Fuchs, Inschriften, 90; 315; cf. also the threshold inscriptions from Khorsabad, ll. 38–41, ibidem, 262; 360; and a clay cylinder from Khorsabad, l. 19, ibidem, 34; 290.
relevant for the dating of the Nubian rule in Egypt. In the year 716, Sargon II extends his sphere of control further south, and receives tribute (or the like) “from Pharaoh, the king of the Land of Egypt”. Another source is more precise, recording that Shilkanni, the king of Egypt, sent 12 large steeds as a greeting present. Shilkanni could be Osorkon IV, but he is in any case a LE and not a Nubian king. In the case of the Yamani-affair (711–706) the city of Ashdod asks “Pharaoh, the king of Egypt, a prince, who could not rescue it” for an alliance, apparently in vain. As the Assyrians attack, Yamani flees “to the border of Egypt in the area of Nubia”, where he lives “(secretly) like a thief”, until extradited by Shebitku. Neither the events of 716 nor 711 can possibly serve as a terminus post quem for the beginning of Nubian rule. The pharaoh whose alliance was requested in 712/711 can only be either Shabaka or a Delta Prince, but even in the latter case, it would not imply that Shabaka had not yet been recognized in Memphis. Shilkanni apparently had good reasons for trying to reassure the Assyrians; but this does not solve the issue of who had the upper hand in Egypt. In the account of his third campaign, Sennacherib reports that at the battle at Eltekeh (701), Hezekiah made appeals to “the kings of Egypt” and the troops of the King of Nubia (Shebitku). On this occasion, the Assyrian king captured “the charioteers and the sons of the kings of Egypt” and “the charioteers of the king of Nubia”.

From the Assyrian point of view, the enemies are perceived primarily as a kind of coalition, and this may have correspond to the facts, for

---

174 There is one hint that Nubian soldiers took part in the battle at Raphia (cf. Kahn, Orientalia 70, 11–12), but these could have been mercenaries.
177 This is, however, by no means certain, a name such as Ṣškn or the like would be more reasonable, cf. J. Yoyotte, Kēmi 21 (1971), 51–52.
179 This frequently discussed phrase (cf. most recently L. Depuydt, JEA 79 [1993], 272, n. 24; Fuchs, Inschriften, 220; 348; 452; Frame (n. 165), 52, n. 24) seems to mean something like “to that part of Egypt, which was under the direct control of the Nubians”.
even under Asarhaddon and Assurbanipal the princes of the Delta are represented as acting independently on the international stage. It is thus inadmissible to use evidence of such activities as a base for defining the beginning of Dyn. 25.

There are no obstacles to ending the reign of Shabaka in 706 at the latest; on the contrary, everything suggests that Shebitku ruled alone from 707/706 to 690. Year 2, 3, 4, 6, 10, 12, 13, 14, 15 are documented for Shabaka, and he is generally assigned 14 full years. An indirect confirmation of this can be found in Manetho, if one allows for a slip by assigning the 14 years Africanus gives to Shebitku to Shabaka. However, in view of the unreliability of the Manetho tradition concerning Dyn. 25 this does not mean much. A possibility for calculating can also be deduced from two stelae from Kawa where Taharqa states that he was 20 years old when Shebitku called upon him to go from Nubia to Egypt. As this will doubtless have taken place in the course of the preparations for the campaign which led to the battle at Eltekeh where Taharqa saw action, he must have been born ca. 722/721. If he was a son of Piye’s (as is generally assumed), the latter must have lived until at least 723 and perhaps a bit longer. However, it is by no means certain that Taharqa was really the biological brother of Shepenupet II and thus the son of Piye. Nevertheless, a reign of 14–15 years for Shabaka remains highly probable. Favoring this is also the fact that there is a relatively complete coverage of dates from the second decade of his reign (10, 12, 13, 14, 15), and a large hole would be improbable. He must thus have come to the throne at the latest in 720, or more probably 721 or 722. His second year would thus be ca. 720 (721–719), and also year 6 of Bocchoris. It is calculating

\[182\] Thus Beckerath, *Chronologie*, 92; *TIP*, § 421.
\[183\] Cf. *TIP*, § 468.
\[185\] *TIP*, § 127–9; 133.
\[186\] According to the stela of Nitokris, ll. 3–4 (cf. *JE A* 50 [1964], 74; pl. VIII) the Divine Wife Shepenupet II, a daughter of Piye, was his sister, cf. *TIP*, §§ 120–121.
\[189\] An inscription from year 2 of Shabaka was found in the Serapeum, and this—despite some inconsistencies in the secondary literature—should be related to the same Apis burial as the stelae from the beginning of year 6 of Bocchoris, cf. *TIP*, § 114; J. Vercoutter, *Kush* 8 (1960), 62–67; *PM* III, 789. That year 2 of Shabaka was either the same as, or close to, year 6 of Bocchoris is clear from the sources: Manetho assigns
the regnal years of Piye, the predecessor of Shabaka, which is uncertain, and thus likewise the link to the major campaign of year 20.\footnote{Only the erection of the stela with the record of this campaign is dated, in the first month of year 21. It is generally agreed that the campaign must have taken place in the previous year.} In Egypt, the years 20(?), 21, 22, and 24 are documented,\footnote{JE} but he is generally assigned a reign of 31 years as a few years must be inserted for Tefnakhte before the reign of Bocchoris his successor. This rests on the correct assumption that the various rulers of Egypt listed on the stela of Piye are actually identified by their rightful titles—including the foes of the Nubian king. If Tefnakhte is not designated a king there,\footnote{In ll. 19–20 he is named “Great Prince of the West”, along with a few of his other titles; in general, however, he is merely the “Chief of the Ma” (ll. 28; 80; 126).} he will thus have become such only after the campaign of Piye. As a year 8 is recorded for Tefnakhte as king,\footnote{A hierarchical donation stela in Athens, cf. R. el-Sayed, Documents relatifs à Saïs et ses divinités, BdE 69 (1975), 37–53; pl. 7. K.-H. Priese (ZAIS 98 [1972], 19–21) and K. Baer (JNES 32 [1973], 23–24) have disputed that the king Tefnakhte with the throne-name “Spss-R” is the same as the Prince Tefnakhte on the stela of Piye. They assume instead that this is the first king of Dyn. 26 (before the predecessor of Neco I) mentioned by Manetho (“Stephinates”), and thus a local prince of Saïs. Opposing this stance is the fact that one of the stelae of “Spss-R” Tefnakhte actually probably comes from the eastern Delta (cf. Yoyotte [n. 177], 37–40), which was most assuredly not under the control of the local princes ruling in Saïs during Dyn. 25. Furthermore, Diodor (I, 43) specifies that the king Tefnakhte, predecessor of the sage Bokchoris, undertook an expedition to “Arabia”, and this would only be possible from the eastern Delta.} at least an additional 7 years must have passed between Bocchoris’s accession to the throne (ca. 725, cf. above) and the campaign of Piye,\footnote{The possibility that Tefnakhte only became king after the campaign, but that his regnal years were then post facto extended back to a point in time before the campaign is rejected by Kitchen (TIP, § 112).} and thus the campaign will have taken place shortly before ca. 732, perhaps 733/734. This is possible, but not compelling. Tefnakhte’s predecessors were not kings,\footnote{J. Yoyotte, BSFE 31 (1960), 13–22; TIP, § 113; 468.} and on two donation stelae from years 36 and 38 of Shoshenq V—certainly only a few years before the campaign of Piye\footnote{ Cf. above, section 4.}—he himself does not yet bear the royal title,\footnote{The unusual designation, “Great Prince of the Entire Land” reveals that his ambition (and certainly also his power) extended far beyond that of the ordinary Libyan local princes.} and dates himself according to
Shoshenq V. If he became king shortly thereafter, e.g., after the death of Shoshenq V, this could only have taken place on the basis of his own power. As one very conscious of legitimacy, Piye would thus not have had the slightest reason to have designated someone as a king if that person had only just shortly before proclaimed himself king, and even less so if this person was his major opponent. It would thus be possible to set the campaign of Piye somewhat closer to the accession of Bocchoris, perhaps, between 734 and 726 BC; his accession to the throne would thus be ca. 753–745 BC.

7. Connecting Dyns. 22 and 25

Shoshenq V died before the campaign of Piye, but not long before, since Tefnakhte claims the title “Great Prince of the Entire Land” in year 38. On the other hand, however, Shoshenq’s rule was apparently uncontested in Memphis in his year 37, and thus Tefnakhte’s expansion was not as advanced as at the beginning of the campaign of Piye. In addition, there may be another king Petubaste (cf. above) to insert before Osorkon IV who reigned in Bubastis and Tanis during the campaign. A period of about 5 years between the death of Shoshenq V and year 20 of Piye would appear reasonable.

For the kings from Shoshenq I to Takelot I we can reckon at least 21 + 35 + 15 years, for Osorkon II at least 30 years, as a year 29 is very probably documented and the genealogical data favours a long reign (cf. above, section 1). For the kings Shoshenq III, Shoshenq IIIa, Pami and Shoshenq V, we have made a minimal period of 95 years (cf. above, section 3). If we start with year 945 as the beginning of Dyn. 22, the year 38 of Shoshenq V is to be set in 749 at the earliest. The campaign of Piye can be placed in the years 734–726 (cf. above, section 6); 10–18 years would remain to bridge the period between the campaign and year 38 (+ 5) of Shoshenq V. This result is also realistic as those reigns the duration of which is not certain were assigned minimal values here. Where these missing years must be placed is a

---

198 On his “small stela” (Khartoum 1851, G. A. Reisner, ZÄS 66 [1931] 89–100; pls. V–VI) Piye clearly enunciates that only that person is king whom he makes king, and not those whom he forbids. This could apply to Tefnakhte, nor does he call Tefnakhte “Great Prince of the Entire Land”, but rather “Chief of the Ma”. 
matter of speculation, but there are several possibilities. First of all, the year 945 is not certain. If the campaign of Shoshenq in Palestine (926/925 in year 5 of Rehabeam) did not take place in his year 20, but rather a few years earlier—as is entirely possible—the beginning of the reign must accordingly be placed somewhat later. Candidates for a somewhat longer reign are Shoshenq V himself and Osorkon II. Likewise, Pami may have reigned for more than 6 years, if his “annals” were not written posthumously (cf. above, section 3), and Osorkon I and his successors could have ruled longer than we have assumed above. In any case, a very slight extension of a few reigns is just as unproblematic as setting the beginning of Dyn. 22 marginally later in history.

8. Conclusion

For the chronology of the TIP, Egyptian sources only supply the year 690 as a certain point of departure. Additionally, the date of the campaign of Shoshenq I, presumably towards the end of his reign, can be placed with the aid of Near Eastern chronology in 925/926. Between these two there is not one single firm date, but the sequence of kings and the highest known dates for these kings does not leave significant gaps. The general framework of the chronology of this age is certain. Additional finds of dated monuments from this period will hopefully add to the previous discoveries, and lead to an even higher degree of resolution, leaving still less uncertainty.

---

199 Assigning the entire sum of years to the reign of Osorkon II, as Aston (n. 31; 145–148) does, is not necessarily the most logical possibility.
200 Cf. above, Jansen-Winkeln, Chapter II. 9.
201 Beckerath, Chronologie, 98, assigns him 11 years.
202 The usual numbers still depend to a great extent upon the very doubtful figures for this period provided by the copyists of Manetho.
203 Cf. above, n. 200. Following alternative and acceptable calculations in OT studies, the year 5 of Rehabeam would not have been 926/5, but rather 922/1 (H. Donner, Geschichte des Volkes Israel und seiner Nachbarn in Grundzügen, 2 [1995], 274); and this would correspond to the Egyptian dates quite well. A “chronological problem” noted by Donner ibidem, 321, n. 14) does not exist in this fashion: the Egyptian chronology is absolutely dependent upon Near Eastern chronology. If one follows Begrich/Jepsen and not Thiele, one simply shifts the accession of Shoshenq I by the same margin.
II. 11 SAITE AND PERSIAN EGYPT, 664 BC–332 BC
(DYNS. 26–31, PSAMMETICHUS I TO ALEXANDER’S
CONQUEST OF EGYPT)

Leo Depuydt

In the period at hand, events can be dated exactly in absolute terms, that is, in relation to the present moment in time. Thus, the death of Psammetichus II in Month 1 Day 23 of his Year 7, that is, on 9 Feb 589 BC, is separated from the same time of day (whatever it was) on 1 Jan AD 2003 by 946311 full days or 24-hour periods. Chapter III. 11 outlines the general principles of day-exact chronology, with references to contributions that provide more detail. In terms of chronological structure, the period has three natural subdivisions, each with its own anatomy: (1) Dyn. 26, the Saite dynasty; (2) Dyn. 27, consisting of Persian rulers; and (3) the fourth century BC up to Alexander’s conquest of 332 BC, when Egypt was independent yet in Persia’s sphere of influence. Accordingly, the following three equations have been obtained in fundamentally different ways.

1. Year 7 Month 1 Day 23 (I ḫt 23) = 9 Feb 589 BC
   of Psammetichus II
2. Year 15 Month 4 Day 16 (16 Hathyr) = 4 Mar 471 BC
   of Xerxes I
3. Year 16 Month 8 Day 21 (21 Pharmouthi) = 5 Jul 343 BC
   of Nectanebo II

The structural hierarchy of the chronology of Dyns. 26–31 is as follows. Dyn. 27 is most secure, ultimately owing to synchronies with Mesopotamia established through Babylonian astronomical texts. As the anchor, Dyn. 27 is treated here first. Dyn. 26 depends on Dyn. 27 and is reasonably secure. It is treated next, along with Taharqa’s reign, the last of Dyn. 25, which depends on Dyn. 26. The fourth century BC is best seen as a gap to be bridged between Dyn. 27 and Alexander’s conquest of 332 BC. It is only partly day-exact.

---

1. Dynasty 27

The four pioneers who in the more recent past have done the most to cement the chronology of Egypt in 664 BC–332 BC by consolidating Dyn. 27 as its anchor are E. Meyer, R. A. Parker, A. Sachs, and above all F. X. Kugler. By manipulating (1) Ptolemy’s Canon, (2) pre-dating of postdating, and (3) the cuneiform record, the following approximate dates for the beginnings of the reigns are obtained. Details follow in the notes to the table in section 4. Day dates derived from ancient lunar dates can be one to two days off.

<table>
<thead>
<tr>
<th>Pharaoh</th>
<th>Reign Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cambyses</td>
<td>Aug 530 BC</td>
</tr>
<tr>
<td>Darius I</td>
<td>29 Sep–22 Dec 522 BC</td>
</tr>
<tr>
<td>Xerxes I</td>
<td>late Nov 486 BC</td>
</tr>
<tr>
<td>Artaxerxes I</td>
<td>5 Aug 465 BC–2 Jan 464 BC</td>
</tr>
<tr>
<td>Darius II</td>
<td>25 Dec 424 BC–13 Feb 423 BC</td>
</tr>
<tr>
<td>Artaxerxes II</td>
<td>18 Sept 405 BC–9 Apr 404 BC</td>
</tr>
</tbody>
</table>

Babylonian regnal Year 1 began on the first Babylonian new year following these dates (see 1.2 in Chapter III. 11), that is, around the spring equinoxes of 529, 521, 485, 464, 423, and 404 BC. The numberless period lasting from the beginning of the reign to the first Babylonian new year may be called the accession year. The above dates can be translated as follows into reign lengths detailing years only.

<table>
<thead>
<tr>
<th>Dynasty 27</th>
<th>Reign Lengths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cambyses (second half of reign)</td>
<td>527–525 – 522</td>
</tr>
<tr>
<td>Darius I</td>
<td>522 – 486</td>
</tr>
<tr>
<td>Xerxes I</td>
<td>486 – 465</td>
</tr>
<tr>
<td>Artaxerxes I</td>
<td>465 – 424/3</td>
</tr>
<tr>
<td>Darius II</td>
<td>424/3 – 405/4</td>
</tr>
<tr>
<td>Artaxerxes II (beginning of reign)</td>
<td>405/4 – ca. 400</td>
</tr>
</tbody>
</table>

En-dashes (–) denote time-periods. Slashes (/) mark ancient calendar-years straddling two Julian years.

---


3 See sections 2.1, 1.2, and 2.3 in Chapter III. 11.
2. Dynasty 26

The main structural feature of the day-exact chronology of Dyn. 26 is its dependence on the day-exact chronology of Dyn. 27. Already in the nineteenth century AD, data from Greek historians and Serapeum stelae (see 2.2 in Chapter III. 11) had fixed the reigns of Dyn. 26 absolutely to within one or two years. In the 1950s, two contributions by R. A. Parker pushed the limit of day-exact chronology back from 525 BC in two moves: (1) from 525 BC back to 664 BC; (2) from 664 BC back to 690 BC. Each move rests on a single piece of evidence.4

(1) A civil-lunar double date deciphered jointly by M. Malinine and R. A. Parker at Brown University in a photograph of the abnormal hieratic papyrus Louvre 7848 equates civil Month 10 Day 13 (II Shemu 13) with lunar Month 9 Day 15 (I Shemu 15) in Year 12 of Amasis. Lunar Day 15 ought to fall around full moon. Before this date surfaced, Amasis’s Year 12 had mostly been equated with the 365-day year 10 Jan 558 BC–9 Jan 557 BC, in which civil Month 10 Day 13 equals 19 October. However, 19 Oct 558 BC is not close to full moon. In the preceding Egyptian year, 10 Jan 559 BC–9 Jan 558 BC, civil Month 10 Day 13 also equals 19 Oct. and 19 Oct 559 BC does occur near the full moon of 21 Oct 12:09PM.5 The earlier Egyptian year is therefore in all probability Amasis’s Year 12.6

This backward shift of Amasis’s regnal years affects the dating of Cambyses’s conquest. Traditionally, the conquest had been dated to spring 525 BC and Amasis’s Year 44 had been considered his last. But now, Day 1 of Year 44 was moved back from 2 Jan 526 BC to 2 Jan 527 BC. To keep the end of Amasis’s reign close to the conquest, R. A. Parker postulated an unattested Year 45 for Amasis beginning on 2 Jan 526 BC. However, postulating a Year 45 was rendered unnecessary when the arguments dating the conquest to spring 525 BC.

---

4 A passage in Demotic papyrus Berlin 13588 that has been interpreted variously as a solar eclipse (E. Hornung, “Die Sonnenfinsternis nach dem Tode Psammetichs I”, Ἁρμ. 92 (1966), 38–9) and as a lunar eclipse (M. Smith, “Did Psammetichus I Die Abroad?”, OLP 22 (1991), 101–9) has possible chronological relevance (see also L. Depuydt, “On the Consistency of the Wandering Year as Backbone of Egyptian Chronology”, JARCE 32 (1995), 43–58, at 53, note 50); for a different view, see Chapter III. 4.

5 Goldstine’s time, Moons, 37, for Babylon, minus 47 minutes for Thebes.

became invalid. The conquest is now better dated more imprecisely to 527–525 BC.7 (2) Serapeum stela Louvre IM 3733, the official epitaph of an Apis bull born in Taharqa’s Year 26 and deceased in Psammetichus I’s Year 20 pushes day-exact chronology back further from 664 BC to 690 BC.8 Accordingly, Taharqa would have counted his reign from some day in the Egyptian year 12 Feb 690 BC–11 Feb 689 BC. The year 12 Feb 691 BC–11 Feb 690 BC is also a possibility. This window of doubt exists because IM 3733 lacks certain information: (1) the months and days of the bull’s life-span, given as 21 years; (2) the month and day of his birth in Taharqa’s Year 26; and (3) the year of his day of installation, which was Month 8 Day 9.9 The lengths of the reigns of Dyn. 26 are as follows. Details follow in the notes to the table in section 4.

<table>
<thead>
<tr>
<th>Dyn. 26</th>
<th>664/3</th>
<th>–</th>
<th>ca. 527–5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psammetichus I</td>
<td>664/3</td>
<td>–</td>
<td>610</td>
</tr>
<tr>
<td>Necho II</td>
<td>610</td>
<td>–</td>
<td>595</td>
</tr>
<tr>
<td>Psammetichus II</td>
<td>595</td>
<td>–</td>
<td>589</td>
</tr>
<tr>
<td>Apries</td>
<td>589</td>
<td>–</td>
<td>570</td>
</tr>
<tr>
<td>Amasis</td>
<td>570</td>
<td>–</td>
<td>527/6</td>
</tr>
</tbody>
</table>
| Psammetichus III? | some (6?) months in 527–525?

En-dashes (–) denote time-periods. Slashes (/) mark ancient calendar-years straddling two Julian years.

3. Dynasties 28 to 31

The main structural feature of the chronology of Egypt in the fourth century BC up to Alexander’s conquest of 332 BC is that it is partly day-exact. This feature deserves attention first. The evidence is in Nectanebo’s Dream, which prophesies the demise of Egypt’s last native ruler. The king of the Greek version had been identified with Nectanebo II,

---

9 For details, see Depuydt, JARCE 32, 52–53.
not Nectanebo I, but it took a Demotic fragment to confirm this definitively.\textsuperscript{10} In the Greek version in papyrus Leiden I 396, the Dream is dated to the night from 21 to 22 Pharmouthi (Day 21 to Day 22 of Month 8) of Nectanebo II’s Year 16.\textsuperscript{11} It was about full moon (κατεθεν δια δεξιρέμιαν). The lunar date can be identified with the help of Manetho’s king-lists. In Manetho,\textsuperscript{12} about 72 to 74 years separate the end of the reign of Darius II in 405/4 BC from Alexander’s conquest of 332 BC. Nectanebo II’s Year 16 is therefore about 62 years away from 405/4 BC, or falls about halfway between 345 BC and 340 BC. By far the closest match for the combination of full moon with 21/2 Pharmouthi falls in 343 BC. In this year, 21/2 Pharmouthi equals 5/6 Jul 343 BC. Full moon occurred about noon of 6 July.\textsuperscript{13} The following equations result. Details follow in the table in section 4.

\begin{tabular}{|l|c|}
\hline
Nectanebo II Year 1 & 21 Nov 359–20 Nov 358 \\
Nectanebo II Year 2 & 21 Nov 358–19 Nov 357 \\
And so on & \\
Nectanebo II Year 19 & 16 Nov 341–15 Nov 340 \\
Nectanebo II Year 20 & 16 Nov 340–15 Nov 339 \\
\hline
\end{tabular}

It is not known when in the Egyptian year 21 Nov 359 BC–20 Nov 358 BC Nectanebo II assumed power. According to Manetho, he reigned 20 years. The highest regnal date in hieroglyphic sources is Year 18.\textsuperscript{14}

According to Manetho, or an addition to Manetho, Artaxerxes III, also called Ochos, conquered Egypt in his Year 20.\textsuperscript{15} His Babylonian Year 20 ran from spring 339 BC to spring 338 BC. According to predating of postdating (see 1.2 in Chapter III. 11), his Egyptian year 20 would begin on the Egyptian new year of 16 Nov 340 BC.


\textsuperscript{11} The Demotic version’s Year 18 must be an error. Indeed, three other Demotic versions, Carlsberg 424, 499, and 559, date a sequel to the Dream to Year 16 (Ryholt, \textit{ZPE} 122, 198).

\textsuperscript{12} Waddell, \textit{Manetho}.

\textsuperscript{13} Goldstine’s time \textit{(Moons}, 55) for Babylon, minus 53 minutes for Memphis.

\textsuperscript{14} Kienitz, \textit{Geschichte}, 216 (part of a useful and extensive listing of documents dating to the fourth century BC).

\textsuperscript{15} Waddell, \textit{Manetho}, 184–187.
Remarkably, the conquest is now mostly dated earlier, to 343/2 BC.\textsuperscript{16} But on closer inspection, the sole argument ever adduced in favor of 343/2 BC appears non-binding. Persian envoys visited Athens when Lukiskos was archon, from July 344 BC to July 343 BC. It has been assumed that the army of Greek mercenaries hired on the occasion could not have been maintained long without action. The invasion of Egypt must therefore have followed soon, in the fall of 343 BC.\textsuperscript{17} This argument is reasonable, but hardly conclusive. It contradicts other evidence that seems firmer. 340/39 BC remains preferable as the date of the re-conquest.

For the rest of Dyns. 28 to 30, Manetho serves as the basis, fine-tuned by data from the monuments. Current assignments of regnal years to Egyptian wandering years are not definitive, but in all probability correct to within one or two years. Africanus, generally considered the best source for Manetho, who is himself not preserved, gives 73 years and 4 months for that period: 6 years for Dyn. 28; 20 years 4 months for Dyn. 29; 38 years for Dyn. 30; and 9 years for Dyn. 31. Provisional dates for the reigns are as follows.\textsuperscript{18}

<table>
<thead>
<tr>
<th>Dyn. 28</th>
<th>Amyrtaios</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dyn. 29</td>
<td>Nefherites I</td>
</tr>
<tr>
<td></td>
<td>Achoris</td>
</tr>
<tr>
<td></td>
<td>Psammuthis</td>
</tr>
<tr>
<td>Dyn. 30</td>
<td>Nefherites II</td>
</tr>
<tr>
<td></td>
<td>Nectanebo I (Nectanebes)</td>
</tr>
<tr>
<td></td>
<td>Teos/Tachos</td>
</tr>
<tr>
<td></td>
<td>Nectanebo II (Nectanebos)</td>
</tr>
</tbody>
</table>


\textsuperscript{17} E. J. Bickerman, “Notes sur la chronologie de la XXX\textdegree{} dynastie”, in: \textit{Mélanges Maspero I: Orient Ancien} (Cairo: MIFAO 56, 1934), 77–84, at 81.

\textsuperscript{18} From Lloyd, \textit{CAH}\textsuperscript{2}, vol. 6, 358. Lloyd’s survey of Egypt in 404–332 BC includes an appendix on chronology. See also J. D. Ray, “Psammuthis and Hakoris”, \textit{JEA} 72 (1986), 149–58; G. Traunecker, “Essai sur l’histoire de la XXIX\textdegree{} Dynastie”, 79 (1979), 395–436. M. Chauveau (“Les archives d’un temple des oasis au temps des Perses”, \textit{BSFE} 137 (1996), 32–47) suggests that Amyrtaios, sole ruler of Dyn. 28, sometimes used the name Psammetichus. That would him make the fifth ruler of that name, in addition to Psammetichus I and II of Dyn. 26 and two postulated ephemeral rulers dating to about 526 BC and to about the mid 480s BC.
The evidence for Dyn. 31 is sparse. The following dates for the lengths of the Egyptian reigns of its three Persian kings are derived from the date of Artaxerxes III's conquest (see section 3 above) and from Ptolemy's Canon (see 2.1 in Chapter III. 11). The first Babylonian regnal years of Arses and Darius III began in the spring of 337 BC and of 335 BC respectively, that is, on the first Babylonian new year following the Canon’s beginnings for their reigns, namely 16 Nov 338 BC and 15 Nov 336 BC. Their actual reigns may have begun up to a year earlier and therefore have either preceded or followed the Canon’s beginning.

<table>
<thead>
<tr>
<th>Dyn. 31</th>
<th>ca. 340</th>
<th>–</th>
<th>332</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artaxerxes III (end of reign)</td>
<td>ca. 340</td>
<td>–</td>
<td>338/7</td>
</tr>
<tr>
<td>Arses</td>
<td>338/7</td>
<td>–</td>
<td>336/5</td>
</tr>
<tr>
<td>Darius III</td>
<td>336/5</td>
<td>–</td>
<td>332</td>
</tr>
</tbody>
</table>

4. Regnal Years in 690 BC–332 BC

All the years in the following table are exactly 365 days long. The years printed in italics include a Julian 29 February. The Era of Nabonassar in the first column is a year-count from the first king of Ptolemy’s Canon (see 2.1 in Chapter III. 11). The table joins the Canon in 525 BC. Details on the transitions of the historical reigns appear in the notes. The years from 525 BC to the end of the fifth century BC are almost certainly also the actual historical Egyptian regnal years; the years back to 664 BC, with high probability; those back to 690 BC, quite possibly. For the fourth century BC, only regnal years placed with reasonable certainty are listed. To convert, say, Month 5 Day 29 of Year 5 of Cambyses, one may proceed as follows.

---

2 Jan 525 = Month 1 Day 1 + 29
31 Jan 525 = Month 1 Day 3 + 1
1 Feb 525 = Month 2 Day 1 + 28
29 Feb 525 = Month 2 Day 29 + 1

and so on

<table>
<thead>
<tr>
<th>Era of Nabonassar</th>
<th>Ruler+</th>
<th>Length of 365-day Egyptian Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>58</td>
<td>Shabataka? Year ? + Taharqa 1</td>
<td>12 Feb 690–11 Feb 689</td>
</tr>
<tr>
<td>59</td>
<td>Taharqa 2</td>
<td>12 Feb 689–10 Feb 688</td>
</tr>
<tr>
<td>60</td>
<td>Taharqa 3</td>
<td>11 Feb 688–10 Feb 687</td>
</tr>
<tr>
<td>61</td>
<td>Taharqa 4</td>
<td>11 Feb 687–10 Feb 686</td>
</tr>
<tr>
<td>62</td>
<td>Taharqa 5</td>
<td>11 Feb 686–10 Feb 685</td>
</tr>
<tr>
<td>63</td>
<td>Taharqa 6</td>
<td>11 Feb 685–9 Feb 684</td>
</tr>
<tr>
<td>64</td>
<td>Taharqa 7</td>
<td>10 Feb 684–9 Feb 683</td>
</tr>
<tr>
<td>65</td>
<td>Taharqa 8</td>
<td>10 Feb 683–9 Feb 682</td>
</tr>
<tr>
<td>66</td>
<td>Taharqa 9</td>
<td>10 Feb 682–9 Feb 681</td>
</tr>
<tr>
<td>67</td>
<td>Taharqa 10</td>
<td>10 Feb 681–8 Feb 680</td>
</tr>
<tr>
<td>68</td>
<td>Taharqa 11</td>
<td>9 Feb 680–8 Feb 679</td>
</tr>
<tr>
<td>69</td>
<td>Taharqa 12</td>
<td>9 Feb 679–8 Feb 678</td>
</tr>
<tr>
<td>70</td>
<td>Taharqa 13</td>
<td>9 Feb 678–8 Feb 677</td>
</tr>
<tr>
<td>71</td>
<td>Taharqa 14</td>
<td>9 Feb 677–7 Feb 676</td>
</tr>
<tr>
<td>72</td>
<td>Taharqa 15</td>
<td>8 Feb 676–7 Feb 675</td>
</tr>
<tr>
<td>73</td>
<td>Taharqa 16</td>
<td>8 Feb 675–7 Feb 674</td>
</tr>
<tr>
<td>74</td>
<td>Taharqa 17</td>
<td>8 Feb 674–7 Feb 673</td>
</tr>
<tr>
<td>75</td>
<td>Taharqa 18</td>
<td>8 Feb 673–6 Feb 672</td>
</tr>
<tr>
<td>76</td>
<td>Taharqa 19</td>
<td>7 Feb 672–6 Feb 671</td>
</tr>
<tr>
<td>77</td>
<td>Taharqa 20</td>
<td>7 Feb 671–6 Feb 670</td>
</tr>
<tr>
<td>78</td>
<td>Taharqa 21</td>
<td>7 Feb 670–6 Feb 669</td>
</tr>
<tr>
<td>79</td>
<td>Taharqa 22</td>
<td>7 Feb 669–5 Feb 668</td>
</tr>
<tr>
<td>80</td>
<td>Taharqa 23</td>
<td>6 Feb 668–5 Feb 667</td>
</tr>
<tr>
<td>81</td>
<td>Taharqa 24</td>
<td>6 Feb 667–5 Feb 666</td>
</tr>
<tr>
<td>82</td>
<td>Taharqa 25</td>
<td>6 Feb 666–5 Feb 665</td>
</tr>
<tr>
<td>83</td>
<td>Taharqa 26</td>
<td>6 Feb 665–4 Feb 664</td>
</tr>
<tr>
<td>84</td>
<td>Taharqa 27</td>
<td>5 Feb 664–3 Feb 663</td>
</tr>
<tr>
<td>+ Psammetichus I 1</td>
<td></td>
<td>-4 Feb 663</td>
</tr>
<tr>
<td>85</td>
<td>Psammetichus I 2</td>
<td>5 Feb 663–4 Feb 662</td>
</tr>
<tr>
<td>86</td>
<td>Psammetichus I 3</td>
<td>5 Feb 662–4 Feb 661</td>
</tr>
<tr>
<td>87</td>
<td>Psammetichus I 4</td>
<td>5 Feb 661–3 Feb 660</td>
</tr>
</tbody>
</table>

(continued on next page)
<table>
<thead>
<tr>
<th>Era of Nabonassar</th>
<th>Ruler+ Regnal Year</th>
<th>Length of 365-day Egyptian Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>88</td>
<td>Psammetichus I 5</td>
<td>4 Feb 660–3 Feb 659</td>
</tr>
<tr>
<td>89</td>
<td>Psammetichus I 6</td>
<td>4 Feb 659–3 Feb 658</td>
</tr>
<tr>
<td>90</td>
<td>Psammetichus I 7</td>
<td>4 Feb 658–3 Feb 657</td>
</tr>
<tr>
<td>91</td>
<td>Psammetichus I 8</td>
<td>4 Feb 657–2 Feb 656</td>
</tr>
<tr>
<td>92</td>
<td>Psammetichus I 9</td>
<td>3 Feb 656–2 Feb 655</td>
</tr>
<tr>
<td>93</td>
<td>Psammetichus I 10</td>
<td>3 Feb 655–2 Feb 654</td>
</tr>
<tr>
<td>94</td>
<td>Psammetichus I 11</td>
<td>3 Feb 654–2 Feb 653</td>
</tr>
<tr>
<td>95</td>
<td>Psammetichus I 12</td>
<td>3 Feb 653–1 Feb 652</td>
</tr>
<tr>
<td>96</td>
<td>Psammetichus I 13</td>
<td>2 Feb 652–1 Feb 651</td>
</tr>
<tr>
<td>97</td>
<td>Psammetichus I 14</td>
<td>2 Feb 651–1 Feb 650</td>
</tr>
<tr>
<td>98</td>
<td>Psammetichus I 15</td>
<td>2 Feb 650–1 Feb 649</td>
</tr>
<tr>
<td>99</td>
<td>Psammetichus I 16</td>
<td>2 Feb 649–31 Jan 648</td>
</tr>
<tr>
<td>100</td>
<td>Psammetichus I 17</td>
<td>1 Feb 648–31 Jan 647</td>
</tr>
<tr>
<td>101</td>
<td>Psammetichus I 18</td>
<td>1 Feb 647–31 Jan 646</td>
</tr>
<tr>
<td>102</td>
<td>Psammetichus I 19</td>
<td>1 Feb 646–31 Jan 645</td>
</tr>
<tr>
<td>103</td>
<td>Psammetichus I 20</td>
<td>1 Feb 645–30 Jan 644</td>
</tr>
<tr>
<td>104</td>
<td>Psammetichus I 21</td>
<td>31 Jan 644–30 Jan 643</td>
</tr>
<tr>
<td>105</td>
<td>Psammetichus I 22</td>
<td>31 Jan 643–30 Jan 642</td>
</tr>
<tr>
<td>106</td>
<td>Psammetichus I 23</td>
<td>31 Jan 642–30 Jan 641</td>
</tr>
<tr>
<td>107</td>
<td>Psammetichus I 24</td>
<td>31 Jan 641–29 Jan 640</td>
</tr>
<tr>
<td>108</td>
<td>Psammetichus I 25</td>
<td>30 Jan 640–29 Jan 639</td>
</tr>
<tr>
<td>109</td>
<td>Psammetichus I 26</td>
<td>30 Jan 639–29 Jan 638</td>
</tr>
<tr>
<td>110</td>
<td>Psammetichus I 27</td>
<td>30 Jan 638–29 Jan 637</td>
</tr>
<tr>
<td>111</td>
<td>Psammetichus I 28</td>
<td>30 Jan 637–28 Jan 636</td>
</tr>
<tr>
<td>112</td>
<td>Psammetichus I 29</td>
<td>29 Jan 636–28 Jan 635</td>
</tr>
<tr>
<td>113</td>
<td>Psammetichus I 30</td>
<td>29 Jan 635–28 Jan 634</td>
</tr>
<tr>
<td>114</td>
<td>Psammetichus I 31</td>
<td>29 Jan 634–28 Jan 633</td>
</tr>
<tr>
<td>115</td>
<td>Psammetichus I 32</td>
<td>29 Jan 633–27 Jan 632</td>
</tr>
<tr>
<td>116</td>
<td>Psammetichus I 33</td>
<td>28 Jan 632–27 Jan 631</td>
</tr>
<tr>
<td>117</td>
<td>Psammetichus I 34</td>
<td>28 Jan 631–27 Jan 630</td>
</tr>
<tr>
<td>118</td>
<td>Psammetichus I 35</td>
<td>28 Jan 630–27 Jan 629</td>
</tr>
<tr>
<td>119</td>
<td>Psammetichus I 36</td>
<td>28 Jan 629–26 Jan 628</td>
</tr>
<tr>
<td>120</td>
<td>Psammetichus I 37</td>
<td>27 Jan 628–26 Jan 627</td>
</tr>
<tr>
<td>121</td>
<td>Psammetichus I 38</td>
<td>27 Jan 627–26 Jan 626</td>
</tr>
<tr>
<td>122</td>
<td>Psammetichus I 39</td>
<td>27 Jan 626–26 Jan 625</td>
</tr>
<tr>
<td>123</td>
<td>Psammetichus I 40</td>
<td>27 Jan 625–25 Jan 624</td>
</tr>
<tr>
<td>124</td>
<td>Psammetichus I 41</td>
<td>26 Jan 624–25 Jan 623</td>
</tr>
<tr>
<td>125</td>
<td>Psammetichus I 42</td>
<td>26 Jan 623–25 Jan 622</td>
</tr>
<tr>
<td>126</td>
<td>Psammetichus I 43</td>
<td>26 Jan 622–25 Jan 621</td>
</tr>
<tr>
<td>127</td>
<td>Psammetichus I 44</td>
<td>26 Jan 621–24 Jan 620</td>
</tr>
<tr>
<td>128</td>
<td>Psammetichus I 45</td>
<td>25 Jan 620–24 Jan 619</td>
</tr>
<tr>
<td>129</td>
<td>Psammetichus I 46</td>
<td>25 Jan 619–24 Jan 618</td>
</tr>
</tbody>
</table>

(continued on next page)
<table>
<thead>
<tr>
<th>Era of Nabonassar</th>
<th>Ruler+ Regnal Year</th>
<th>Length of 365-day Egyptian Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>130</td>
<td>Psammetichus I 47</td>
<td>25 Jan 618–24 Jan 617</td>
</tr>
<tr>
<td>131</td>
<td>Psammetichus I 48</td>
<td>25 Jan 617–23 Jan 616</td>
</tr>
<tr>
<td>132</td>
<td>Psammetichus I 49</td>
<td>24 Jan 616–23 Jan 615</td>
</tr>
<tr>
<td>133</td>
<td>Psammetichus I 50</td>
<td>24 Jan 615–23 Jan 614</td>
</tr>
<tr>
<td>134</td>
<td>Psammetichus I 51</td>
<td>24 Jan 614–23 Jan 613</td>
</tr>
<tr>
<td>135</td>
<td>Psammetichus I 52</td>
<td>24 Jan 613–22 Jan 612</td>
</tr>
<tr>
<td>136</td>
<td>Psammetichus I 53</td>
<td>23 Jan 612–22 Jan 611</td>
</tr>
<tr>
<td>137</td>
<td>Psammetichus I 54</td>
<td>23 Jan 611–22 Jan 610</td>
</tr>
<tr>
<td>138</td>
<td>Psammetichus I 55</td>
<td>23 Jan 610–</td>
</tr>
</tbody>
</table>

+ Necho II 1

| 139              | Necho II 2         | 23 Jan 609–21 Jan 608           |
| 140              | Necho II 3         | 22 Jan 608–21 Jan 607           |
| 141              | Necho II 4         | 22 Jan 607–21 Jan 606           |
| 142              | Necho II 5         | 22 Jan 606–21 Jan 605           |
| 143              | Necho II 6         | 22 Jan 605–20 Jan 604           |
| 144              | Necho II 7         | 21 Jan 604–20 Jan 603           |
| 145              | Necho II 8         | 21 Jan 603–20 Jan 602           |
| 146              | Necho II 9         | 21 Jan 602–20 Jan 601           |
| 147              | Necho II 10        | 21 Jan 601–19 Jan 600           |
| 148              | Necho II 11        | 20 Jan 600–19 Jan 599           |
| 149              | Necho II 12        | 20 Jan 599–19 Jan 598           |
| 150              | Necho II 13        | 20 Jan 598–19 Jan 597           |
| 151              | Necho II 14        | 20 Jan 597–18 Jan 596           |
| 152              | Necho II 15        | 19 Jan 596–18 Jan 595           |
| 153              | Necho II 16        | 19 Jan 595–                        |

+ Psammetichus II 1

| 154              | Psammetichus II 2  | 19 Jan 594–18 Jan 593           |
| 155              | Psammetichus II 3  | 19 Jan 593–17 Jan 592           |
| 156              | Psammetichus II 4  | 18 Jan 592–17 Jan 591           |
| 157              | Psammetichus II 5  | 18 Jan 591–17 Jan 590           |
| 158              | Psammetichus II 6  | 18 Jan 590–17 Jan 589           |
| 159              | Psammetichus II 7  | 18 Jan 589–9 Feb 589            |

+ Apries 1

| 160              | Apries 2           | 10 Feb 589–16 Jan 588           |
| 161              | Apries 3           | 17 Jan 588–16 Jan 587           |
| 162              | Apries 4           | 17 Jan 587–16 Jan 586           |
| 163              | Apries 5           | 17 Jan 586–16 Jan 585           |
| 164              | Apries 6           | 16 Jan 584–15 Jan 583           |

(continued on next page)
<table>
<thead>
<tr>
<th>Era of Nabonassar</th>
<th>Regnal Year</th>
<th>Egyptian Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>165</td>
<td>Apries 7</td>
<td>16 Jan 583–15 Jan 582</td>
</tr>
<tr>
<td>166</td>
<td>Apries 8</td>
<td>16 Jan 582–15 Jan 581</td>
</tr>
<tr>
<td>167</td>
<td>Apries 9</td>
<td>16 Jan 581–14 Jan 580</td>
</tr>
<tr>
<td>168</td>
<td>Apries 10</td>
<td>15 Jan 580–14 Jan 579</td>
</tr>
<tr>
<td>169</td>
<td>Apries 11</td>
<td>15 Jan 579–14 Jan 578</td>
</tr>
<tr>
<td>170</td>
<td>Apries 12</td>
<td>15 Jan 578–14 Jan 577</td>
</tr>
<tr>
<td>171</td>
<td>Apries 13</td>
<td>15 Jan 577–13 Jan 576</td>
</tr>
<tr>
<td>172</td>
<td>Apries 14</td>
<td>14 Jan 576–13 Jan 575</td>
</tr>
<tr>
<td>173</td>
<td>Apries 15</td>
<td>14 Jan 575–13 Jan 574</td>
</tr>
<tr>
<td>174</td>
<td>Apries 16</td>
<td>14 Jan 574–13 Jan 573</td>
</tr>
<tr>
<td>175</td>
<td>Apries 17</td>
<td>14 Jan 573–12 Jan 572</td>
</tr>
<tr>
<td>176</td>
<td>Apries 18</td>
<td>13 Jan 572–12 Jan 571</td>
</tr>
<tr>
<td>177</td>
<td>Apries 19</td>
<td>13 Jan 571–12 Jan 570</td>
</tr>
<tr>
<td>178</td>
<td>Apries 20</td>
<td>13 Jan 570–</td>
</tr>
<tr>
<td></td>
<td></td>
<td>–at least until 19 Oct 570vi</td>
</tr>
<tr>
<td>+ Amasis 1</td>
<td></td>
<td>by Day x in 11 Jul–9 Aug 570</td>
</tr>
<tr>
<td>179</td>
<td>Amasis 2</td>
<td>13 Jan 569–11 Jan 568</td>
</tr>
<tr>
<td>180</td>
<td>Amasis 3</td>
<td>12 Jan 568–11 Jan 567</td>
</tr>
<tr>
<td>181</td>
<td>Amasis 4</td>
<td>12 Jan 567–11 Jan 566</td>
</tr>
<tr>
<td>182</td>
<td>Amasis 5</td>
<td>12 Jan 566–11 Jan 565</td>
</tr>
<tr>
<td>183</td>
<td>Amasis 6</td>
<td>12 Jan 565–10 Jan 564</td>
</tr>
<tr>
<td>184</td>
<td>Amasis 7</td>
<td>11 Jan 564–10 Jan 563</td>
</tr>
<tr>
<td>185</td>
<td>Amasis 8</td>
<td>11 Jan 563–10 Jan 562</td>
</tr>
<tr>
<td>186</td>
<td>Amasis 9</td>
<td>11 Jan 562–10 Jan 561</td>
</tr>
<tr>
<td>187</td>
<td>Amasis 10</td>
<td>11 Jan 561–9 Jan 560</td>
</tr>
<tr>
<td>188</td>
<td>Amasis 11</td>
<td>10 Jan 560–9 Jan 559</td>
</tr>
<tr>
<td>189</td>
<td>Amasis 12</td>
<td>10 Jan 559–9 Jan 558</td>
</tr>
<tr>
<td>190</td>
<td>Amasis 13</td>
<td>10 Jan 558–9 Jan 557</td>
</tr>
<tr>
<td>191</td>
<td>Amasis 14</td>
<td>10 Jan 557–8 Jan 556</td>
</tr>
<tr>
<td>192</td>
<td>Amasis 15</td>
<td>9 Jan 556–8 Jan 555</td>
</tr>
<tr>
<td>193</td>
<td>Amasis 16</td>
<td>9 Jan 555–8 Jan 554</td>
</tr>
<tr>
<td>194</td>
<td>Amasis 17</td>
<td>9 Jan 554–8 Jan 553</td>
</tr>
<tr>
<td>195</td>
<td>Amasis 18</td>
<td>9 Jan 553–7 Jan 552</td>
</tr>
<tr>
<td>196</td>
<td>Amasis 19</td>
<td>8 Jan 552–7 Jan 551</td>
</tr>
<tr>
<td>197</td>
<td>Amasis 20</td>
<td>8 Jan 551–7 Jan 550</td>
</tr>
<tr>
<td>198</td>
<td>Amasis 21</td>
<td>8 Jan 550–7 Jan 549</td>
</tr>
<tr>
<td>199</td>
<td>Amasis 22</td>
<td>8 Jan 549–6 Jan 548</td>
</tr>
<tr>
<td>200</td>
<td>Amasis 23</td>
<td>7 Jan 548–6 Jan 547</td>
</tr>
<tr>
<td>201</td>
<td>Amasis 24</td>
<td>7 Jan 547–6 Jan 546</td>
</tr>
<tr>
<td>202</td>
<td>Amasis 25</td>
<td>7 Jan 546–6 Jan 545</td>
</tr>
<tr>
<td>203</td>
<td>Amasis 26</td>
<td>7 Jan 545–5 Jan 544</td>
</tr>
</tbody>
</table>

(continued on next page)
Table (cont.)

<table>
<thead>
<tr>
<th>Era of Nabonassar</th>
<th>Ruler+ Regnal Year</th>
<th>Length of 365-day Egyptian Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>204</td>
<td>Amasis 27</td>
<td>6 Jan 544–5 Jan 543</td>
</tr>
<tr>
<td>205</td>
<td>Amasis 28</td>
<td>6 Jan 543–5 Jan 542</td>
</tr>
<tr>
<td>206</td>
<td>Amasis 29</td>
<td>6 Jan 542–5 Jan 541</td>
</tr>
<tr>
<td>207</td>
<td>Amasis 30</td>
<td>6 Jan 541–4 Jan 540</td>
</tr>
<tr>
<td>208</td>
<td>Amasis 31</td>
<td>5 Jan 540–4 Jan 539</td>
</tr>
<tr>
<td>209</td>
<td>Amasis 32</td>
<td>5 Jan 539–4 Jan 538</td>
</tr>
<tr>
<td>210</td>
<td>Amasis 33</td>
<td>5 Jan 538–4 Jan 537</td>
</tr>
<tr>
<td>211</td>
<td>Amasis 34</td>
<td>5 Jan 537–3 Jan 536</td>
</tr>
<tr>
<td>212</td>
<td>Amasis 35</td>
<td>4 Jan 536–3 Jan 535</td>
</tr>
<tr>
<td>213</td>
<td>Amasis 36</td>
<td>4 Jan 535–3 Jan 534</td>
</tr>
<tr>
<td>214</td>
<td>Amasis 37</td>
<td>4 Jan 534–3 Jan 533</td>
</tr>
<tr>
<td>215</td>
<td>Amasis 38</td>
<td>4 Jan 533–2 Jan 532</td>
</tr>
<tr>
<td>216</td>
<td>Amasis 39</td>
<td>3 Jan 532–2 Jan 531</td>
</tr>
<tr>
<td>217</td>
<td>Amasis 40</td>
<td>3 Jan 531–2 Jan 530</td>
</tr>
<tr>
<td>218</td>
<td>Amasis 41</td>
<td>3 Jan 530–2 Jan 529</td>
</tr>
<tr>
<td>219</td>
<td>Amasis 42</td>
<td>3 Jan 529–1 Jan 528</td>
</tr>
<tr>
<td>220</td>
<td>Amasis 43</td>
<td>2 Jan 528–1 Jan 527</td>
</tr>
<tr>
<td>221</td>
<td>Amasis 44</td>
<td>2 Jan 527–1 Jan 526</td>
</tr>
<tr>
<td>+ uncertain\textsuperscript{vii}</td>
<td></td>
<td>–1 Jan 526</td>
</tr>
<tr>
<td>222</td>
<td>uncertain\textsuperscript{vii}</td>
<td>2 Jan 526–1 Jan 525</td>
</tr>
<tr>
<td>223\textsuperscript{viii}</td>
<td></td>
<td>2 Jan 525–1 Jan 524</td>
</tr>
<tr>
<td>+ Cambyses 5</td>
<td></td>
<td>–31 Dec 525</td>
</tr>
<tr>
<td>224</td>
<td>Cambyses 6</td>
<td>1 Jan 524–31 Dec 524</td>
</tr>
<tr>
<td>225</td>
<td>Cambyses 7</td>
<td>1 Jan 523–31 Dec 523</td>
</tr>
<tr>
<td>226\textsuperscript{x}</td>
<td></td>
<td>1 Jan 522–death in 522\textsuperscript{x}</td>
</tr>
<tr>
<td>+ Darius I’s accession year</td>
<td></td>
<td>accession in 522\textsuperscript{x}–</td>
</tr>
<tr>
<td>227\textsuperscript{x}</td>
<td>Darius I’s accession year or Year 1?</td>
<td>1 Jan 521–ca. 13 Apr 521\textsuperscript{xii}</td>
</tr>
<tr>
<td>Darius I 1</td>
<td></td>
<td>ca. 13 Apr 521–ca. 13 Apr 521–30 Dec 521</td>
</tr>
<tr>
<td>228</td>
<td>Darius I 2</td>
<td>31 Dec 521–30 Dec 520</td>
</tr>
<tr>
<td>229</td>
<td>Darius I 3</td>
<td>31 Dec 520–30 Dec 519</td>
</tr>
<tr>
<td>230</td>
<td>Darius I 4</td>
<td>31 Dec 519–30 Dec 518</td>
</tr>
<tr>
<td>231</td>
<td>Darius I 5</td>
<td>31 Dec 518–29 Dec 517</td>
</tr>
<tr>
<td>232</td>
<td>Darius I 6</td>
<td>30 Dec 517–29 Dec 516</td>
</tr>
<tr>
<td>233</td>
<td>Darius I 7</td>
<td>30 Dec 516–29 Dec 515</td>
</tr>
<tr>
<td>234</td>
<td>Darius I 8</td>
<td>30 Dec 515–29 Dec 514</td>
</tr>
<tr>
<td>235</td>
<td>Darius I 9</td>
<td>30 Dec 514–28 Dec 513</td>
</tr>
<tr>
<td>236</td>
<td>Darius I 10</td>
<td>29 Dec 513–28 Dec 512</td>
</tr>
<tr>
<td>237</td>
<td>Darius I 11</td>
<td>29 Dec 512–28 Dec 511</td>
</tr>
<tr>
<td>238</td>
<td>Darius I 12</td>
<td>29 Dec 511–28 Dec 510</td>
</tr>
</tbody>
</table>

(continued on next page)
<table>
<thead>
<tr>
<th>Era of Nabonassar</th>
<th>Ruler+ Regnal Year</th>
<th>Length of 365-day Egyptian Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>239</td>
<td>Darius I 13</td>
<td>29 Dec 510–27 Dec 509</td>
</tr>
<tr>
<td>240</td>
<td>Darius I 14</td>
<td>28 Dec 509–27 Dec 508</td>
</tr>
<tr>
<td>241</td>
<td>Darius I 15</td>
<td>28 Dec 508–27 Dec 507</td>
</tr>
<tr>
<td>242</td>
<td>Darius I 16</td>
<td>28 Dec 507–27 Dec 506</td>
</tr>
<tr>
<td>243</td>
<td>Darius I 17</td>
<td>28 Dec 506–26 Dec 505</td>
</tr>
<tr>
<td>244</td>
<td>Darius I 18</td>
<td>27 Dec 505–26 Dec 504</td>
</tr>
<tr>
<td>245</td>
<td>Darius I 19</td>
<td>27 Dec 504–26 Dec 503</td>
</tr>
<tr>
<td>246</td>
<td>Darius I 20</td>
<td>27 Dec 503–26 Dec 502</td>
</tr>
<tr>
<td>247</td>
<td>Darius I 21</td>
<td>27 Dec 502–25 Dec 501</td>
</tr>
<tr>
<td>248</td>
<td>Darius I 22</td>
<td>26 Dec 501–25 Dec 500</td>
</tr>
<tr>
<td>249</td>
<td>Darius I 23</td>
<td>26 Dec 500–25 Dec 499</td>
</tr>
<tr>
<td>250</td>
<td>Darius I 24</td>
<td>26 Dec 499–25 Dec 498</td>
</tr>
<tr>
<td>251</td>
<td>Darius I 25</td>
<td>26 Dec 498–24 Dec 497</td>
</tr>
<tr>
<td>252</td>
<td>Darius I 26</td>
<td>25 Dec 497–24 Dec 496</td>
</tr>
<tr>
<td>253</td>
<td>Darius I 27</td>
<td>25 Dec 496–24 Dec 495</td>
</tr>
<tr>
<td>254</td>
<td>Darius I 28</td>
<td>25 Dec 495–24 Dec 494</td>
</tr>
<tr>
<td>255</td>
<td>Darius I 29</td>
<td>25 Dec 494–23 Dec 493</td>
</tr>
<tr>
<td>256</td>
<td>Darius I 30</td>
<td>24 Dec 493–23 Dec 492</td>
</tr>
<tr>
<td>257</td>
<td>Darius I 31</td>
<td>24 Dec 492–23 Dec 491</td>
</tr>
<tr>
<td>258</td>
<td>Darius I 32</td>
<td>24 Dec 491–23 Dec 490</td>
</tr>
<tr>
<td>259</td>
<td>Darius I 33</td>
<td>24 Dec 490–22 Dec 489</td>
</tr>
<tr>
<td>260</td>
<td>Darius I 34</td>
<td>23 Dec 489–22 Dec 488</td>
</tr>
<tr>
<td>261</td>
<td>Darius I 35</td>
<td>23 Dec 488–22 Dec 487</td>
</tr>
<tr>
<td>262&lt;sup&gt;iii&lt;/sup&gt;</td>
<td>Darius I 36</td>
<td>23 Dec 487–</td>
</tr>
<tr>
<td></td>
<td></td>
<td>–at least until 24 Nov 486&lt;sup&gt;xiv&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>at the latest by 1 Dec 486–</td>
</tr>
<tr>
<td></td>
<td></td>
<td>–22 Dec 486</td>
</tr>
<tr>
<td></td>
<td></td>
<td>–at least until 24 Nov 486&lt;sup&gt;xiv&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ca. 5 Apr 485&lt;sup&gt;xv&lt;/sup&gt;–21 Dec 485</td>
</tr>
<tr>
<td>263&lt;sup&gt;iii&lt;/sup&gt;</td>
<td>Xerxes I’s accession year</td>
<td>23 Dec 486–</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ca. 5 Apr 485&lt;sup&gt;xv&lt;/sup&gt;–21 Dec 485</td>
</tr>
<tr>
<td>264</td>
<td>Xerxes I 1</td>
<td>22 Dec 485–21 Dec 484</td>
</tr>
<tr>
<td>265</td>
<td>Xerxes I 2</td>
<td>22 Dec 484–21 Dec 483</td>
</tr>
<tr>
<td>266</td>
<td>Xerxes I 3</td>
<td>22 Dec 483–21 Dec 482</td>
</tr>
<tr>
<td>267</td>
<td>Xerxes I 4</td>
<td>22 Dec 482–20 Dec 481</td>
</tr>
<tr>
<td>268</td>
<td>Xerxes I 5</td>
<td>21 Dec 481–20 Dec 480</td>
</tr>
<tr>
<td>269</td>
<td>Xerxes I 6</td>
<td>21 Dec 480–20 Dec 479</td>
</tr>
<tr>
<td>270</td>
<td>Xerxes I 7</td>
<td>21 Dec 479–20 Dec 478</td>
</tr>
<tr>
<td>271</td>
<td>Xerxes I 8</td>
<td>21 Dec 478–19 Dec 477</td>
</tr>
<tr>
<td>272</td>
<td>Xerxes I 9</td>
<td>20 Dec 477–19 Dec 476</td>
</tr>
<tr>
<td>273</td>
<td>Xerxes I 10</td>
<td>20 Dec 476–19 Dec 475</td>
</tr>
<tr>
<td>274</td>
<td>Xerxes I 11</td>
<td>20 Dec 475–19 Dec 474</td>
</tr>
<tr>
<td>275</td>
<td>Xerxes I 13</td>
<td>20 Dec 474–18 Dec 473</td>
</tr>
</tbody>
</table>

<sup>iii</sup> Xerxes I’s accession year or Year 1?

<sup>xiv</sup> at least until 24 Nov 486

<sup>xv</sup> ca. 5 Apr 485–21 Dec 485
<table>
<thead>
<tr>
<th>Era of Nabonassar</th>
<th>Ruler+ Regnal Year</th>
<th>Length of 365-day Egyptian Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>276</td>
<td>Xerxes I 14</td>
<td>19 Dec 473–18 Dec 472</td>
</tr>
<tr>
<td>277</td>
<td>Xerxes I 15</td>
<td>19 Dec 472–18 Dec 471</td>
</tr>
<tr>
<td>278</td>
<td>Xerxes I 16</td>
<td>19 Dec 471–18 Dec 470</td>
</tr>
<tr>
<td>279</td>
<td>Xerxes I 17</td>
<td>19 Dec 470–17 Dec 469</td>
</tr>
<tr>
<td>280</td>
<td>Xerxes I 18</td>
<td>18 Dec 469–17 Dec 468</td>
</tr>
<tr>
<td>281</td>
<td>Xerxes I 19</td>
<td>18 Dec 468–17 Dec 467</td>
</tr>
<tr>
<td>282</td>
<td>Xerxes I 20</td>
<td>18 Dec 467–17 Dec 466</td>
</tr>
<tr>
<td>283¹vi</td>
<td>Xerxes I 21</td>
<td>18 Dec 466−</td>
</tr>
<tr>
<td></td>
<td>+ Artaxerxes I’s accession year?</td>
<td>−Day x in 4–8 Aug 465&lt;sup&gt;vi&lt;/sup&gt; by 5 Aug 465 at the earliest&lt;sup&gt;vi&lt;/sup&gt;−16 Dec 465</td>
</tr>
<tr>
<td>284¹vi</td>
<td>Artaxerxes I’s accession year or Year 1?</td>
<td>17 Dec 465−</td>
</tr>
<tr>
<td></td>
<td>Artaxerxes I 1</td>
<td>−ca. 13 Apr 464&lt;sup&gt;six&lt;/sup&gt;</td>
</tr>
<tr>
<td>285</td>
<td>Artaxerxes I 2</td>
<td>17 Dec 464–16 Dec 463</td>
</tr>
<tr>
<td>286</td>
<td>Artaxerxes I 3</td>
<td>17 Dec 463–16 Dec 462</td>
</tr>
<tr>
<td>287</td>
<td>Artaxerxes I 4</td>
<td>17 Dec 462–15 Dec 461</td>
</tr>
<tr>
<td>288</td>
<td>Artaxerxes I 5</td>
<td>16 Dec 461–15 Dec 460</td>
</tr>
<tr>
<td>289</td>
<td>Artaxerxes I 6</td>
<td>16 Dec 460–15 Dec 459</td>
</tr>
<tr>
<td>290</td>
<td>Artaxerxes I 7</td>
<td>16 Dec 459–15 Dec 458</td>
</tr>
<tr>
<td>291</td>
<td>Artaxerxes I 8</td>
<td>16 Dec 458–14 Dec 457</td>
</tr>
<tr>
<td>292</td>
<td>Artaxerxes I 9</td>
<td>15 Dec 457–14 Dec 456</td>
</tr>
<tr>
<td>293</td>
<td>Artaxerxes I 10</td>
<td>15 Dec 456–14 Dec 455</td>
</tr>
<tr>
<td>294</td>
<td>Artaxerxes I 11</td>
<td>15 Dec 455–14 Dec 454</td>
</tr>
<tr>
<td>295</td>
<td>Artaxerxes I 12</td>
<td>15 Dec 454–13 Dec 453</td>
</tr>
<tr>
<td>296</td>
<td>Artaxerxes I 13</td>
<td>14 Dec 453–13 Dec 452</td>
</tr>
<tr>
<td>297</td>
<td>Artaxerxes I 14</td>
<td>14 Dec 452–13 Dec 451</td>
</tr>
<tr>
<td>298</td>
<td>Artaxerxes I 15</td>
<td>14 Dec 451–13 Dec 450</td>
</tr>
<tr>
<td>299</td>
<td>Artaxerxes I 16</td>
<td>14 Dec 450–12 Dec 449</td>
</tr>
<tr>
<td>300</td>
<td>Artaxerxes I 17</td>
<td>13 Dec 449–12 Dec 448</td>
</tr>
<tr>
<td>301</td>
<td>Artaxerxes I 18</td>
<td>13 Dec 448–12 Dec 447</td>
</tr>
<tr>
<td>302</td>
<td>Artaxerxes I 19</td>
<td>13 Dec 447–12 Dec 446</td>
</tr>
<tr>
<td>303</td>
<td>Artaxerxes I 20</td>
<td>13 Dec 446–11 Dec 445</td>
</tr>
<tr>
<td>304</td>
<td>Artaxerxes I 21</td>
<td>12 Dec 445–11 Dec 444</td>
</tr>
<tr>
<td>305</td>
<td>Artaxerxes I 22</td>
<td>12 Dec 444–11 Dec 443</td>
</tr>
<tr>
<td>306</td>
<td>Artaxerxes I 23</td>
<td>12 Dec 443–11 Dec 442</td>
</tr>
<tr>
<td>307</td>
<td>Artaxerxes I 24</td>
<td>12 Dec 442–10 Dec 441</td>
</tr>
<tr>
<td>308</td>
<td>Artaxerxes I 25</td>
<td>11 Dec 441–10 Dec 440</td>
</tr>
<tr>
<td>309</td>
<td>Artaxerxes I 26</td>
<td>11 Dec 440–10 Dec 439</td>
</tr>
<tr>
<td>310</td>
<td>Artaxerxes I 27</td>
<td>11 Dec 439–10 Dec 438</td>
</tr>
<tr>
<td>311</td>
<td>Artaxerxes I 28</td>
<td>11 Dec 438–9 Dec 437</td>
</tr>
<tr>
<td>312</td>
<td>Artaxerxes I 29</td>
<td>10 Dec 437–9 Dec 436</td>
</tr>
</tbody>
</table>

(continued on next page)
<table>
<thead>
<tr>
<th>Era of Nabonassar</th>
<th>Ruler+ Regnal Year</th>
<th>Length of 365-day Egyptian Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>313</td>
<td>Artaxerxes I 30</td>
<td>10 Dec 436–9 Dec 435</td>
</tr>
<tr>
<td>314</td>
<td>Artaxerxes I 31</td>
<td>10 Dec 435–9 Dec 434</td>
</tr>
<tr>
<td>315</td>
<td>Artaxerxes I 32</td>
<td>10 Dec 434–8 Dec 433</td>
</tr>
<tr>
<td>316</td>
<td>Artaxerxes I 33</td>
<td>9 Dec 433–8 Dec 432</td>
</tr>
<tr>
<td>317</td>
<td>Artaxerxes I 34</td>
<td>9 Dec 432–8 Dec 431</td>
</tr>
<tr>
<td>318</td>
<td>Artaxerxes I 35</td>
<td>9 Dec 431–8 Dec 430</td>
</tr>
<tr>
<td>319</td>
<td>Artaxerxes I 36</td>
<td>9 Dec 430–7 Dec 429</td>
</tr>
<tr>
<td>320</td>
<td>Artaxerxes I 37</td>
<td>8 Dec 429–7 Dec 428</td>
</tr>
<tr>
<td>321</td>
<td>Artaxerxes I 38</td>
<td>8 Dec 428–7 Dec 427</td>
</tr>
<tr>
<td>322</td>
<td>Artaxerxes I 39</td>
<td>8 Dec 427–7 Dec 426</td>
</tr>
<tr>
<td>323</td>
<td>Artaxerxes I 40</td>
<td>8 Dec 426–6 Dec 425</td>
</tr>
<tr>
<td>324&lt;sup&gt;xx&lt;/sup&gt;</td>
<td>Artaxerxes I 41&lt;sup&gt;xxi&lt;/sup&gt;</td>
<td>7 Dec 425–6 Dec 424 (death)</td>
</tr>
<tr>
<td>ephemeral rulers&lt;sup&gt;xxi&lt;/sup&gt;</td>
<td>death Artaxerxes I–Death</td>
<td>6 Dec 424</td>
</tr>
<tr>
<td>325&lt;sup&gt;xx&lt;/sup&gt;</td>
<td>ephemeral rulers&lt;sup&gt;xxi&lt;/sup&gt;</td>
<td>7 Dec 424–Darius II's accession on Day x in 25 Dec 424–13 Feb 423</td>
</tr>
</tbody>
</table>

    Darius II’s accession year<sup>xxi</sup>–ca. 11 Apr 423
    Darius II 1<sup>xxi</sup>ca. 11 Apr 423–6 Dec 423
| 326              | Darius II 2        | 7 Dec 423–6 Dec 422             |
| 327              | Darius II 3        | 7 Dec 422–5 Dec 421             |
| 328              | Darius II 4        | 6 Dec 421–5 Dec 420             |
| 329              | Darius II 5        | 6 Dec 420–5 Dec 419             |
| 330              | Darius II 6        | 6 Dec 419–5 Dec 418             |
| 331              | Darius II 7        | 6 Dec 418–4 Dec 417             |
| 332              | Darius II 8        | 5 Dec 417–4 Dec 416             |
| 333              | Darius II 9        | 5 Dec 416–4 Dec 415             |
| 334              | Darius II 10       | 5 Dec 415–4 Dec 414             |
| 335              | Darius II 11       | 5 Dec 414–3 Dec 413             |
| 336              | Darius II 12       | 4 Dec 413–3 Dec 412             |
| 337              | Darius II 13       | 4 Dec 412–3 Dec 411             |
| 338              | Darius II 14       | 4 Dec 411–3 Dec 410             |
| 339              | Darius II 15       | 4 Dec 410–2 Dec 409             |
| 340              | Darius II 16       | 3 Dec 409–2 Dec 408             |
| 341              | Darius II 17       | 3 Dec 408–2 Dec 407             |
| 342              | Darius II 18       | 3 Dec 407–2 Dec 406             |
| 343<sup>xxii</sup> | Darius II 19       | 3 Dec 406– |
| Artaxerxes II’s accession year? | Darius II 19 and | at least until ca. 17 Sep 405<sup>xxiii</sup> |
| Artaxerxes II’s accession year? | Artaxerxes II’s accession year? | ca. 18 Sep 405–1 Dec 405<sup>xxiii</sup> |

(continued on next page)
About this time, Persia lost control of Egypt. The native kings of Dyns. 28–30 ruled for about seven decades. Their reigns are not day-exact, except Nectanebo II’s of Dyn. 30. The following provisional estimates (see Lloyd, CAH², vol. 6, 358) are probably correct to within one or two years.

### Dynasty 28
- Amyrtaios ca. 404/3–398/7

### Dynasty 29
- Nepherites I ca. 398/7–392/1
- Achoris ca. 392/1–379/8
- Psammuthis brief reign
- Nepherites II brief reign

### Dynasty 30
- Nectanebo I (Nectanebes) ca. 379/8–361/0
- Teos/Tachos ca. 361/0–359/8

The reign of the third king of Dyn. 30 and the last native ruler of Egypt, Nectanebo II (Nectanebos), is again day-exact, with high probability, as follows.

<table>
<thead>
<tr>
<th>Year</th>
<th>Ruler</th>
<th>Egyptian Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>390</td>
<td>Nectanebo II 1</td>
<td>21 Nov 359–20 Nov 358&lt;sup&gt;xvi&lt;/sup&gt;</td>
</tr>
<tr>
<td>391</td>
<td>Nectanebo II 2</td>
<td>21 Nov 358–19 Nov 357</td>
</tr>
<tr>
<td>392</td>
<td>Nectanebo II 3</td>
<td>20 Nov 357–19 Nov 356</td>
</tr>
<tr>
<td>393</td>
<td>Nectanebo II 4</td>
<td>20 Nov 356–19 Nov 355</td>
</tr>
<tr>
<td>394</td>
<td>Nectanebo II 5</td>
<td>20 Nov 355–19 Nov 354</td>
</tr>
<tr>
<td>395</td>
<td>Nectanebo II 6</td>
<td>20 Nov 354–18 Nov 353</td>
</tr>
<tr>
<td>396</td>
<td>Nectanebo II 7</td>
<td>19 Nov 353–18 Nov 352</td>
</tr>
<tr>
<td>397</td>
<td>Nectanebo II 8</td>
<td>19 Nov 352–18 Nov 351</td>
</tr>
<tr>
<td>398</td>
<td>Nectanebo II 9</td>
<td>19 Nov 351–18 Nov 350</td>
</tr>
<tr>
<td>399</td>
<td>Nectanebo II 10</td>
<td>19 Nov 350–17 Nov 349</td>
</tr>
<tr>
<td>400</td>
<td>Nectanebo II 11</td>
<td>18 Nov 349–17 Nov 348</td>
</tr>
<tr>
<td>401</td>
<td>Nectanebo II 12</td>
<td>18 Nov 348–17 Nov 347</td>
</tr>
<tr>
<td>402</td>
<td>Nectanebo II 13</td>
<td>18 Nov 347–17 Nov 346</td>
</tr>
<tr>
<td>403</td>
<td>Nectanebo II 14</td>
<td>18 Nov 346–16 Nov 345</td>
</tr>
</tbody>
</table>
Table (cont.)

<table>
<thead>
<tr>
<th>Era of Nabonassar</th>
<th>Ruler+</th>
<th>Regnal Year</th>
<th>Length of 365-day Egyptian Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>404</td>
<td>Nectanebo II</td>
<td>15</td>
<td>17 Nov 345–16 Nov 344</td>
</tr>
<tr>
<td>405</td>
<td>Nectanebo II</td>
<td>16</td>
<td>17 Nov 344–16 Nov 343</td>
</tr>
<tr>
<td>406</td>
<td>Nectanebo II</td>
<td>17</td>
<td>17 Nov 343–16 Nov 342</td>
</tr>
<tr>
<td>407</td>
<td>Nectanebo II</td>
<td>18</td>
<td>17 Nov 342–15 Nov 341</td>
</tr>
<tr>
<td>408</td>
<td>Nectanebo II</td>
<td>19</td>
<td>16 Nov 341–15 Nov 340&lt;sup&gt;xxvii&lt;/sup&gt;</td>
</tr>
<tr>
<td>409</td>
<td>Nectanebo II</td>
<td>20</td>
<td>16 Nov 340–15 Nov 339&lt;sup&gt;xxvii&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

The following years are Egyptian years derived from the Canon (see section 3 above).

<table>
<thead>
<tr>
<th>Era of Nabonassar</th>
<th>Ruler+</th>
<th>Regnal Year</th>
<th>Length of 365-day Egyptian Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>409</td>
<td>Artaxerxes III</td>
<td>20</td>
<td>16 Nov 340–15 Nov 339</td>
</tr>
<tr>
<td>410</td>
<td>Artaxerxes III</td>
<td>21</td>
<td>16 Nov 339–15 Nov 338</td>
</tr>
<tr>
<td>411</td>
<td>Arsés</td>
<td>1</td>
<td>16 Nov 338–14 Nov 337</td>
</tr>
<tr>
<td>412</td>
<td>Arsés</td>
<td>2</td>
<td>15 Nov 337–14 Nov 336</td>
</tr>
<tr>
<td>413</td>
<td>Darius III</td>
<td>1</td>
<td>15 Nov 336–14 Nov 335</td>
</tr>
<tr>
<td>414</td>
<td>Darius III</td>
<td>2</td>
<td>15 Nov 335–14 Nov 334</td>
</tr>
<tr>
<td>415</td>
<td>Darius III</td>
<td>3</td>
<td>15 Nov 334–13 Nov 333</td>
</tr>
<tr>
<td>416</td>
<td>Darius III</td>
<td>4</td>
<td>14 Nov 333–13 Nov 332</td>
</tr>
<tr>
<td>417</td>
<td>Alexander</td>
<td>and so on</td>
<td>and so on</td>
</tr>
</tbody>
</table>

1 Taharqa presumably came to the throne some day in this Egyptian year. There is a possibility that Year 1 is 12 Feb 691–11 Feb 690 (see section 2 above). No documents dating to Taharqa’s Years 1 and 2 are known (cf. Chapter III. 11, section 3).

2 Psammetichus I’s reign presumably began in this Egyptian year. No documents dating to his Years 1–8 are known.

3 The earliest date for Necho II is 19 Nov 610 BC, or Year 1 Month 11 Day 1, in stela Leyden V 18–9 (Kienitz, Geschichte, 155, with note 6, and 157–158).

4 The latest date for Necho II is 4 May 595 BC, or Year 16 Month 4 Day 16, in stela Louvre 193 (Kienitz, Geschichte, 155, with note 2, and 158). The earliest date for Psammetichus II is 23 Nov 594 BC, or Year 1 Month 11 Day 9, in stela Louvre 240 (Kienitz, Geschichte, 155, with note 4, and 158).

5 Psammetichus II died on 9 Feb 589 BC, or Year 7 Month 1 Day 23. The next day is here taken as Day 1 of Apries’s reign.


7 It has hitherto remained without explicit notice, as far as I know, that the latest date for Apries is later than the earliest date for Amasis, although S. P. Vleeming (“The Sale of a Slave in the Time of Pharaoh Py”, OMRO 61 (1980), 1–17, at 6, note 20) rightly calls the Apries date “rather high.” It now becomes possible to buttress the
veracity of Herodotus’s account (II, 169) about the overlap of the reigns of Apries and Amasis. After a short period with two rival Pharaohs, Amasis first vanquished Apries but then let him rule as coregent before eventually killing him. It is not clear whether Apries was a rival ruler or a nominal coregent on 19 Oct 570 BC, the date of pBM 10113. It is significant that pBM 10113 is, like all abnormal hieratic texts, from Thebes, which was Apries’s power base as rival ruler, whereas the Amasis stela mentioned above is from the Delta, Amasis’s original power base.

vii For the chronology of the transition from Amasis to Cambyses, see section 2 above. Amasis could still have been in power on 1 Jan 526 BC as last day of his Year 44. Greek sources mention a king Psammetichus, commonly styled as “III,” who ruled six months between Amasis and Cambyses. The sole native documents ever assigned to his reign have recently been re-dated to a Psammetichus “IV,” who may have ruled part of Egypt in the 480s BC (see E. Cruz-Uribe, “On the Existence of Psammetichus IV,” Serapis 5 (1980), 35–39; cf. also P. W. Pestman, “The Diopolis Parva Documents: Chronological Problems concerning Psammetichus III and IV”, in: Grammata Demotika, H.-J. Thissen & K.-Th. Zauzich, eds., (Würzburg, 1984), 145–155; S. P. Vleeming, The Gooseherds of Hou (Pop. Hou) (Leuven: Studia demotica 3, 1991), 3–4).

viii With this Egyptian year, Year 223 from Nabonassar, the present table joins Ptolemy’s Canon, which earlier lists rulers of Babylon (see Chapter III. 11, section 2.1). In the Canon, whose years are all full 365-day Egyptian years, Year 223 from Nabonassar is entirely Year 5 of Cambyses.

ix In Ptolemy’s Canon, Year 226 from Nabonassar is entirely Year 8 of Cambyses and Year 227 entirely Year 1 of Darius I.

x Cambyses was still recognized in Babylon in April 522 BC and, according to the Behistun inscription, did not die till after 1 Jul 522 BC (Parker & Dubberstein, Chronology, 14).

xi The accession to the throne probably occurred between about 29 Sep 522 BC, the date of Bardiya’s defeat according to the Behistun inscription, and about 22 Dec 522 BC, the date of the earliest Babylonian tablet of Darius I’s reign (Parker & Dubberstein, Chronology, 15). Again, lunar dates are mostly not known to the exact Julian day but cannot be more than one to two days off.

xii It is not known whether the time from the Egyptian new year of 1 Jan 521 BC to the Babylonian new year of about 13 Apr 521 BC was called Year 1 in Egypt or considered part of a numberless accession year (for an argument in support of the latter, see L. Depuydt, “Regnal Years and Civil Calendar in Achaemenid Egypt;” JEA 81 (1995), 151–173, at 164). In Babylon, for sure, regnal Year 1 did not begin before the first Babylonian new year of the reign.

xiii In Ptolemy’s Canon, Year 262 from Nabonassar is entirely Year 36 of Darius I and Year 263 entirely Year 1 of Xerxes I.


xv It is not clear whether, in Egypt, the time from the Egyptian new year of 23 Dec 486 BC, to the Babylonian new year of about 5 Apr 485 BC was called Year 1 or considered part of as numberless accession year. Cf. note xii above.

xvi In Ptolemy’s Canon, Year 283 from Nabonassar is entirely Year 21 of Xerxes and Year 284 entirely Year 1 of Artaxerxes I.

xvii Xerxes I may have been murdered on one of these days. The source is an eclipse text (Parker & Dubberstein, Chronology, 17).

xviii This is the first day after the earliest possible date for the murder of Xerxes I (see note xvii). The earliest date for Artaxerxes I is 2 Jan 464 BC in an Aramaic papyrus (“B2.2” in B. Porten and A. Yardeni, Textbook of Aramaic Documents from Ancient Egypt (Jerusalem, 1986–99). Since the date is from Aswan, Artaxerxes I was probably
in power already in 465 BC and perhaps even before the Egyptian new year of 16 Dec 465 BC. His Babylonian regnal Year 1 certainly began about 13 Apr 464 BC. His Egyptian year may have begun earlier, but hardly before the Egyptian new year of 17 Dec 465 BC (cf. notes xii and xix).

xx It is not known whether the period from the Egyptian new year of 17 Dec 465 BC to the Babylonian new year of about 13 Apr 464 BC was called Year 1 in Egypt or considered part of a numberless accession year (cf. notes xii and xviii).

xxi In Ptolemy's Canon, Year 324 from Nabonassar is entirely Year 41 of Artaxerxes I and Year 325 entirely Year 1 of Darius II.

xxii For problems pertaining to the chronology of the transition from Artaxerxes I to Darius II, see L. Depuydt, “The Date of Death of Artaxerxes I”, *WdO* 26 (1995), 86–96; id., *JEA* 81, 159, note 28. Arguments can be produced for the following possible scenario: (1) Artaxerxes I dies in Feb 424 BC; (2) ephemeral kings including Xerxes II and Sogdianus rule for several months, while documents keep being dated according to Artaxerxes I, whose fictional Babylonian Year 41 began about 24 Apr 424 BC; (3) Darius II assumes power some day in 25 Dec 424 BC–13 Feb 423 BC, perhaps rather near the end of this period. Darius II's Year 1 had certainly begun by about 10 April 404 BC, the Babylonian new year.

xxiii In Ptolemy's Canon, Year 343 from Nabonassar is entirely Year 19 of Darius II and Year 344 entirely Year 1 of Artaxerxes II.

xxiv It is certain that Artaxerxes II's Babylonian regnal Year 1 began on about 10 April 404 BC, the Babylonian new year. The latest date for Darius II is about 17 Sep 405 BC, the date of Louvre cuneiform tablet AO 17603 (cf. Depuydt, *JEA* 81, 159, n. 29). It is not known when in the period from about 17 Sep 405 BC to about 10 Apr 404 BC the transition from Darius II to Artaxerxes II happened.

xxv The latest date is 18 Jan 401 BC (see Chapter III. 11, section 3).

xxvi Ptolemy's Canon continues at this point with regnal Years 6–46 of Artaxerxes II, measured by the Egyptian calendar. The New Year's days of these 41 full Egyptian civil years, Years 349 to 389 from Nabonassar, are as follows: 1 Dec 400–396 BC in years 349–51 from Nabonassar (= Artaxerxes II's regnal Years 6–8); 30 Nov 397–4 BC in 352–5 Nab. (= 9–12); 29 Nov 393–0 BC in 356–9 Nab. (= 13–6); 28 Nov 389–6 BC in 360–3 Nab. (= 17–20); 27 Nov 385–2 BC in 364–7 Nab. (21–4); 26 Nov 381–78 BC in 368–71 Nab. (= 25–28); 25 Nov 377–4 BC in 372–5 Nab. (= 29–32); 24 Nov 373–0 BC in 376–9 Nab. (= 33–6); 23 Nov 369–6 BC in 380–3 Nab. (= 37–40); 22 Nov 365–2 BC in 384–7 Nab. (= 41–4); 21 Nov 361–0 BC in 388–9 Nab. (= 45–6).

xxvii It is not known when Nectanebo II assumed power in this Egyptian year.

xxviii There is no hieroglyphic evidence for Years 19 and 20 of Nectanebo II.
II. 12 THE CHRONOLOGY OF NUBIAN KINGDOMS FROM DYN. 25 TO THE END OF THE KINGDOM OF MEROE

Karola Zibelius-Chen

The era of the independent kingdom of Kush in Nubia is broadly divided into four parts:

1. Pre-Dyn. 25, i.e. the epoch of the preliterate rulers of el-Kurru with approximately 6 reigns up to and including Alara, known from their tombs in the necropolis of el-Kurru (ca. 885/835 BC1 to ca. 765 BC).2

2. Dyn. 25, simultaneously a segment of Egyptian history—and differing from Manetho and Egyptological tradition—plus the Kushite Kashta (Gen. 1) as its first king, since he secured the Thebaid by having his daughter Amenirdis I adopted by the Egyptian God’s Wife Shepenupet I, daughter of Osorkon III.3 Thus his daughter succeeded Shepenupet in her official role at Thebes. The Assyrians effectively ended the dynasty, and Psammetichus I expelled the last Kushites at the time of Tanwetamani (ca. 655 BC).

3. The Napatan Period, subdivided into an Early Napatan Period (Atlanersa (Gen. 7) to Malowi-Amani (Gen. 19), 4 ca. 653 until the mid-5th century BC) and the Late Napatan period, from Talakhamani and including the so-called Neo-Ramesside rulers with 5 kings up to Sabrakamani5 (mid 5th century to early 3rd century BC).

---


2 Conventional dates reckoned back from the Tang-i Var inscription (see below) with the accession of Shebitku in 707: Shabaka, 15 years (highest known date: statue of ḫḥ, BM 24429: Leclant, *Enquêtes*, 15ff); Piankhi, 31 years inferred; Kashta (= Manetho’s Ammeris Aithiops), 12 years assumed; Alara, 20 years presumed; plus roughly 50 to 100 years for the five reigns between Alara and the foundation of the el-Kurru necropolis. (For the reinstatement of the reading Piankhi, see C. Rilly, *BIFAO* 101 (2001), 351ff)


4 I prefer this transcription to Malowiebamani (Macadam, *Kawa I*, 54 (25), with reproducing Meroitic -b indicating a plural). I suppose instead that is a phonetic determinative, derived from Egyptian wꜥ (Wb I, 246).

5 Contrast Hofmann, *Chronologie*, 64ff.
4. The Meroitic Period with the Early Meroitic period from Arkamaniqo/Ergamenes I (Gen. 33) up to Queen Sanakadakhete (ca. early 3rd century until late 2nd century BC), the Middle Meroitic period (late 2nd century BC to late 1st or early 2nd century AD), followed by the Late Meroitic Period (late 1st or early 2nd century AD until the end of the Meroitic kingdom).

In the southern part of the kingdom, the post-Meroitic Period follows with off-shoots of Meroitic culture surviving the end of the Kingdom between 330 and 370 AD (when the royal necropolis at Begerawiya North and the West cemetery at Begerawiya were finally abandoned) and the Ballana culture (so-called X-Group) in Lower Nubia with royal necropoleis at Qustul and Ballana which are beyond the chronological range concerning us here.

This historical division into four periods ultimately depends on linking the seriation of the tombs in the royal necropoleis of the kingdom to other monuments and epigraphic data. Individual rulers are numbered according to their relative positions in a scheme of generations (Gen.), especially since existing royal tombs cannot be assigned in every case to specific named rulers, and since some known rulers cannot yet be associated with any tomb. The cemeteries are el-Kurru (Ku.), Nuri (Nu.), Gebel Barkal (Bar.), Begerawiya South (Beg. S., with only two kings’ tombs but other royal and non-royal burials), Begerawiya North (Beg. N.) and Begerawiya West (Beg. W., used by lesser members of the royal family and commoners). The excavator Reisner established a typology, based on the architectural evolution of the tombs, and he identified tomb groups. Reisner’s archaeological seriation of the tombs,

---

7 As viewed from a political perspective; see Török, in: Welsby, Research, 142ff. Whether the cultural aspect of the transitional phase should be described as “post-pyramidal” (P. Lenoble, SARS Newsletter 3 (1992), 9ff.; idem, MNL 25 (1994), 113ff.; idem, in: Welsby, Research, 157ff.), remains open.
8 The end of the Meroitic state and the abandonment of the royal cemetery in Beg. N. ca. 360/370 AD was approximately contemporaneous with the military campaign of the Axumite king Ezana against the Noba, unless Ezana’s conversion to Christianity was earlier, around 330 AD. If so, the demise of Meroe will have been prolonged, from 330 to 360/70 AD. See Török’s summary of the issues, in: Welsby, Research, 142ff.
10 Török summarizes Reisner’s criteria in: ANRW II 10, 169ff.
which envisioned a continuous succession of 5 plus 68 rulers, 850 BC to 355 AD,\textsuperscript{11} was revised by Dunham when he published the excavations.\textsuperscript{12} Further revisions\textsuperscript{13} were undertaken by Macadam\textsuperscript{14} and, for the Meroitic material in particular, by Hintze\textsuperscript{15} and Wenig.\textsuperscript{16} The last also drew on the iconography of the tomb chapel reliefs which provides information about the tomb-owner (king, queen, prince), resulting in the elimination of some pyramid owners from the list of reigning monarchs, but also on additional criteria for sequencing and thus dating tombs. Wenig’s research eliminated Reisner’s First Collateral Meroitic Dynasty of Napata, and integrated its rulers into the main line. The problem of the Second Collateral Dynasty of Napata, however, cannot be considered resolved. To include it, too, in the main line as Wenig proposes, seems justified, by demonstrable kinship relationships between pyramid owners in Barkal and Begerawiya North, aside from the fact that most of the rulers of the 1st century BC (to which the tombs belong) are attested both in the north and in Meroe. But if so, temporary changes in the royal burial grounds must be assumed, which could perhaps be explained in the context of the contemporaneous political situation.\textsuperscript{17}

While Napatan internal chronology can generally be considered reliable,\textsuperscript{18} despite some specific problems and questions,\textsuperscript{19} the same cannot

\textsuperscript{11} The seriation, attempted by K. Grzymski, \textit{Meroitica} 7 (1984), 222ff, using computer-aided quantitative analysis is generally considered unsuccessful.

\textsuperscript{12} RCK I, II, IV, V. RCK IV, 6f.: 5 plus 72 rulers.


\textsuperscript{14} Kawa I and II; idem, \textit{Allen Memorial Art Museum Bulletin} 23 (1966), 42–71.

\textsuperscript{15} Studien, 33 and \textit{Meroitica} 1 (1973), 127–144: 5 plus 67 generations.


\textsuperscript{17} Summary: Hintze, \textit{Meroitica} 1 (1973), 135ff., with discussion of the conceivable historical scenario; see also Wenig, \textit{Meroitica} 1 (1973), 152ff.

\textsuperscript{18} Even in view of new data from the field, such as the finds at Gebel Barkal, with Bar. P-26 from the mid-6th century BC. This tomb is decorated with an astronomical ceiling: F. Berenguer, \textit{Kush} 17 (1997), 108ff.; eadem, in: Welsby, \textit{Research}, 55–63. Berenguer refers to P-26 as a royal tomb. It has only two chambers, yet contains a serekh with a name; there were no foundation deposits.

\textsuperscript{19} The difficulties concern, e.g., the assignment of Nu. 20 and the position of Amanibakhi (Gen. 26) in the sequence; the stela from his chapel and an offering table were discovered in Nuri (RCK II, 269, fig. 213; R. J. Leprohon, \textit{CAA Boston Museum of Fine Arts} 3, 127), but no tomb can yet be assigned to him. The sequence and relative chronology of the Neo-Ramesside rulers are also problematic, but according to their
be said of the Meroitic material, where the situation is significantly more complex. In a fundamental review, Hofmann underscored the necessity of systematically utilizing Hellenistic and Roman imports in the tomb inventories for dating purposes, but her work leads to a number of controversial problems, the most important being Hofmann’s attribution of royal pyramids to persons whom she considers ruling kings. She bases her attributions on offering tables with royal benediction formulas K, L, and C’, but the offering tables were not found in the royal necropolis itself. Furthermore, royal benediction formulas could also presumably have been used for members of the royal family.

Török discusses the chronological issues in the context of the publication of the *Fontes Historiae Nubiorum*. A further difficulty in ascribing pyramids to known rulers ignores the fact that some pyramids were torn down (e.g., Beg. N. 53) or built over in antiquity.

Wenig’s proposal that stylistic elements be given more attention, and Hofmann’s call for a more systematic examination of imports among the funeral deposits were virtually ignored, because the poorly preserved tomb chapels at Begerawiya have been inadequately explored archaeologically. The challenges presented by interdisciplinary research essential for dating the imports and evaluating their chronological and geographical distribution in the Mediterranean are also considerable. Nevertheless the results of the clearance, reconstruction, and documentation of the pyramids of Meroe undertaken by Friedrich Hinkel and Janice Yellin and others, should eventually produce new evidence relevant to chronological issues.

The relative chronology of the royal tombs, epigraphic sources, and other monuments furnish the foundations for establishing the sequence of the kings of Kush. Since the mechanism of succession remains unclear, titulararies and the language of the texts (for which see now C. Peust, *Das Napatanische: ein ägyptischer Dialekt aus dem Nubien des späten ersten vorchristlichen Jahrtausends* (Göttingen, 1999), 70–71) they belong at the end of the Napatan period. According to Morkot, in: *Centuries of Darkness*, P. James et al., eds., (London, 1991), 216f., the Neo-Ramesside rulers should be assigned to the period before Dyn. 25; more cautious idem, *The Black Pharaohs* (London, 2000), 146–150; see further below.

20 Hofmann, *Chronologie*, passim (p. 192: 6 plus 69 rulers).
22 See the paragraphs for the reigns under discussion in FHN I–III.
23 Hinkel began studying the pyramids in 1976; there are 169 relief scenes at his disposal compared to 52 previously available; see Hinkel in: K. Bard, ed., *Encyclopedia of the Archaeology of ancient Egypt* (London, 1999), s.v. Meroe; idem, *Meroitica* 7 (1984), 310ff.
and since succession from one generation to the next is paralleled by collateral succession among brothers and cousins, it is virtually impossible to project life spans and lengths of reigns from a change of sovereign. Genealogies established for individual sovereigns are largely based on circumstantial evidence or on conjecture about possible rules of succession; they are rarely certain and apply only to specific cases.\(^{24}\) For example, Assyrian sources designate Tanwetamani as the son both of Shabaka\(^ {25}\) and of Taharqa’s sister.\(^ {26}\) His presumed mother is Qalhata, who should accordingly have been Taharqa’s sister and Shabaka’s consort. Her titles define her only as mwet nswt, snt nswt, hnwet n b-stj and possibly zt nswt (?),\(^ {27}\) but not hmt nswt which is, however, not among the titles of any Kushite royal mother documented to date. Either these women were not royal wives, or the title hmt nswt was deemed irrelevant for them, possibly because it was considered a lower ranking title, for even in those cases where the husband may have been king, he was dead at the time his son was proclaimed king. The reconstruction of kinship ties is rendered even more difficult since it is not known whether the Kushites employed the terminology in a literal sense, or whether terms such as snt “sister” and sn “brother” had broader connotations.\(^ {28}\) For the period after Aspalta, who traced his maternal line back seven generations,\(^ {29}\) there is either very little genealogical or historical information, or none at all. The evidence and conjectural data suggest only that fully adult men ascended the throne.\(^ {30}\)


\(^{25}\) Egyptologists, except M. A. Leahy, *GM* 83 (1984), 43ff., consistently consider Shabaka in error for Shebitku. However, it is improbable that the Assyrians erred in the affiliation of their opponent, citing a king who had been dead for 43 years.

\(^{26}\) See R. Borger, *Beiträge zum Inschriftenwerk Assurba日产 (BIWA), 24 (A II 22 B II 10)* and 214ff.


\(^{30}\) Arike-Amanote, e.g., states that he was 41 years of age (Kawa IX, l. 4). Tanwetamani, Shabaka’s son, may have been in his mid-40’s. If Taharqa left Nubia in 701 as a 20 year old (Kawa V, l. 20) to participate in the battle of Eltheke (K. A. Kitchen, in: *Fontes atque fontes: eine Festgabe für Helmut Brunner* (Wiesbaden: AUAT 5, 1983, 249ff.), then he may have been about 31 when he ascended the throne; Sabrakamani (Kawa XIII, l. 2) gives his age as 39 (?).
Similarly, it is not known whether the ruling sovereign influenced the nomination of a crown prince, if indeed such an institution existed (no source preserves a term for it).\(^{31}\) Kawa Stelae IV, 7ff. and V, 13ff. state that Shebitku appreciated Taharqa more than any of the other royal “brothers”, but this need not necessarily imply that Shebitku considered Taharqa crown prince.\(^{32}\) On the other hand, the Assyrian sources report that in 671 BC, Esarhaddon captured Taharqa’s crown prince Ushanahuru.\(^{33}\) But other Assyrian sources refer only to his son.\(^{34}\) Kushite sources, and particularly the election stela of Aspalta, appear to testify against the practice of designating a successor.

The only reign in more than twelve centuries of Kushite history whose length and absolute dates are known is Taharqa’s (690–664 BC), fifth king of Dyn. 25 and eleventh (?) sovereign of Kush. The dates and lengths of his predecessors’ reigns, especially those of his immediate predecessor Shebitku (who had ascended the throne by 707 as the Tang-i Var inscription shows—see further below) and the others back to Alara (the first Kushite ruler whose name is known),\(^{35}\) must be reckoned from this point, as well as those of his successor Tanwetamani and the later Early Napatan rulers up to Aspalta. All other dates for Kushite rulers, particularly pre-Dyn. 25, but also those of the Napatan period after Aspalta, are estimates. There is a single certain date for the entire Meroitic period: 10 April 253 AD, in regnal year 3 of Teqorideamani (Beg. N. 28).\(^{36}\) All other year dates of this period are based on logical deductions from indirect testimony and historical considerations, frequently deriving from Classical sources. Some of these

\(^{31}\) I doubt that ḫwn “youth” was such a designation (as Macadam suspected, Kawa I, 53 [6]). Taharqa, e.g., travelled to Egypt in the middle of the ḫwnw nfrw (plural), according to Kawa IV, l. 8. The Adoption stela, l. 4, describes Psammetichus II as ḫj ḫjw ḫw nfrw, and even Amasis is ḫwn nfr. Cf. also Zibelius-Chen, in: T. Kendall, ed., Nubian Studies 1998 (Boston, 2004), 468.

\(^{32}\) As Macadam assumed, Kawa I, 17 (19).

\(^{33}\) See R. Borger, Die Inschriften Asarhaddons, AfO Beih. 9 (1967), 99.

\(^{34}\) In Chronicle I A. K. Grayson, Assyrian and Babylonian Chronicles [Locust Valley, 1975], 85 there is only a reference to his (i.e., Taharqa’s) son and brother. See also J. Börker-Klähn, Altvorderasiatische Bildstelen (Mainz, 1982) Nos. 217. 218. Whether the Zincirli stela also depicts Ushanahuru is uncertain. According to Börker-Klähn, ibid., No. 219, the person wearing an uraeus could be Taharqa; however, Taharqa was not himself captured by Esarhaddon.

\(^{35}\) For the nameless predecessors of Alara and their chronological classification, see Kendall, Meroitica 15 (1999), 3–117.

\(^{36}\) Demotic graffito of Pasan (Ph. 416).
estimates are well founded while others are conjectures. As a rule, neither the accession dates of Kushite kings nor their reign lengths are known, and only rarely can they be inferred.

The reign of Taharqa (Gen. 5) depends upon the absolute dates of Dyn. 26 and those of its first king, Psammetichus I, whose first regnal year falls in 664 BC.\textsuperscript{37} The stela Louvre 192 from the burial of an Apis bull in the Serapeum mentions that it was born in Taharqa’s year 26 and enthroned in the same year on 9/IV/\textit{peret}; the bull died on 20/IV/\textit{shemu} in year 20 of Psammetichus I, having lived 21 years. In our calendar, the bull’s death occurred on February 25, 644, and its enthronement on September 11, 665. Accordingly, Taharqa’s year 26 is the Egyptian year which lasted from February 6, 665 to February 4, 664, when he died in the course of his 27th regnal year, having reigned 26 full years between 690 and 664 BC.\textsuperscript{38}

The virtually certain sequence of Taharqa’s predecessors in Dyn. 25 is supported by the relative chronology of their pyramids, their inscriptions, and their representations. Assyrian synchronisms, together with the Tang-i Var inscription, show that Shebitku (Gen. 4) was already king in 707, or at the latest in 706. After Yamani of Ashdod fled by sea from the Assyrians in 711 and had dwelt “like a thief” in “the area of Egypt at the border by/to Kush”, he must have been handed over to the Assyrian king Sargon II by the king of Mēluḫḫa/Kush in the year 706 at the latest. According to the Tang-i Var inscription and the version from Malatya,\textsuperscript{39} this king is Shebitku. There is no evidence in favour of a supposed vice-royalty in Kush with Shebitku regent for Shabaka ruling in Egypt, nor for suggesting a coregency between the two kings, theorized to salvage the old chronology with its “anchor date” of 712 for the postulated campaign of Shabaka against or into

\textsuperscript{37} Beckerath, \textit{Chronologie}, 41, 84–88.

\textsuperscript{38} Beckerath, \textit{Chronologie}, 91. According to Beckerath, SAK 29 (2001), 1 his first year began antedating on 12 February 690 BC.

Consequently, D. Kahn rejects such ideas. A division of power is documented neither for Piankhi nor Taharqa. That the Assyrians would have referred to the junior, less powerful ruler, is improbable. And why indeed should they not have mentioned both rulers of Egypt and Kush in their propaganda? It is more logical to suppose that Shebitku at his accession handed over Yamani, after he had spent some time in Egyptian-Kushite territory. Such an act might be viewed as a friendly gesture, since Yamani was an outlaw in Assyrian eyes, while in Egypt he could have stirred up trouble, perhaps seeking political support against the Assyrians. Both domestic and foreign policy could thus have provided motives for his extradition. Simultaneously, it might have served as a warning for the Delta princes to keep them in line. This scenario is, however, pure speculation, since neither the place of Yamani’s sojourn nor what he did is known. Regardless, Shebitku did not want Yamani on his territory, and he failed to find asylum for him elsewhere, although committing himself to the anti-Assyrian alliance at Eltekeh shortly thereafter (701). Here, the petty rulers stood in battle array beside the Kushite army and their allies, as the Assyrian king Sennacherib specifically states, the Delta rulers were thus still to be reckoned with, despite more than 30 years of Kushite rule in Egypt.

Shebitku’s reign can be calculated at a minimum of 17 years, 707–690. Africanus gives him 14 and Eusebius, 12. By contrast, his highest known date from Egypt is year 3. His involvement in the Near East can only be grasped by studying Assyrian and Old Testament sources, as is also true for Taharqa.

The accession of Taharqa’s successor in 664 is certain. According to the Dream Stela ll. 6f., Tanwetamani (Gen. 6) proceeded to Egypt in his first year, passing through Napata and Elephantine on the way to reclaim the Delta which had been lost to the Assyrians in 667. Indirect confirmation comes from Assyrian sources which refer to the change of rulers, noting that Tanwetamani made Thebes and Heliopolis his major bastions. Assyrian sources report that Tanwetamani was

---

43 Nile Level mark No. 33 in Karnak; Kitchen, TIP, § 126.
44 On Assurbanipal’s battles against Taharqa and Tanwetamani, see the edition of textual sources by Borger (n. 26), 210–215.
45 Grimal (n. 29), 7, 11f.
expelled from Thebes shortly thereafter (probably within only a matter of months).\textsuperscript{46} With the installation of Nitocris as God’s Wife in Thebes by Psammetichus I ca. 655, Tanwetamani’s rule in Upper Egypt ended. There is no hint of how long he continued to rule Kush. Using Greek sources, Burstein\textsuperscript{47} plausibly argues that Tanwetamani did in fact return once to Memphis, where he fought Psammetichus I who had engaged the aid of Carian mercenaries. Tanwetamani was buried in the royal necropolis at Kurrū, in Ku. 16.

Psammetichus I fortified Elephantine and campaigned in LN,\textsuperscript{48} but the identity of his Kushite opponent is not certain; chronologically, it could be either Atlanersa or Senkamanisken.\textsuperscript{49} With the withdrawal of the Kushites from Egypt, Nubia sank into obscurity. Until the mid-4th century AD, which marks the end of the Meroitic kingdom, there were at least another 61 kings, but dated monuments are associated with few of them. Synchronisms with Egypt provide chronological fixpoints solely for the early Meroitic Period. Otherwise, there exists only Reisner’s relative chronology, based on the typological criteria of the royal tombs and emended since only in some specific cases. Estimates of average reign lengths have been made, working with the number of kings between accepted fixpoints of the absolute chronology and by comparison with Egyptian data of different periods; but these remain hypothetical. The proposed dates are merely suggested reference points indicating approximate positions, by contrast to Egyptian chronology for the LP, which is certain after 664 BC.

The sequence of kings for the generations following Tanwetamani until Malonaqen (Gen. 12), based on archaeological seriation and inscriptions, is reasonably reliable. The succession Atlanersa—Senkamanisken follows from the addition of the latter’s name to the barque stand of Atlanersa (MFA 23.728).\textsuperscript{50} Senkamanisken also completed Temple B 700 at Barkal, begun by Atlanersa. Since the succeeding kings Anlamani\textsuperscript{51} and Aspalta\textsuperscript{52} were both children of Nasalsa, it is clear that they were

\textsuperscript{46} Borger (n. 26), 214 (B § 13, II 10–17).
\textsuperscript{47} JSSEA 14 (1984), 31ff.
\textsuperscript{48} L. Habachi, Oriens Antiquus 13 (1974), 32ff.
\textsuperscript{49} A fragment of an offering table belonging to Senkamanisken was found in Memphis: Zibelius-Chen, Meroitica 15 (1999), 712.
\textsuperscript{50} Dunham, Barkal Temples, 32 (15); cf. also Reisner, ZÄS 66 (1930), 91–92.
\textsuperscript{51} Kawa VIII, representation in the lunette and ll. 22f.
\textsuperscript{52} Stela of Madiqen from year 3, representation in the lunette, and on the stela of Khaliut. For the latter, see M.B. Reisner, ZÄS 70 (1934), 40 (13).
brothers. Indirect evidence correlates Aspalta with Psammetichus II who campaigned against Nubia in 593, his 3rd regnal year. Traces of destruction at Napata which affected the monuments of Kushite rulers up to and including Aspalta (with later monuments untouched) are associated with Psammetichus’s incursion. Ash layers were found in the corresponding levels of Palace 1200 and in Temple B 500. Fires were likewise confirmed in the temple and “treasury” at Sanam, where the latest royal name found is Aspalta’s. The chronological position of Aspalta thus inferred was confirmed by the discovery of statues of Taharqa, Tanwetamani, Senkamanisken, Anlamani and Aspalta in a cachette in the temple precinct at Doukki Gel (Kerma), all showing deliberate damage (including the removal of royal insignia).

Generations 11 to 27, following Aspalta, span about three centuries, from the second quarter of the 6th century to the end of the 4th century BC (ca. 570–315 BC). Burials have been confirmed for 15 of the 17 kings postulated. One tomb (Ku. 1), with a very large pyramid, is still unattributed, as is Ku. 2, presumably the burial of the consort or mother of Ku. 1’s owner. The temporary return from Nuri to the old royal necropolis at el-Kurru may reflect a brief change of dynasty. King Amanibakhi’s mortuary stela and his offering table were discovered reused in Nuri 100, but the king’s pyramid has not yet been identified. He is tentatively placed before Nastasen (Gen. 27). Only a few royal monuments are known in this sequence before Nastasen, and those citing regnal years are quite rare. The highest known year for Aspalta is 3. For Arike-Amanote year 25+x is attested and from Kawa

53 For stelae of the king at Shellal, Karnak, and Tanis, see P. Der Manuelian, Living in the Past (London 1994), 337ff. Psammetichus II ascended the throne on 19/I/595 BC (W. Barta, ZAS 119, 1992, 89); his campaign in year 3 thus took place in 593 BC.
54 Most recently, Kendall, Kush 17 (1997), 232ff; but cf. Török, FHN I, 230–231, who considers the evidence insufficient for concluding that the Egyptian army reached and destroyed Napata. Török thinks that the destruction could have resulted from a natural disaster or local political conflicts, in which case the survival of the Khaliut stela undamaged and in situ is remarkable. Unfortunately it bears no date. Also undamaged are the stela of Madiqen (dated to year 3; perhaps originally erected in Sanam), the inscriptions on the sphinx of Defeia, and the tomb and sarcophagus of Aspalta. Thus Aspelta could hardly have been the victim of persecution, as frequently claimed. For the find, see C. Bonnet, Genava 51 (2003), 267ff; D. Valbelle, RdE 54 (2003), 199.
55 RCK II, 269 fig. 213; for the stela, see also Leprohon (n. 19), 127ff.
56 So now also Török, FHN II, 465.
57 Kawa XII.
inscription IX, 4 it emerges that his predecessor was Talakhamani (Nu. 16). Thus the typological sequence postulated by Reisner has been confirmed by epigraphic evidence. The mention of the ruler Malowi-Amani in Kawa IX, 12 demonstrates that he should be considered the immediate predecessor of Talakhamani. The annals of Harsijotef (Gen. 23) fall in his year 35, and those of Nastasen (Gen. 27) in his year 8.

Archaeological remains confirm that after the campaigns of Psammetichus I, LN was subject to Egyptian hegemony. Even under the Achaemenids, in Dyn. 27, the fort at Dorginarti remained for some time under northern control. Kushites appear as tribute bearers in the Apadana reliefs at Persepolis under Darius I, but their costume does not correspond to the Kushites’ own imagery. On the statue of Darius I from Susa, b-nḥṣj is listed among the occupied countries, along with Egypt and Libya. Cambyses is supposed to have attempted an invasion of (Upper) Nubia; and Xerxes deployed an Ethiopian contingent in his invasion of Greece. The inscriptions of the Kushite kings Harsijotef and Nastasen reveal that they fought in LN, confirming that the region was then no longer subject to northern rule. Apparently, Kushite control extended northwards during the era of Egyptian independence from Persian rule, Dyns. 28–30 (404–342 BC). Harsijotef (Nu. 13) is thus placed around 404. It seems that Kushite kings also remained active in LN during the last phase of the Second Persian Period in Egypt, as Nastasen names Ḥmbswdn as the enemy in LN. Hintze, citing linguistic and historical arguments, equated this foe with the Egyptian rival king Khababash, a proposal that strongly influenced the chronological position assigned to Nastasen and resulted in his being dated ca. 335–315 BC. Although this identification of Nastasen’s
opponent (presumably a LN prince), is most assuredly inaccurate, the position of Nastasen in the sequence is unaffected. In terms of the general time scale, placing him somewhere in this era seems to be entirely reasonable, given the dates proposed for the early Meroitic king Arkamani-qo and the insertion of the so-called Neo-Ramesside rulers after Nastasen.

The five “Neo-Ramesside” kings, Gen. 28–32, have been placed between Nastasen, the last king to be buried in Nuri (Nu. 15), and the first Meroitic king to be buried in Begerawiya South (Beg. S. 6). They are Aktisanes, Ary(aman)i, Kash ... meri-Amun, Arike-P(ankhi)-qo, and Sabrakamani. But using archaeological criteria, it is possible to associate only three of the five with burials, viz. the anepigraphic Barkal pyramids Bar 11, 14, and 15, which belong between Nu. 15 and Beg. S. 6, the first royal burial at Meroe. Ascribing the pyramids to specific Neo-Ramesside kings is, however, completely hypothetical. Moreover, these kings are viewed as a group and placed in the same period solely on account of their names. Their proximity to Amanislo (Gen. 34), buried in Beg. S. 5, and their position before Arnekhamani mrj-Jmn (Gen. 36), the builder of the Lion temple at Musawwarat es-Sufra may, however, be viewed as certain. Arnekhamani, buried in Beg. N. 53, was the last king to bear the epithet mrj-Jmn (see below). Amanislo and Amani-tekhma (Gen. 35) also used the epithet. However, it is not clear whether all five Neo-Ramesside kings form a single group in the period between Nastasen (Gen. 27) and Arkamani-qo (Gen. 33).

---

67 Hintze identified the last part of the name as Meroitic wte (for wte, see now Rilly, MNL 27 [2000], 105 n. 5). It is, however, highly improbable that such a positive epithet would be attached to the name of an opponent; see A. S. Spalinger, ẒLS 105 (1978), 147. Furthermore, Khababash was chiefly active in LE.

68 For Gtsn/Ktsn see K.-H. Priese, in: Fs Hintze, 343ff. Beckerath, Handbuch², 275, “Atiaa-qo” is to be corrected; likewise, the mistaken data for H, G, and N names of Arike-Amanote (Beckerath, Handbuch², 273). Diodorus I, 60 records an Ethiopian king Aktisanes, who might be identical with Gtsn/Ktsn. Diodorus took the name from Hekataios of Abdera, a contemporary of Ptolemy I, whose work must have been composed before 300 BC; thus Aktisanes should be dated to before 300, or at the very latest, before 282 BC.

69 Kendall’s identification as Alara (Meroitica 15 [1999], 64) cannot be maintained.

70 Cf. Beckerath, Handbuch², 275 Arkamanikasch ... (?).

71 All but Aktisanes are documented only in Kawa. See Macadam, Kawa I, 72ff. (XIII, XIV, XV), 90 (XLV).

72 See Wenig, MIO 13 (1967), 1ff.

73 I.e., the epithet mrj-Jmn written in the cartouche with the nomen of Kas ... Ar(yaman)i and Sabrakamani.

74 Priese, in: Fs Hintze, 351ff. See also above, note 14.

75 Probably restored correctly as Amani-tekhma mrj-Jmn by Beckerath, Handbuch², 277.
Peculiarities of writing and diction in the inscriptions of Sabrakamani and Arike-Pi(ankhi)-qo led Priese to date them earlier in the Napatan era, before Nastasen, whereas Hofmann places Sabrakamani and Kash...amani in the Meroitic period (as Gen. 39 and 40), assigning them the later pyramids Bar. 7 and Bar. 9 in the north group at Gebel Barkal. But this would imply that these two kings temporarily revived the tradition of using the epithet mrj-Jmn in their cartouches after a lapse of several generations. In the absence of additional arguments, this proposal does not seem very appealing. Positioning the Barkal pyramids 7 and 9 between the necropoleis of Nuri and Begerawiya led to the rejection of the idea of a First Collateral dynasty at Napata.

Typologically, the tombs Beg. S. 6 und Beg. S. 5 at Meroe immediately follow the pyramids of the southern group at Barkal. They belong to kings Arkamani-qo (Gen. 33) and Amanislo (Gen. 34). According to Diodorus III, 6, the Ethiopian king Ergamenes was a contemporary of Ptolemy II (285–246 BC) and the first to oppose the priesthood and their custom of ritual regicide. This information resulted in the identification of Ergamenes with Arkamani-qo, and thus to establish him approximately in the 2nd quarter of the 3rd century BC. The transfer of the royal necropolis from Barkal to Meroe in Arkamani-qo’s reign also contributed to his identification with Ergamenes, as the move could have been related to the latter’s opposition to the priesthood.

After Amanislo, the sequence of royal tombs at Meroe continues in the northern area of Begerawiya. Of 41 tombs, at least two must be assigned to princes, and one to a non-reigning queen. The uncertainty of ascribing tombs in this cemetery results from the use of two-chambered tombs for kings after the turn of the 2nd to the 1st century BC. Previously kings owned three-chamber tombs while two-chamber tombs were used for non-ruling members of the royal family. Since the non-ruling members continued to be buried in two-chamber tombs, it is difficult to identify the burial of a king when the reliefs in the tomb chapels have been destroyed, as is frequently the case; or when tomb stelae and offering tables are not preserved in situ. Furthermore, kings are usually not distinguished by the use of their title qore in the

---

76 In: Fs Hintze, 352f.  
77 Chronologie, 65–66.  
78 F. Hintze, Die Inschriften des Löwentempels von Musawwarat Es Sufia (Berlin, 1962), 16f.
nomination of the funerary texts. The series of tombs in the northern cemetery was interrupted for three generations by a move to Barkal, but then the sequence was resumed and maintained in the north cemetery until the end of the Meroitic kingdom.

Associating individual pyramids with known kings to establish a chronological sequence is thus a particularly difficult task in this cemetery. The first tomb, Beg. N. 4, belongs to Amani-tekh who, distinguished by the epithet ‘mrj-Ĵmn in his cartouche,\(^79\) follows Amanislo closely. The chronological position of Arnekhamani (Gen. 36), builder of the Lion Temple at Musawwarat es-Sufra, who has been assigned the destroyed pyramid Beg. N. 53, has been deduced from the repeated changes of epithet in his cartouche. ‘Mrj-Ĵmn he first altered to ‘nh ʻdt ‘mrj-Ĵmn, and then to ‘nh ʻdt ‘mrj-Ĵst. This last epithet naming Isis is used in Egypt only by Ptolemy IV (221–205 BC). Presumably Arnekhamani ascended the throne during the reign of Ptolemy III (246–221 BC), and subsequently changed his name, when Ptolemy IV became pharaoh.\(^80\) Arqamani/Ergameses II (Gen. 37; Beg. N. 7) and Adikhalamani/Tabirqo?\(^81\) (Gen. 38; Beg. N. 9) used the same epithet. They should therefore be successors of Arnekhamani, especially since Arqamani might be identical with the son of Arnekhamani who appears in the reliefs of the Lion Temple at Musawwarat es-Sufra.\(^82\) A chronological niche for Arqamani and Adikhalamani is easily defined, since both built in the Dodekaschoinos in LN,\(^83\) and can only have done so (for political and chronological reasons) during the Theban secession between 207/6 and 186 BC.

---

\(^79\) See above, note 75.

\(^80\) Hintze (n. 78), 14f. The Egyptian rival king Hr-wn-nfr likewise takes the epithet ‘nh-ʻdt ‘mrj-Ĵst along with others at his coronation in Thebes, 205 BC, see W. Huß, Ägypten in hellenistischer Zeit (München, 2001), 446 and P. W. Pestman, Chronologie égyp- tienne d’après les textes démotiques (Leiden, 1967), 44.

\(^81\) Possibly a mortuary name of Adikhalamani.

\(^82\) Hintze, (n. 78), 25 (10). However, Hofmann, Chronologie, 57, rightly argues that Prince Arka cannot be Arqamani (Dakke; RCK IV, fig. D no. 24 G) because the orthography of the name is quite different, but she does concede that his chronological position after Arnekhamani could be correct.

\(^83\) Chapel of Ergameses in the temple of Dakke (G. Roeder, Der Tempel von Dakke, Cairo, 1911) and chapel of Adikhalamani in Debd (G. Roeder, Debod bis Kalabische, Cairo, 1911); see also a stela of the latter in Philae (A. Farid, MDAIK 34 [1978], 53–56). For the alleged joint constructions of Meroites and Ptolemies in the Dodekaschoinos, see Török, Handbook, 210–211, 428–431.
The tombs continuing the archaeological sequence in the northern cemetery can be assigned to specific individuals only with difficulty. Relevant epigraphic material is generally lacking, and attributions on the basis of fragmentary and displaced offering tables can be no more than provisional. A ruling queen must have been interred in the pyramid Beg. N. 11 (Gen. 41), where the reliefs depict a woman with royal insignia. Shards with Demotic and Meroitic cursive characters have been found in the debris, supporting attribution of it to Sanakadakhete. The earliest known inscription in Meroitic comes from Temple F which she built in Naqa. An iconographic detail leads Hofmann to correlate the pyramid with the later part (after 145 BC) of the reign of Ptolemy VIII (170–163, 145–131, and again 127–116 BC). A block from a pylon with traces of a Horus name with the component $k^3\cdot nht$ comes from Beg. N. 20 (Gen. 44). Ptolemy IX (116–107 and 88–80 BC) and Ptolemy XII (80–57 and 55–51 BC) use $k^3\cdot nht$ in their Horus names, suggesting to Wenig that the pyramid Beg. N. 20 belongs to the Meroitic king Taneyidamani, who is known from many monuments and must belong to this period. However, Hofmann and Török consider him the immediate successor of Sanakadakhete, and therefore assign him pyramid Beg. N. 12 (Gen. 42).

After Beg. N. 20, the royal family moved the burial ground to Barkal for three generations, before returning to Begerawiya North for the remainder of Meroitic history. Only one of the three tombs at the latter site can be assigned, viz. Bar. 6 to the ruling queen Nawidemaka. Other identifications depend upon differing interpretations of the historical events that may have led to the transfer of the necropolis. Since the assignment of the tomb group Beg. N. 11, 12, 13, and 20 is already hypothetical, and the sequence of kings accordingly contested, any interpretations amount to mere circular reasoning until new material comes to light.

Epigraphic documentation for three personalities—king Teriteqase, Kandake Amanirenase and Paqara Akinidada—at the temple of Dakke.

---

84 Chronologie, 77–78.
85 MIO 13 (1967), 43.
86 Hofmann, Chronologie, 78. Török notes palaeographic details favouring Taneyidamani for Sanakadakhete’s immediate successor, Handbook, 205; idem, FHN II, 664.
87 But not, in my opinion, an active northern policy (cf. Hofmann, Chronologie, 66 ff.), since the kings of Dyn. 25 had a decided northern policy with the seat of government in Egypt, yet were buried in Kush.
88 REM 0092; REM 0093.
is chronologically very significant. Queen Amanirenase, who apparently reigned after the death of Teriteqase, is attested together with Akinidada in Kawa and in Hamadab. Akinidada may be the son of the one-eyed Kandake mentioned by Strabo. Akinidada is also named with the reigning queen Amanisakheto (Beg. N. 6) on a stela in Qasr Ibrim. These four individuals must have been not only contemporaries, but also apparently associated with historical events linked to a more aggressive northern policy, which led to the Meroitic conquest and pillage of Philae and Syene and provoked the conflict with the Romans, resulting in Petronius’s campaign of 23 BC. With the peace of Samos 21/20 BC, both parties were satisfied with the Roman garrison’s withdrawal from Qasr Ibrim while the Meroites recognized the border at Maharraqa. Only in 297 AD did Diocletian move the frontier back to Syene, but exactly how the Romans ruled LN during their years of sovereignty, and the degree to which the Meroites may have been involved, cannot be established with certainty. Demotic graffiti in the Dodekaschoinos, dating for the most part to the 1st and 3rd centuries AD, testify to the activities of Meroitic officials in the region. The cult of Isis at Philae was particularly important to them, and defensive actions against the aggressive and marauding Blemmyes will have been a common concern of Romans and Meroites. The Kharamadoye text in the Mandulis temple at Kalabsha is the last Meroitic inscription in the region; it dates to the beginning of the 5th century AD. Whether King Aqрака-manан (§гр-змн) should also be assigned to the period of conflict with Petronius remains unclear. A Demotic inscription of a Meroite in Dakke belongs to his reign and that of his royal mother, the pr-ȝt Naytal (Njṭl).  

89 REM 0628; REM 1039.
90 Strabo 17, 1. 53f.; see FHN III, 828ff. (190).
91 REM 1141; cf. also REM 0705. 0706 in the temple T at Kawa.
93 For the dates, see Török, FHN III, 1105f.
94 That the Kharamadoye inscription might have been written in a language other than Meroitic (as Peust (n. 19), 75, maintains) is highly improbable. It is precisely postpositions such as -dik or -lw (which Peust cites as indicators of a different language) which are known Meroitic language morphemes, like the lexeme qore “king”. A glance at the beginning of the inscription, which clearly reveals Meroitic diction as far as line 9, should have discouraged him from pursuing this proposal. For analyses of the inscription, see Bibliographie REM 0094 and Millet, MNL 30 (2003), 57–72.
95 Török in: FHN II, 686 (161), without, however, going into A. Burckhardt’s arguments in Meroitica 8 (1985), 76 and n. 12, where this graffito is assigned to the late 1st or early 2nd century AD.
After Amanisakheto come the great Meroitic builders Natakamani (Beg. N. 22) and Amanitore (Beg. N. 1) under whose reign a “Re-Egyptianization” in art and script occurred. The new excavations of the Berlin Egyptian Museum discovered two stelae of Amanisakheto in the temple of Amun at Naqa, built by Natakamani and Amanitore, which may necessitate a reassessment of the sequence of these rulers, unless the two stelae actually come from an earlier building in Naqa, or were perhaps shifted to the Amun temple and left there. Both stelae show the queen with Amesemi, once before Amesemi’s consort Apedemak (REM 1293), and once simply together (REM 1294). Studying details of the representations and the finds in the tombs, Hofmann dates Natakamani to the 2nd half of the 1st century AD.

It is uncertain, although entirely plausible, that Sorakorara, who occasionally appears together with Natakamani and Amanitore and may have initially occupied the position of a pqr(tr), should be placed in the sequence of rulers after Natakamani. A relief at Gebel Qeili shows Sorakorara with full royal insignia.

Links with the Roman Empire are lacking for the following epoch, and there are only a few kings attested in inscriptions and by offering tables. The small number of names which belong to known rulers, and those which have been proposed as names of rulers, are mere compilations in list form. Only the pyramids Beg. N. 17, 18, and 19 and the late pyramid Beg. N. 28 (of Teqorideamani) can be associated by inscriptions with owners and their sequence established beyond doubt, following Beg. N. 16. Beg. N. 17, 18, and 19 date to the period from somewhat after the mid-1st century AD to the mid-2nd century. However, two offering tables were found in Beg. N. 16, one belonging to

---

97 REM 1293 and 1294.
98 Naqa may already have been documented in the stela of Nastasen as trrqt; see Zibelius, Afrikanische Orts- und Völkernamen in hieroglyphischen und hieratischen Texten (Wiesbaden, 1972), s.v. twrkt(t) and trrqt.
100 M. Zach (GM 136 [1993], 89ff) considers Sorakorara a rival of King Natakamani; Hofmann (Chronologie, 128) removes him from the list of kings and assigns Beg. N. 15 to him; Török (FHN III, 910ff.) considers him a ruling king since he wears a royal costume at Gebel Qeili; Zach (GM 145, 1995, 105ff) concurs. See also Wenig (n. 16), 17; idem, Fs Wenig (n. 16), 182.
101 Amanitenamomide (Beg. N. 17), Queen Amanikhatashen (Egyptian hieroglyphs, Beg. N. 18), Tarekeniwala (Beg. N. 19, in the debris of which was found an offering table of Areteneyesebokhe). Beg. N. 29 probably Takideamani, and certainly Teqorideamani (Beg. N. 18).
Amanitaraqide and the other to Arayesebokhe. Palaeographic and typological features allow earlier pyramid Beg. N. 16 to be ascribed to Amanitaraqide. Arayesebokhe is dated to a later period, since his offering table is typologically younger, and Beg. N. 36 is assigned to him, but there are significant discrepancies in his chronological position. Furthermore, it is by no means clear that both these individuals were kings at all: no other monuments have yet surfaced for either. The assignment of pyramids in the following period also remains entirely hypothetical. For the specific identification of the burials in Hofmann’s 6th group of pyramids in Begerawiya North, which she dates from the mid-2nd century to the mid-3rd century, she relies on offering tables with royal benediction formulae found in the West necropolis at Begerawiya, on the assumption that they had been moved. This clearly illustrates the difficulties and uncertainties surrounding the identifications of rulers and their relative chronological positions.

King Amanikhareqerema, who left us the “omphalos” (i.e., a naos) of Napata, two ram statues and a rounded stone with his name found at Naqa, has as yet no tomb at all, unless Beg. N. 37 (Gen. 67)

102 His parents are Mnhdke (B) and Pisek (C). The facsimile REM 0816 has Pisekdo instead (C), but it is not possible to decide which reading is correct on the basis of the photograph. Pisekara appears in the king lists because kings’ fathers are presumed to have been kings too, but this is by no means certain.

103 For example, Török, FHN III, 912–914 places Arayesebokhe as Gen. 56 with Beg. N. 36 immediately after Amanitaraqide with Beg. N. 16. The same sequence appears in Török, Handbook, 205, but with Beg. N. 36 assigned to Amanitaraqide and Beg. N. 16 to Arayesebokhe. Hintze, Studien, 33 placed Amanitaraqide in Gen. 48 and Arayesebokhe much later in Gen. 60, while Wenig (n. 16), 17; idem, Fs Wenig (n. 16), 182 assumes Gens. 56 and 69, and Hofmann, Chronologie, 192, assigns them, respectively, to Gens. 52 and 63.

104 See Rilly, MNL 28 (2001), 81.

105 Chronologie, 155.

106 For example, inserting Maloqorebara (Meroitic chamber in Philae, REM 0101 l. 1) in the king list is fraught with difficulties; cf. Török’s discussion, FHN III, 1028f. Even if a royal name should be expected in REM 0101 (so Török) the context of the inscription (tld:t: Mloqorebr:qoretal lldemni....) does not suggest that Maloqorebara should be considered a king. At our present understanding of the language qore:tlidemni /qoretal:ldemni/ is to be read as qorese-t lldemni.

107 REM 1004.

108 REM 0001 and REM 1151.

109 REM 1282, with the writing Mnhereqerem (contra Rilly, MNL 28 [2001], 71 n. 1), see the figure, K. Kroeper & D. Wildung, ANM 9 (2002), 146 pl. VI a (inverted); G. & J. Hallof, BzS 7 (2000), 169ff; C. Carrier, MNL 27 (2000), 2 and figs. 4–5.

110 Török, Handbook, 206 (Gen. 62).

111 Wenig (n. 16), 17; idem, Fs Wenig (n. 16), 182.
or Beg. N. 41 (Gen. 56) is his. Proposed dates range from the 2nd half to the end of the 2nd century. When doubts arose about the late dates for Amanikhareqerema, Rilly attempted to check the chronological position proposed for him by applying palaeographic criteria to the inscription on the stone REM 1282. To avoid circular reasoning, he relied on statistical analyses of the cursive royal inscriptions after Natakamani. His study includes 18 documents, analysed according to strict methodological criteria, while excluding archaeological and iconographic factors. Rilly concludes that the later dates for Amanikhareqerema should be reconsidered, since he may belong instead to the end of the 1st century.

We have almost no names for the kings reigning between Amanikhareqerema and those of around a century later. Many princes and queens were included in the king-list for the last centuries of the kingdom of Meroe, none of whom reigned autonomously. In the corpus studied by Rilly they are: Amanitaraqide, Arayesebokhe, Amanikhedolo, Mashaqadakhela, Temelordealami, who may have been a half-brother of King Teqorideamani, Pat..rapeamani and Amanipilade.

A maximum list of kings after Natakamani (and Sorakarora?) would include 23 rulers with a total of 24 pyramids. In a minimal list, only the following individuals can be considered kings:

- Amanikhareqerema, end 1st century AD
- Amanitenamomide (Beg. N. 17)
- Amanikhatashan (Beg. N. 18)
- Takideamani (?)
- Tarekeniwala (Beg. N. 19)
- Aritenaryesbokhe
- Teqorideamani (Beg. N. 28), accession 248/249 AD
- Yesebokheamani

Teqorideamani can be dated precisely; he is named in the Demotic graffito Ph. 416 of Pasan mentioning the third year of the ruler Tqrrmn and year 253 (in our reckoning) under Trebonius Gallus. The king’s name, written in Meroitic Teqorideamani, was found in his pyramid, Beg. N. 28. We also possess an offering table REM 0829, dedicatory texts REM 0408 through REM 0410, and the graffito REM 1261 in

---

112 Hofmann, *Chronologie*, 160.
113 *MNL* 28 (2001), 71ff.
Meroe inscribed with his name. He may have reigned 20 years.\textsuperscript{114} The inscription of his official Pasan and those of other Meroites attest that the personnel of the Isis temple was partially under the authority of Meroitic officials. It is probably in this connection that the representations in the Meroitic chamber at Philae showing a Meroitic delegation should be understood.\textsuperscript{115} One of the successors of Teqorideamani was Yesebokheamani, who is attested in a dedicatory inscription on Hadrian’s gate at Philae, where he is explicitly titled \textit{qore}.\textsuperscript{116} He thus belongs most probably to the period of Roman withdrawal from the Dodekaschoinos.\textsuperscript{117} His lion statue was found in Qasr Ibrim in LN,\textsuperscript{118} and he is also known from a stela in the Apedemak temple at Meroe, with an inscription identifying him as king.\textsuperscript{119}

The sequence of pyramids in Begerawiya North ends with Beg. N. 25. This tomb belonged to a queen who is depicted wearing royal insignia and sitting on a lion throne to receive an offering of incense.\textsuperscript{120} The pyramid Beg. N. 25 represents the last burial in the royal necropolis at Begerawiya North, marking the end of the Meroitic kingdom.

\textsuperscript{114} Deduced by Hofmann, \textit{Chronologie}, 168, based on Ph. 68, where year 20 of a Meroitic king is mentioned.
\textsuperscript{115} \textit{REM} 0097–0111.
\textsuperscript{116} \textit{REM} 0119 and \textit{REM} 0120. On \textit{qoro} < \textit{qore-lo} see Rilly, \textit{MNL} 26 (1999), 79ff.
\textsuperscript{117} See Török, \textit{FHN} III, 1050; contrast Hofmann, \textit{Chronologie}, 189.
\textsuperscript{118} Not in \textit{REM}. See J. M. Plumley, \textit{JEA} 52 (1966), 12, pl. 4, 3. The writing cannot be confirmed on the basis of the published photograph, but see Hall, \textit{JEA} 89 (2003), pl. 23.
\textsuperscript{119} \textit{REM} 0407, l. 2 without the adjunct \textit{amni} only as \textit{yeseboheqore}.
\textsuperscript{120} \textit{RCK} III, pl. 23.
II. 13 CHRONOLOGICAL LINKS BETWEEN
THE CUNEIFORM WORLD OF THE ANCIENT
NEAR EAST AND ANCIENT EGYPT

Jörg Klinger

The multiple sources available for the reconstruction of the chrono-
logical background of ancient Near Eastern history are a major factor
distinguishing these cultures from Egypt, where ultimately there is but
one single historical thread. By contrast, Mesopotamia and the neigh-
bouring regions offer a series of at least partially independent sources.
There are admittedly important differences in the distribution of these
sources over time and space such that phases with abundant material
contrast with others which are less satisfying. For certain periods, there
is simply insufficient material to draw any conclusions, regardless of the
number of different threads available.

The middle of the second millennium is such a period, and this has
led to the conundrum of three parallel chronological systems, each
based on the Venus tablet recording year 6 of Ammisaduqa of Babylon.¹
These Venus observations seem to have offered the basis for the astro-
nomical calculations, since this observational event repeats itself every
56/64 years, and thus the date means that the year 6 of Ammisaduqa
can be set on a spectrum ranging from 1641 to 1577 BC. This fix
point became a pivot upon which the various chronologies turned,²

¹ The texts are part of the omina series Enûma Anu Enlîk; cf. esp. E. Reiner &
D. Pingree, Babylonian Planetary Omens. Part I: The Venus Tablet of Amnisaduqa (Malibu,
1975). For an evaluation of the data, and the link with the lunar dates in particular,

² Fundamental for establishing the chronological frameworks were the work of
17 (1954–56), 294ff., with a short survey of the state of the chronological discussion
up to that time, and a plea for the “Low Chronology”, along with B. Landsberger,
“Assyrische Königsliste und ‘Dunkles Zeitalter’”, JCS 8 (1954), 31–45, 47–73, 106–133
53–61, 63–73, favouring the “Middle Chronology”, along with the response from
table with dates for Mesopotamian rulers following the Middle Chronology was pre-
of a Dead Civilization (Chicago, 1977), 335–348.
with the later periods firmly anchored, and the earlier periods floating freely, the date for the fall of Babylon being 1595 (according to the Middle chronology) or 1531 BC (according to the Low chronology). This point has now been lost since the observations are no longer viewed as reliable, with the result that the long debate about the relative merits of the Middle or Low chronologies must now be abandoned, having become pointless as the various alternatives for an absolute date are no longer separated by intervals of 64 years. Instead, we now have a moving link separating a block of 500 years from the later periods where the chronology is relatively reliable.

3 The conquest of Babylon by Murshili I is an important event in the Hittite versions, but cannot be used chronologically. The Babylonian records indicate that it took place at the “time of Samsuditana”; Agum (II?) recovered of the plundered statues only 24 years later. The relevant references have been collected by G. Wilhelm, “Murshili”, *RA* VIII: 434–435; on the chronological evaluation, cf. A. Goetze, *JCS* 11, 65–73, and for the difficulties of the Kassite kings named Agum, cf. esp. J. A. Brinkman, *Materials and Studies for Kassite History* (Chicago, 1976), I, 95, 97.


On the evaluation of the dates, cf. P. J. Huber, “Astronomy and Ancient Chronology”, *Akkadica* 119–120 (2000), 160–174, who still maintains that a statistical analysis of the possibly faulty dates is possible, and that the ensuing results which he considers to be compatible with a date for Ammisaduqa I are 1582 or 1516.

5 The preservation of the very different strands from the beginning of the Ur III period (2111–2003 BC, Middle Chronology) to the end of the Old Babylonian period are so tightly woven that the relative chronology for the history of the first half of the second millennium can be viewed as certain; the prospective of either larger hiatus or a significant reduction can be excluded. For the Ur III period, with its rich harvest of chronological data, cf. W. Sallaberger “Ur III-Zeit”, in: W. Sallaberger & A. Westenholz, *Mesopotamien: Akkade-Zeit und Ur III-Zeit* (Fribourg, 1999), esp. 123ff.

6 Explicitly: the use of a date 1531 or 1595 BC for the Hittite conquest of Babylon, which is certainly relevant for the beginning of Hittite history, is today a mere convention; limiting it to a period of 10–20 years is possible. Cf. the basic observation by C. Kühne, “Imperial Mittani: An Attempt at Historical Reconstructions”, *SCCNH* 10 (1999), 203 n. 1, who in the meantime assumes a decade between “1550 and 1540 as a transitional decade for the end of the Old Babylonian Dynasty”. Referring to the running dendrochronological analyses by P. I. Kuniholm (cf. also S. W. Manning, B. Kromer, P. I. Kuniholm & M. W. Newton, “Anatolian Tree Rings and a New Chronology for the East Mediterranean Bronze-Iron Ages”, *Science* 294 (2001), 2532–35; M. W. Newton & P. I. Kuniholm, “A Dendrochronological Framework for the Assyrian Colony Period in Asia Minor”, *Türkiye Bilimler Akademisi Arkeoloji Dergisi* 7 (2004), 165ff. and the current reports of the Aegean Dendrochronology Project at http://www.arts.cornell.edu/dendro/), he proposes 1541 BC +/– 37 years as a possible date for the Babylon campaign.
It was just a question of time until a new attempt would be made to revise the entire chronology of the period before the first millennium. The model proposed by Gasche et al. in 1998\(^7\) thus gave momentum to a new and intense debate which endures up to the time of writing.\(^8\) Whether a new chronological framework similar to that prevailing with the Middle Chronology will emerge remains to be seen. New sources are still not available, with the exception of the gradual clarification of the royal succession in the Middle Hittite period, which can at least offer some kind of orientation around the middle of the second millennium.\(^9\) At present, the earlier chronological proposals are maintained as conventions.

The greatest lack in the cuneiform sources thus continues to be the lack of adequate data\(^10\) combined with the absence of an overarching system of year names.\(^11\)

In Assyria, the traditional principle of naming years and counting according to the holder of a certain office (\(\text{lîmu}\)) was maintained, but the sequence of officials in the books of eponyms eliminated the need for naming the years. This system was already established in the first quarter of the second millennium, and became a standard dating method, as can be seen in the eponym dates in the thousands of Old Assyrian texts from the \(kārum\)-period in Anatolia, and as is confirmed by the recent discovery of two tablets with \(\text{lîmu}\) lists.\(^12\) With the overlap between

---

\(^7\) Gasche et al., *Dating.*


\(^9\) There are a whole series of astronomical observations completely independent of these which are highly significant and could contribute to gaining a higher resolution for the DeltaT (Deceleration of the rotation of the earth) factor which is so important and difficult in these calculations. In addition, there are specific cases where chronologically absolute dates can be checked or controlled using calculable dates. Here, we will merely refer to the detailed investigations by Stephenson, *Eclipses*. Specifically relevant for the Ancient Near East are chapters 4–7; cf. also below Locher, chapter III. 9.


these lists and the eponym chronicle from Mari, a period of almost exactly 200 years is not absolutely precisely dated in relative terms. This allows the end of kārum Kanesh II to be placed into a relative chronological context, and this permits further deductions about the overall chronological framework of the whole period. If we allow that the eponym chronicle ends with the death of Shamshi-Adad I, and the final 20 or more names in the kārum-texts cannot be identified, the end of kārum II will have been roughly in year 11 or 12 of Shamshi-Adad I. This means that the restoration of a few more fragmentary entries in the Assyrian king-lists contributes significantly to the second major source for the establishment of an Ancient Near Eastern chronology. Yet here too, it must be conceded that the later periods are better documented and more reliable, than both the earlier era, and the neighbouring regions. These lists are the spine of all dates stretching back to the 12th century, complemented by eponym-lists (generally complete for the first half of the first millennium), and themselves anchored absolutely with a solar eclipse, dated to 15 June 763 BC, recorded in the eponym-lists. The general compatibility of the versions of the Assyrian king-lists thus leaves only small margins in dating the reigns of the Assyrian kings back to the 12th century.

---

13 For details, cf. Veenhof, *Akkadica* 119–120, esp. 139 and Veenhof (n. 12), 61–62. Veenhof dates the accession of Shamshi-Adad to the year 1833 BC, on the basis of the Middle Chronology. Important is also his observation that the *Distanzangaben* of the later Assyrian tradition relate to Irshum I and Shamshi-Adad I, meaning that these are therefore probably realistic, effectively negating the hypothesis that the *Distanzangaben* are not chronologically relevant. Following the traditional Middle Chronology, Veenhof specifies the following Old Assyrian dates: the accession of Irshum I in 1974 BC and the death of Shamshi-Adad I in 1776 BC.


In comparison with the Assyrian sources, the Babylonian material is far poorer. The Babylonians did indeed move relatively rapidly to a more elegant and relatively more accessible means of dating, namely simply counting the years sequentially according to the king’s reign, which became the norm as early as the first half of the 14th century.  However, there is a comparative dearth of written sources, so that the Babylonian chronology must be established by synchronisms with Assyrian history, where works such as the synchronic history are important—if partial—witnesses.

The general situation is more or less comparable in all of the other areas, as a consistent sequential system of dates was not used anywhere, or is at least not preserved. This means that any attempt to establish a precise chronology for the history of the ancient Near East must rely initially on the Assyrian data, and only then on that of their neighbours, and their predecessors. Once these relative chronologies have been established, the second step is to identify the best possible synchronisms with the Assyrian chronology. Due to the multitude of sources, and especially the diplomatic correspondence of certain periods, it is possible to establish not merely one-to-one links, but actually to weave a fabric of relations which can actually be established without any internal contradictions.

Arriving at absolute dates depends upon a very different and diverse set of conditions. For the first millennium, people and events can be dated with near precision, as the uncertainty is highly constrained. For the earlier periods, some closed blocks can be isolated in which the relative chronology is certain, but anchoring these to the absolute dating of the first millennium leaves a considerable margin of error. There is a significant contrast with respect to the precise chronological synchronisations between Mesopotamia and Egypt for the first and second millennia. For the first millennium BC, where the Assyrian data is reliable and precise, the correlation difficulties lie with Egypt, whereas before this, the reverse is true.

---

18 Cf. Brinkman (n. 3), 402ff.; probably during the reign of Kadashman-Enlil II.
19 A. K. Grayson, “Königslisten und Chroniken. 3. Kings Lists”, RIA VI: 89ff. offers a survey of the Babylonian sources; along with the fragments of a synchronic list, 121ff.
20 This covers the period from the middle of the 2nd millennium through Adad-narari III in the 8th century; edited by A. K. Grayson, Assyrian and Babylonian Chronicles (Locust Valley, 1975).
Despite the millennia during which these civilisations existed, documents confirming direct contacts and exchange between Mesopotamia and its neighbours on the one hand, and Egypt on the other, are rather rare and restricted to certain historical phases. Although one can assume that at all times there will have been people who were travelling back and forth or trading between these lands, this has left virtually no trace in the sources. We only have access to major state activities—diplomatic contacts or military engagements—which were generally exceptional.\textsuperscript{21} The lucky find of the Amarna archive appears to be a period of particularly intensive contacts, but may actually have been repeated at very different times. The multi-faceted diplomatic archives from Hattusha can serve as a hint that \textit{cum grano salis} the same continuity of epistolary exchange may have taken place with other powers, and even in times which appear to us quite obscure.\textsuperscript{22}

Despite such obstacles, there is a general consensus among scholars on the basic framework of the chronological framework which can be established using the basis provided by the Assyrian records, including also the reduction of ca. one decade in the Assyrian chronology proposed some time ago.\textsuperscript{23} Another constraint is the revised model proposed by H. Gasche et al., which would result in a significant reduction even with respect to the Low chronology. Affecting the ancient Near East up to the middle of the second millennium BC, it touches a period for which the Assyrian sources do not provide complete cover.\textsuperscript{24}

\textsuperscript{21} The seemingly comprehensive documentation in the Mari archives does not reveal one single direct link to Egypt, cf. A. Malamat, \textit{Mari and The Early Israelite Experience} (Oxford, 1989), 61f. c. n. 125. An informative survey on the geographical horizon of international relations in the Amorite period will be found in B. Lafont, “Relations internationales, alliances et diplomatie au temps des royaumes amorrites”, \textit{Amurru} 2 (2001), 213ff., where Egypt likewise fails to appear.

\textsuperscript{22} The first fragment of a cuneiform letter, presumably from the diplomatic correspondence of Ramesses II, was found in 2003 in the excavations at Pi-Ramesses in the Delta, cf. E. B. Pusch & S. Jakob, “Der Zipfel des diplomatischen Archivs Ramses’ II.”, \textit{Ä&L} 13 (2003), 145–153.

\textsuperscript{23} Fundamental is the contribution by Boese & Wilhelm (n. 17) as well as the further and generally positive reception with the literature to be found by Freydank (n. 15), 11 n. 3. Freydank (n. 15; 34) confirms that although no definitive conclusions can be drawn from what is hitherto known from the Middle Assyrian eponyms, he tends to assign the two kings relatively short reigns.

\textsuperscript{24} The arguments in Gasche et al., \textit{Dating}, are supported not only by philological historical sources, but fundamentally based on archaeological criteria. For a critical evaluation, cf. G. Colbow, “Syrian Chronology in the Old and Early Middle Babylonian Periods”, \textit{Akkadica} 119–120 (2000), 103–116.
For the period from the end of the 14th century, the dates of this new proposal do not differ significantly from those used hitherto, as a comparison between the Boese/Wilhelm shortened Assyrian chronology and the “ultra-low chronology” produced by Gasche et al. shows. The only point up for discussion between Tiglathpileser I (1114–1076 BC) and Ashshur-nerari II (1414–1408 BC) is the reign of Ashshur-dan I, and his predecessor Ninurta-apil-Ekur, which has led to the proposed reduction of Assyrian chronology by 10 years, as mentioned.

The interpretation of the expression *tuppishu* is less significant, since it concerns only the insertion of an additional year. The further back in Assyrian history one goes, the greater the divergences and the greater the room for differing chronological assumptions so that Gasche et al. favour bringing the end of the First Dynasty of Babylon down to 1499, rather than 1531 or 1595 BC. At present, from the philological standpoint, only the statements of the periodic intervals (*Distanzangaben*) can serve as control mechanisms. Unfortunately, there is no consensus on their value and chronological relevance. Gasche et al. logically argue that the temporal intervals preserved as *Distanzangaben* are either incorrect or they try to provide a specific interpretation for the relevant interval. An inscription of Shalmaneser I concerning his

---

25 Compare the table in Boese & Wilhelm (n. 17), 38 with that of Gasche et al., *Dating*, 62. The work by Freydank (n. 15; 188–189), offers another survey of the reigns of the Middle Assyrian kings following the standard dates and the shortened Assyrian chronology. In the following, we follow the shortened chronology offered by Boese & Wilhelm, as this provides better data when compared with Egyptian chronology.

26 For the details, cf. Boese & Wilhelm (n. 17), 23ff.; the shortening was not adopted by Gasche et al., *Dating*, 51 c. n. 223, probably because the collation of the relevant passage (cf. J. A. Brinkman, *Or* 42 [1973], 300 n. 15 and particularly on this, cf. Boese & Wilhelm (n. 17; 24) in the “Nassouhi-Kinglist” (= Copy A of King List No. 9, J. A. Brinkman, *RIA* VI: 101ff.; the passage is in III 41f., *RIA* VI: 111) was interpreted as a confirmation although the reading “46”—there, which Gasche et al., *Dating*, 51, used their table is described as “expressively optimistic”, cited from Boese/Wilhelm and not the actual “26+[*]” originally published by Brinkman, and cited by him again in the *RIA* VI: 111.

27 Cf. the references cited by J. A. Brinkman, *RIA* VI: 112, who translates “his tablet”, for Ninurta-tukulti-Ashshur and Mutakkil-Nusku; Wv. Soden, *AHw*, 1304b, assumes that the corresponding entries are “short reigns of less than a year”, while Freydank (n. 15), 33–34 assumes either a form of coregency or a distinction of the actual exercise of power during the formally still existing reign of Ashshur-dan I, whereby the corresponding entries in the king lists do not record an independent reigns. Gasche et al., *Dating*, 53–54, likewise reckon with 0 years.

28 Cf. Gasche et al., *Dating*, 57: “Our analysis of the *Distanzangaben* makes it apparent that no firm chronological conclusions can be drawn from them.” This statement only applies to the model they propose.
reconstruction of the Ekursagkurkurra specifies a period of 580 years separated his reign from that of Shamshi-Adad I. Understood in this fashion, this would be an obstacle to a major chronological change. The authors therefore propose that the passage should be interpreted as meaning that the number “580” does not refer to the interval between Shamshi-Adad I and the author Shalmaneser I, but also that the preceding period of 159 years between the construction of the temple by Irishum I and its first renovation by Shamshi-Adad should be subtracted from the figure, and therefore the 580 years thus represent the entire period between the construction and reconstruction. This necessarily leads to a substantial reduction in the chronology, a century and a half in fact.

It must be stated that this significant reduction not only entails suggesting a reduction of the length of the Assyrian period of almost 200 years, whereby roughly a quarter of a century will have passed since the end of the Third Dynasty of Ur, but also that a close link between the dynasty ruling in Yamkhad probably allows a link between the Old Hittite Period and the earlier periods, and that this simply cannot be reduced at will. The links in the chronological system of the first half

29 Simply rejecting the Distanzangaben completely is apparently not appropriate as can be surmised from the analysis of the dates by Boese & Wilhelm (n. 17), 29ff.; indeed Veenhof’s demonstration, based on the recently discovered Old Assyrian lmu-Lists, is highly significant (cf. Veenhof n. 12; 139, c. n. 7).

30 It is precisely this source, the reliability of which can be assumed; cf. the last note.

31 For an analysis of the data in a diametrically opposed sense, cf. now Eder (n. 8), 194ff.

32 Veenhof (n. 12), 139f. indicates that the period from Irishum I, year 1, to the death of Shamshi-Adad I was exactly 199 years, resulting from the recently discovered lmu-Lists allowing an overlap with the eponym-lists from Mari.

33 Cf. Veenhof (n. 12), 141.

34 Based on the genealogy beginning with Samsuiluna of Babylon, who was at least partially contemporary with Abba’el and over the immediate descendants Yarim-Lim II—Niqmepa—Yarim-Lim III—Hammurapi, who will have a contemporary of Hattushili I or Murshili I.

35 In addition there is a solar eclipse listed in the Mari chronicle for the year after the birth of Shamshi-Adad I, for which C. Michel & P. Rocher, “La chronologie du IIe millénaire revue à l’ombre d’une éclipse de soleil,” JEOL 35–36 (1997–2000), esp. 124 proposed that the most likely match would be the eclipse of 1795 BC. Taking the Distanzangabe separating Shalmaneser I and Shamshi-Adad I, it follows that 1234 BC + 580 years = 1814 BC, placing the accession at the age of 18, resulting in a birth around 1832–33 which matches quite well with the solar eclipse of 24 June 1832 BC. When revising her position to take account of the recent dendrochronological information, C. Michel (“Nouvelles données pour la chronologie”, N.A.B.U. 2002/1, 17–18)
of the second millennium between Assyria and Babylon, with the death of the Assyrian king Shamshi-Adad I during the second decade of the reign of the Babylonian king Hammurabi\textsuperscript{36} ultimately allows the synchronisation of Hittite history with Mesopotamian history through the campaign of Murshili I leading to the end of the First Dynasty of Babylon in year 31 of Samsuditana. Dating this event to the year 1499 BC creates major problems for Hittite history.\textsuperscript{37}

The question of the form of the Assyrian calendar is less serious than the differing evaluation of the \textit{Distanzangaben}, but nevertheless important. The issue is whether it depended upon lunar months and whether or not intercalary months were used to match the solar year,\textsuperscript{38} and thus whether or not calculations lead to a difference in the number of years in the chronology with respect to solar years. Fortunately, there is evidence favouring the use of solar years in Assyria during the second millennium and not just later.\textsuperscript{39}

For the present purpose, these points do not have any significant impact since there are no direct synchronisms before the Amarna

\textsuperscript{36} This applies although the precise year of the death of Shamshi-Adad I is still discussed, as it may have been in year 12, 13 or 17 of the reign of Hammurabi; cf. Gasche et al., \textit{Dating}, 64 and the literature cited in n. 265, as well as D. Charpin, in: D. Charpin, D. O. Edzard & M. Stol, \textit{Mesopotamien: Die Altbabylonische Zeit} (Fribourg: OBO 160/4, 2004), 155–156 (n. 713), 193.

\textsuperscript{37} As is the new suggestion by Gasche et al., \textit{Dating}, 64f., 77ff.; they did not attempt to integrate the difficulties of Hittite history between Murshili I and Tutkhaliya I (cf. Gasche et al., \textit{Dating}, note 92). G. Beckman, “Hittite Chronology”, \textit{Akkadica} 119–120 (2000), 19ff. discussed precisely these issues at length and came to the conclusion “that the Anatolian evidence does not favour the suggested downward revision of the date of the fall of Babylon”.

\textsuperscript{38} The practice is known since the Ur III period, and letters from the Old Babylonian period record an intercalary month based on royal decrees, but the continuous usage of some rules cannot be documented, at least partially because of the lack of sources. In Assyria, the regular use of calibrating by using the lunar calendar is only known from the 1st millennium, cf. H. Hunger & E. Reiner, “A Scheme for Intercalary Months from Babylonia”, \textit{WZKM} 67 (1975), 21ff. and H. Hunger, “Kalender”, \textit{RLA} V: 297–303.

\textsuperscript{39} Cf. the negative position taken by Veenhof (n. 12) 147, joining the arguments in Gasche et al., \textit{Dating}. 
We can thus use the dates for the Assyrian kings as proposed by Boese/Wilhelm as the basis for the presentation of the synchronisms with Egyptian history.

The earliest contacts are recorded in the Amarna letters which refer to earlier events, and specifically to the relations between Egypt and the Hurrian Mittani state, the most important major power in Western Asia in the 15th century. After intense diplomatic contacts under Amenhotep II a dynastic marriage was arranged during the reigns of Thutmose IV and Artatama (I), which should be dated to the first decades of the 14th century according to the Egyptian chronology. The tradition was maintained by Shuttarna II and Amenhotep III who married a Mittani princess in his year 10, and later a daughter of Tushratta, who had since become ruler. In Shuppiluliuma I of Hatti, Tushratta met a dangerous foe in the first decade of the second half of the 14th century. In light of the complete absence of any original Hurrian or Mittani state sources, not much more chronological information can be gleaned from the information of the Amarna letters.

It is only with the 14th century letters of the Assyrian king Ashshur-Uballit I to Amenhotep IV (EA 15 and 16) that a real synchronism can be won from the Amarna letters. There would appear to be considerable room for debate since the Assyrian ruled for more than 30

40 The situation is different when considering the indirect relations which can be adduced from the interpretation of historical developments, as in, e.g., the question of whether the Hittite advance into northern Syria took place during a period of Mittani dominance or was in fact favoured by Egyptian advances; cf. J. Klinger, “Synchronismen in der Epoche vor Suppiluliuma I.—eine Bemerkung zur Chronologie der mittelhethitischen Geschichte”, in: O. Carruba, Cl. Mora & M. Giorgeri, eds., Atti del II. Congresso Internazionale di Hittitologia (Pavia: Studia Mediterranea 9, 1995), 235 ff. Ultimately, such reconstructions depend upon the chronology selected, and thus easily feed into circular logic.


43 Assyria will have freed itself from Mittani hegemony shortly before the end of the 15th century, which allowed Ashshur-bel-nîsheshu (1409–1400 BC) to renew the alliance with Babylon, under Kara-indash.

44 Mentioning an exchange of letters between Ashshur-nadin-ahhe II and Amenhotep III.
years, but the contents of the first letter place it relatively near the start of his reign (1353 BC). Thereafter follows a gap of several centuries in the historical record of direct contacts between the two powers.

For further links between the cuneiform-using states and Egypt, we can turn to Babylonian and Hittite sources. As preserved, the Amarna correspondence documents contacts over several generations—as in letters between the Babylonian king Kadashman-Enlil I and Amenhotep III, and their successors Burnaburiash II and Amenhotep IV where the Egyptian must have come to the throne during the reign of the second Babylonian king, as the latter is in touch with both of these pharaohs. The preserved letters contain indications that of the earlier Kassite kings, Kara-indash had contact with Thutmose IV, and Kurigalzu I with Amenhotep III. Since the reigns of the Kassite Kings before Kadashman-Enlil are unknown these vague hints appear unpromising, yet one can actually create a chronological framework since we know that Kara-indash reigned at the same time as the Assyrian king Ashshubel-nishu (1407–1399 BC), which puts some limits for the not particularly long reign of Thutmose IV.

The sources are more precise for Kadashman-Enlil I and Burnaburiash II, as the reign of the latter is known, and the synchronic

---

45 In the absence of detailed information about the temporal relationship between the predecessors of Eriba-Adad I and Amenhotep III and his successor Amenhotep IV, we can only deduce that the exchange must have taken place around 1381 BC.

46 Beckerath, Chronologie, 61 places this “shortly after his accession to the throne”, which he dates to 1355 BC, and thus according to his chronology, dating the accession of Amenhotep IV to the end of 1351 BC, allowing an indirect synchronism, as EA 15 does not name the pharaoh. Quite apart from this, there is sufficient time in the reign of Amenhotep IV for the second letter to have been addressed to him, despite the uncertainties with respect to the reading of the name.


49 The assumption of a 15-year reign is not, however, compelling, as Brinkman (n. 3), 142f. c. n. 27 specifically stresses.

50 Following Brinkman, this would be 1359–33 BC, as recently in RIA 9: 190b, i.e., the same dates as those in his table published in Oppenheim & Reiner (n. 2), 338. It should be noted that Brinkman (n. 3), 32 n. 89 already observed the proposed dates
history links the end of his reign with the Assyrian chronology. As he actually corresponded with Amenhotep III, but the exchange of letters only began after his 30th year, the entire reign of Amenhotep IV would thus parallel that of Burnaburiash II, who must have reigned until the accession to the throne of the successor of this pharaoh, and thus to the year 1323 BC according to the shortened chronology. His accession to office must then have taken place in 1349 BC, when Amenhotep III would still have been reigning according to the synchronism of the Amarna letters. However, some of the numbers remain uncertain due to factors which have not yet been eliminated in the reigns of the Kassite rulers, and thus the figures cannot be taken as absolute limits. Discrepancies with Egyptian dates can easily be explained as lying in the Babylonian sources. We must therefore confirm that the known synchronisms between Egypt and Babylon cannot provide and exact chronological fix points due to the imprecision inherent in the frame of reference, or in the uncertainties in the chronological framework itself, although they do place some further limits on the range of variation.

According to sources in internal Hittite history, contacts between the Egyptian and Hittite kings were so intense that a treaty already clarified relations between the two in the 15th century. Fragments of this accord—known as the Kurushtama-treaty—are preserved, and its significance ultimately depend upon the reigns of the Assyrian kings, and that aside from a few uncertain factors mentioned there that any reduction must be accompanied by a corresponding change there; however, there still remains a margin of +/− 5 years.

51 For the details cf. Brinkman (n. 3), 418ff.
52 This is the most probable interpretation of EA 6 according to the collation by Kühne (n. 47), 129 c. n. 642.
53 Cf. most recently, Beckerath, Chronologie, 66.
54 Cf. also Brinkman (n. 3), 6 n. 1.
55 The reduction in the Babylonian chronology in this case would stand in contradiction to the assumed accession of Amenhotep IV ca. 1351/50 BC, as Burnaburiash would only have ascended to the throne in the following year, and thus a synchronism with the older of the two pharaohs would be excluded, although precisely this is fact reliably attested. The margin of uncertainty in this phase remains the +/− 5 years mentioned.
57 The few sources available are assembled under CTH 134. KUB 40.28 (= 134.C) is a fragmentary text preserved in a Middle Hittite copy. A. Ünal’s (RlA VI: 373)
recorded later in the context of the Deeds of Shuppiluliuma I,\textsuperscript{58} yet the hints do not suffice to provide a precise context.\textsuperscript{59} According to the sources, the only possible Hittite ruler would be Tutkhaliya I,\textsuperscript{60} as otherwise the Hittite history of this period was dominated by internal conflict with a correspondingly weak foreign policy, and thus actions in Syria cannot be expected.\textsuperscript{61} The pharaoh who was party to this treaty can only be traced through the Hittite sources,\textsuperscript{62} and for the moment these are inadequate to define the period when Tutkhaliya I reigned,\textsuperscript{63} beyond specifying that it might have been around the third

speculation that these Kurushtama-fragments could merely be part of the Egyptian correspondence of Shuppiluliuma I is thus impossible.\textsuperscript{58} DS Frag. 28 (cf. H. G. Güterbock, “The Deeds of Shuppiluliuma as Told by his Son Murshili II”, \textit{JCS} 10 (1956), 41–68, 75–98, 107ff.). A great many details are still unresolved, and thus it is impossible to state with certainty that it merely a question of a single treaty and not possibly a series of international accords; for this issue, cf. D. Sürenhagen, \textit{Paritätische Staatsverträge aus hethitischer Sicht} (Pavia: Studia Mediterranea, 1985), 22ff. Equally uncertain is the exact placement of those fragments 29 and 30 discussed by H. G. Güterbock of DS, which both mention Egypt.

Likewise belonging to the Middle Hittite period in the draught letter in Hittite, where neither the name of the Hittite king nor that of the Pharaoh to whom it was addressed is preserved. Given its date, the text can be assigned to the period before Shuppiluliuma I. As preserved, it can be deduced that this letter followed another exchange and the Hittite kings complains of a deterioration in relations which has now been resolved. Tutkhaliya I is one possible author, but this remains pure speculation in the absence of further information. For the text itself, cf. E. Edel, “Bo 92/129, ein neues Brieffragment in hethitischer Sprache der Korrespondenz zwischen Ägypten und Hatti”, \textit{ZA} 86 (1996), 114–7; since published as KBo 31.40.

There is still some doubt about the number of kings named Tutkhaliya who reigned in the period immediately before Shuppiluliuma I. In this case I assume the sequence: Tutkhaliya I—Arnuwanda I—Tutkhaliya II—Shuppiluliuma I; cf. also similarly, H. Klengel, \textit{Geschichte des Hethitischen Reiches} (Leiden: HdO I. 34, 1999), 103.

\textsuperscript{58} Cf. the literature cited by Klengel (n. 60), 106f. (on source [A8]) c.n. 93f., who likewise stresses this identification is purely hypothetical.

\textsuperscript{59} W. Helck, \textit{Die Beziehungen Ägyptens zu Vorderasien im 3. und 2. Jahrtausend v. Chr.} (Wiesbaden: AA 5, 1971?), 166 suggested either Thutmose III or Amenhotep II, but did not exclude Thutmose I. In any case, it should be evident that the events detailed here are incompatible with the proposed date of 1499 BC for the campaign of Murshili I to Babylon, as they took place more than a century later, and thus well into the 14th century. The synchronism between Idrimi and Murshili I recently proposed by W. van Soldt, “Syrian Chronology in the Old and Early Middle Babylonian Period”, \textit{Akkadica} 119–120 (2000), 111 or between Idrimi and Zidanta I, by Kühne (n. 6), 214 n. 67 are incompatible with the chronological scheme proposed here, as is the attempt to make a historical link between Murshili I and Thutmose I; for this, cf. F. Zeeb, “The History of Alalaḫ as a Testcase for an Ultrashort Chronology of the Mid-2nd Millennium BCE”, in: Hunger & Pruzsinszky (n. 4), 91f.

\textsuperscript{60} The proposed reigns of some 20–25 years each for the three kings before Shuppiluliuma I in the chronological table of the exhibition catalogue, \textit{Die Hethiter und ihr Reich} (Stuttgart, 2002), 312ff. are largely hypothetical or rely upon an historical
quarter of the 15th century. We can, however, define the number of
generations separating Tutkhaliya I and Shuppiluliuma I, since the lat-
	er was the son of the former’s grandson (Tutkhaliya II). Given the
difficulties of counting generations, the internal between them should
be more than 50 and less than 100 years.

Similarly difficult is precisely delimiting the reign of Shuppiluliuma
I, whose long reign will have stretched from that of Amenhotep III
until perhaps the reign of Aya. It is only certain that he was in direct
contact with Amenhotep IV. Whether he was also in touch with his
father depends upon identifying the pharaoh concealed behind the
apparently unreliable cuneiform transcription Hurija in EA 41 written
by Shuppiluliuma I. Any further attempts to establish a more exact

image dependent upon the short chronology, which simply cannot be assumed given
the very limited historical information at our disposal; this also necessarily applies to
the proposed accession date ca. 1420 BC for Tutkhaliya I.

Dating Thutmose I to the first decade of the 15th century means that he should
be most probably understood as a contemporary of Tutkhaliya I, as the now reliable
reconstruction of the royal succession in the Middle Hittite period tends to bring
Tutkhaliya I closer to Shuppiluliuma I than was the case earlier. On the other hand,
the land donation documents definitely attest that allowance must be made for more
generations between the reign of Tutkhaliya I and the end of the Old Hittite period
(or the beginning of the Middle Hittite period, with the reign of Telpinu as the thresh-
old) than had been appreciated earlier.

A detailed discussion of the Middle Hittite king lists is impossible here for obvious
reasons.

For a detailed account of the specific problem as concerns Hittite history, cf.
G. Wilhelm, “Generation Count in Hittite Chronology”, in: Hunger & Pruzsinszky
(n. 4), 71–79; Eder (n. 8), 224ff. likewise reveals the great differences possible in the
interpretation of the material.

Cf. Klengel (n. 60), 147: “The precise moment of the accession cannot be fixed;”
the various possibilities were discussed by G. Wilhelm & J. Boese, “Absolute Chronologie
und die hethitische Geschichte des 15. und 14. Jahrhunderts v. Chr.”, in: Aström, Acts,
73–117, esp. 76ff. themselves pleading for a much later accession, possibly even after
the accession of Amenhotep IV, whose reign they set at 1343–1322 or 1318 BC.

Most recently discussed in detail by Wilhelm & Boese (n. 67) suggesting a significant
reduction in the length of the reign rather than the 40 years traditionally accepted.
This has not been accepted as the sources simply do not allow for a definitive con-
clusion, but the issue must remain open. Cf. also G. Wilhelm, “Probleme der hethiti-
schen Chronologie”, OLZ 86 (1991), cols. 471ff. The issue was most recently discussed
by J. Freu, “La chronologie du règne de Suppiluliuma: Essai de mise au point,” in:
P. Taracha, ed., Sîlva Anatolica (Warsaw, 2002 = Fs Popko), 87ff. He opposes a dras-
tic reduction in the reign of Shuppiluliuma I, and assumes a 30–40 year reign—
dependent upon a coregency between Amenhotep III and Amenhotep IV (esp. 107).

A decision depends largely upon the author’s historical interpretation, but there
is a tendency to exclude Amenhotep III, probably following Wilhelm & Boese (n. 67),
96ff.: W. L. Moran (n. 41), 114ff. and Klengel (n. 60), 139 (on source [A 10]).
chronological ordering of the historic events thus depends upon the interpretation of the Dakhamunza-affair, that is of who made the astonishing offer of a dynastic marriage to the unbelieving Hittite king—and a generally accepted solution has still not emerged. The widow’s name is not preserved in the Hittite version, and the throne name, Nibḫururija, of the dead pharaoh is recorded in the cuneiform version of the Deeds of Shuppiluliuma I, but this was only written down on the orders of his son Murshili II. The question is therefore identifying the name of the pharaoh whose widow sent the proposal to Shuppiluliuma I. Can the cuneiform Nib at the beginning of the name be only an Egyptian nb, or is a nf(r) also possible? According to my judgement, in the absence of a sufficient quantity of cuneiform attestations which could offer a corresponding orthographic principle to which one could refer, the linguistic and orthographic arguments simply cannot be resolved. Quite apart from this, there is no means of knowing whether a Hittite copyist faced with an unfamiliar name written with what was at that time the quite alien sign /nap/ may not have chosen to divide the signs syllabically as NI-IB. Given that the quite adequate transcription of Nb-hprw-R as "Ni-ib-ru-ri-ja (KUB 34.24+ rev. IV 18) is in principle correct, we can assume that the throne name of

70 The literature here is almost endless, we cannot go into detail here, as for some time now the Hittite sources have simply not shed any new light on the matter. The most recent discussion of the question is that of M. Gabolde, D’Akhenaton à Toutânkhamon (Lyon, 1998), to which we refer here. M. Gabolde offers a summary of his thesis: “Das Ende der Amarnazeit”, in: A. Grimm & S. Schoeske, eds., Das Geheimnis des goldenen Sages (Munich, 2001), 9–42. Basing himself on new epigraphic finds and new interpretations of previously neglected (or differently interpreted) materials, he identifies the widow as Meritaten who replaced Nefertiti near the end of the reign of Amenhotep IV, and when he died, turned to Shuppiluliuma I. This compels him to identify Nibḫururij as Nfr-hprw-R Amenhotep IV, and to assign the letter EA 9 to him. For this, cf. M. Eaton-Krauss & R. Krauss, [review of Gabolde], BiOr 58 (2001), col. 96 and furthermore W. J. Murnane, OLZ 96 (2001), 11ff.

71 All of the preserved texts relevant to the remarkable episode were assembled by Th.P.J. van den Hout, “Der Falke und das Kücken”, ZA 84 (1994), 60–88, esp. 61ff.

72 For a long time, a reading of nb- favoured Tut’ankhamun, but this changed when Krauss, Amarnazeit, 9ff. argued in favour of nfr-, and thus for Amenhotep IV.

73 Definitely favouring the first possibility is most recently T. Bryce, “The Death of Niphururiya and its Aftermath”, JEA 76 (1990), 97–105, whereby he shares what can be viewed as the Hittitological consensus, as argued by Wilhelm & Boese (n. 67), 100ff.; cf. also van den Hout (n. 71), 84ff.; E. Edel, Die ägyptisch-hethitische Korrespondenz aus Boghazkoi in babylonischer und hethitischer Sprache II (Opladen, 1994), 23 n. 3; and G. Meyer, GM 126 (1992), 87–92.

74 In contrast KBo 5.6 obv. III 7 has "Pî-ip-ḫu-ru-ri-ja-a; an error of Pî for NE?
Tut’ankhamun was intended, as alternative readings are difficult to justify, and actually rely upon a further series of assumptions. Assuming this identification of the pharaoh, we can project a series of dates for the end of the reign of Shuppiluliuma I. After the victorious campaign with which the Hittites responded to the murder of the Hittite prince Zannanza, Egyptian prisoners brought the plague to Hattusha, and Shuppiluliuma I himself died shortly thereafter, possibly due to the epidemic. The death of Shuppiluliuma I—and the accession to the throne of his two sons Arnuwanda II and Murshili II—can thus be tied to the Egyptian chronology, and Shuppiluliuma I can only have lived for 2–4 years after the death of Tut’ankhamun. On the other hand, this also enables us to verify the veracity of the interpretations due to the solar eclipse dating to the reign of Murshili II, whose reign can thus be given absolute dates. This means that the two systems must be formed in a fashion which allows an accession to the throne for Murshili II in 1321, since the death of Shuppiluliuma I must be limited to either 1323–1322 or 1326–1325 BC. In contrast to the first mentioned contacts between Egypt and the Hittites, the Dakhamunzu episode might—with all due caution—provide a date relevant to the entire chronological discussion, allowing a link for the two independent chronological systems.

For the decades after the Amarna period, the sources on Hittite-Egyptian relations vary widely. Although the age of Murshili II is among the most productive in terms of overall Hittite historiography, there would appear to be few real openings for the study of relations with Egypt. In terms of their political calculations, the Hittites did not feel

---

75 The thesis argued by M. Gabolde, that Zannanza actually briefly reigned under the throne name of Smenkhkare is not probable; cf. the sceptical judgement of Eaton-Krauss & Krauss, BiOr 58 (2001), col. 96.

76 As noted, what can be won from the Hittite sources was assembled by van den Hout (n. 71), 85ff.

77 Cf. the detailed discussion by Wilhelm & Boese (n. 67), 105ff. Nevertheless, the assumption that the solar eclipse took place in the spring (ibid, pp. 106f.) is not obligatory as it actually relies upon what is actually a rather dubious restoration of KUB 14.4 IV 25f. by E. Forrer, but cf. A. Götze, KlF 1, 1930, 405. Therefore, nothing stands in the way of the total eclipse of 24 June 1312 BC.

78 Favouring the latter date is van den Hout (n. 71), 88, who arrives at 17 years from the death of Nibkhururija = Tut’ankhamun to the solar omen (with 6 years of the reign of Shuppiluliomas I + 1 year of Arnuwanda II + 10 years of the reign of Murshili II), and thus assumes a death in 1325 BC; his calculations are, however, based on the solar eclipse of 13 April 1308 BC.
either challenged or constrained by Egypt. This only changed significantly when Ramesses II came to the Egyptian throne, changing the political constellation during the reign of Muwatalli II, the son and successor of Murshili II. The temporary removal of the Hittite capital from Hattusha to Tarkhuntashsha had significant repercussions for the textual record such that the reign of Muwatalli is badly documented. The lack of relevant documents can be interpreted as meaning that some of the documentation was not returned when Hattusha became the capital again under Muwatalli’s successor. This may be the reason why that period of increasing contact which culminated in the battle of Kadesh, so heavily stressed in the Egyptian tradition, appears to be marginal in the Hittite tradition. A further consequence of our limited understanding of this period in Hittite history is that at the pinnacle of the Hittite-Egyptian conflict, the battle of Kadesh in year 5 of Ramesses II, we can only specify that his opponent was Muwatalli II. The treaty signed in the wake of the conflict in year 21 of Ramesses II was negotiated and sealed by Hattushili III. Nor are there any sources from the Hittite capital Hattusha which can allow this decisive event to be dated, despite the abundance of letters from both kingdoms dating to before and after the signing of the treaty, and despite the wealth of details we have for the internal history of the Hittites during this important age.

Nevertheless, the Egyptian sources do allow some key dates, throwing light on the transfer of power from Urkhi-Teshshup (= Murshili III), whose reign was ended by the usurpation of Hattushili III during these 16 years. It is unclear how long after year 5 of Ramesses II, that

79 The end of the reign of Murshili II can only be approximately delimited since for the later years of the reign the preservation of the annals is significantly worse than for the phase up to ca. regnal year 20. Nevertheless, we can be relatively certain that Murshili remained on the throne for some three decades. A. Ünal, “Muwatalli II”, RLH VIII: 524–527, esp. 524 assigns Muwatalli II a reign of “ca. 1290–1265 BC”, but postulates that he either fell (or was mortally wounded) at the battle of Kadesh, and therefore dying then or shortly thereafter, yet he likewise dates this to ca. 1274 BC (ibid., 527)—which would be nearly a decade earlier. The source used by A. Ünal in this connection, linking the death of the Hittite king with this campaign (citing ABoT 57 obv. 8 is probably an error, as the passage, and as KBo 4.10+ obv. 40’ff. clearly confirms, relates to the removal of the capital and not to the death of the king), refer only to the death without placing this in any identifiable context.

80 For the text of the treaty, cf. E. Edel, Der Vertrag zwischen Ramses II. von Ägypten und Hattushili III. von Hatti (Berlin: WVDOG 95, 1997) prefaced (p. 1) with a short account of the prehistory of the treaty.
Urkhi-Teshshup, the direct and legitimate heir of Muwatalli II, came to the throne as Murshili III, and how long he reigned.\textsuperscript{81} It was during his reign that the removal of the capital was cancelled, for reasons beyond our knowledge. The sources are silent about Murshili’s other activities,\textsuperscript{82} and direct synchronisms with other kings cannot be proved.\textsuperscript{83} Nevertheless, a draught letter from the reign of Hattushili III to the Assyrian king—which could be either Adad-nerari I or Shalmaneser I\textsuperscript{84}—mentions contacts between his predecessor and the Assyrian recipient of the royal letter, and the correspondence between Hattushili III and Ramesses II suggests that Murshili III was also in touch with this Egyptian king, although these cannot be documented either. Just how dependent the interpretations of the fragmentary letters are upon the assumed historical background is illustrated in exemplary fashion by the fragmentary draught of a letter (KUB 23.102). It is generally assumed that the intended recipient was Adad-nerari I, given the clear hints at a very tense relationship between Assur and Hatti, and the Hittite king dismisses any equality between the two. This suggests that the letter should be dated to a period of increasing Assyrian power, but a concrete

\textsuperscript{81} The immediate circumstances of the usurpation and its possibly not entirely unanimous acceptance have been frequently discussed, but the partial character of the sources available mean that the details still remain obscure. In view of the partial descriptions by one of the actors, namely the usurper Hattushili III, it is significant that there is a seal impression naming Muwatalli and the later king Murshili with his given name, which could potentially imply a relatively early attempt at securing the succession; for a detailed survey of the entire situation, cf. most recently, Ph. Houwink ten Cate, “Urhi-Tessub revisited”, BiOr 51 (1994), 239ff.

\textsuperscript{82} Summarized by Klengel (n. 60), 226ff.

\textsuperscript{83} The reason for this may be that the lack of information forthcoming from the fragmentary sources available, e.g., the diplomatic correspondence cannot generally be assigned to or related to Murshili III. On the general tenor of the later sources on Murshili III, cf. also the literature cited Klengel (n. 60), 257 n. 501.

\textsuperscript{84} This is the letter KBo 1.14; cf. A. Hagenbuchner, \textit{Die Korrespondenz der Hethiter. 2. Teil: Die Briefe mit Transkription, Übersetzung und Kommentar} (Heidelberg: TTheth 16, 1989), No. 195 (obv. 15f.) and A. Harrak, \textit{Assyria and Hanigalbat} (Hildesheim: TSO 4, 1987), 69ff., who pleads for Adad-nerari I while A. Ünal, \textit{Hattushili III., Teil I, Hattushili bis zu seiner Thronbesteigung}, Bd 1: \textit{Historischer Abriss} (Heidelberg: TTheth 3, 1974), 6, favours Shalmaneser I. By contrast, following M. B. Rowton, “The Background of the Treaty between Ramesses II and Hattushili III”, \textit{JCS} 13 (1959), 1–11, or M. B. Rowton, “The Material from Western Asia and the Chronology of the Nineteenth Dynasty”, \textit{JNES} 25 (1966), 249–258, the only possible candidate would be Adad-nerari I. This proposal is, however, based exclusively on an interpretation of the material based upon the content, and a corresponding reconstruction of the historical context—which is by means the only possibility. The reference to Murshili III while avoiding the throne name Urhi-Teššup only permits us to conclude that one of his successors wrote the letter.
synchronism does not follow. It is not irrelevant that we can hardly expect to find draught letters from the reign of Muwatalli II in the archives of Hattusas, as this favours attributing the letter to Murshili III. An uncertain but possible synchronism of the latter with Adad-nerari I would follow, leading to a throne change before 1264 BC (the death of Adad-nerari I). Were one to date the letter to Hattushili III, the length of the reign of Murshili would shrink further. It is certain that Murshili III came to the throne after 1275, and remained on it until perhaps 1263 BC, but a shorter reign is more probable. The (at least) “7 years” during which Hattushili III allegedly remained loyal according to his “Apology” need not be taken as a real measure of time; although possible, it cannot be independently verified. This means that the accession to the throne of Hattushili III cannot be determined with precision. Neither the Egyptian chronology nor Egyptian sources, including the correspondence of Ramesses II, offer additional aid. As the synchronism with Shalmaneser I can only offer a date after 1263, then the letter KBo 1.14 becomes interesting. If this letter is from Hattushili III and addressed to Adad-nerari I, then—and only then—would we be able to place the beginning of the reign of Hattushili III in the period after 1268 and before 1264/3 BC.

Although generally viewed as a letter from Tutkhaliya IV to Tukulti-Ninurta I, which would provide another hook for the end of the reign

---

85 Following Hagenbuchner (n. 84), 263; for a discussion of the correct placing of the text, cf. Klenge (n. 60), 204 c. n. 304.
86 A. Hagenbuchner, Theth 16, reads in obv. 16 [A-BI A-BI-J]A-ma’ A-BI-JA-ja “my father and [my] grandfather”, however”, yet the position of the -ma would be unusual, aside from the fact that a collation with the photo suggests that the sign should rather be read as BA, so that the point of departure should be A-BA A-BI-JA-ja, and thus exactly that expression used in KBo 6.28 obv. 16 by Hattushili III with reference to his grandfather Shuppiluliuma I, during whose reign, Assyria first attempted to free itself from Mittani hegemony. By contrast, in his 9th regnal years his successor Murshili II was forced to ward off an assault by Adad-nerari I which reached as far as the eastern bank of the Euphrates at Carchemish; the Assyrians managed to take Taide, Wasashatta’s capital, as mentioned in KUB 23.102 obv. I 1. Regardless, Urhi-Teshup was the grandson of Murshili II.
87 Cf. H. Otten, Die Apologie Hattusilis III. Das Bild der Überlieferung (Mainz: StBoT 24, 1981), 20f.: “And given the estimation of my brother, I refrained from any actions, and was obedient for 7 years” (rev. III 62; on the verbal form in question, cf. Most recently J. Tischler, HEG III, 421).
88 The peace treaty with Hattushili III was sealed in regnal year 21 (i.e., 21/XI/1259 BC) of Ramesses II, and was followed by a widely publicised dynastic marriage in regnal year 34.
89 Cf. Boese & Wilhelm (n. 67), 36 n. 65.
of Hattushili III, the fragmentary letter KUB 26.70 cannot really shed light on the matter. We must bear in mind that in terms of content, this would suggest an exchange of letters between Urkhi-Teshshup/Mursili III and Shalmaneser I, but this can nevertheless have taken place after the usurpation by Hattushili III.90 Even using the fragments of the diplomatic correspondence with Assur, we simply lack the necessary cornerstones required to date the reigns of the Hittite kings of the 13th century.91 Hattushili III and Tutkhaliya IV reigned during the times of Shalmaneser I, but we cannot tell whether his 30 year reign began before the fall of Murshili III, or only thereafter, although the latter possibility is more probable. Tutkhaliya IV definitely reigned in Hatti when Tukulti-Ninurta I came to the throne in Assur. Whether he was still in office when Shuppiluliuma II became king cannot be confirmed as nothing can delimit the length of the reign of the last king known from the archives of Hattusha, according to which the Hittite empire ended sometime shortly after 1200 BC.92 Nor are there any hints at contacts to any of the rapidly disappearing kings during the uneasy period after the murder of Tukulti-Ninurta, i.e., Ashur-nadin-apli to Ninurta-apil-ekur and Ashshur-dan II.

The correspondence with the Babylonian kings is ever worse preserved than that with the Assyrians, who only allow a few additional points in a more precise temporal organization of the Hittite kings of

90 For this, cf. primarily, S. Heinhold-Krahmer, “Zu Salmanassars I. Eroberungen im Hurrritergebiet”, AJO 35 (1988), 94 n. 181, and now Beckerath, Chronologie NR, 26 c. n. 144 (following up on Hornung’s earlier work).

91 Little of value can be gained from the fragments (KBo 28.59–63) of a Middle Assyrian royal letter sent to Hattusha, but one can still appreciate that the subject is the behaviour of Sagarakti-Suriaš, of Babylon which suggests that one can assume that it was composed between the later part of the reign of Shalmaneser I and the beginning of that of Tukulti-Ninurta I; for such a reading, cf. W. von Soden, “Weitere mittelassyrische Briefbruchstücke aus Hattusas”, in: E. Neu & Ch. Küster, eds., Documentum Asiae minoris antiquae (Mainz, Fs Otten, 1988), 346. The reference to Tutkhaliya does suggest dating the correspondence to his reign, yet this does not allow its chronological limits to be defined any further. Finally, it is unclear just what the reference to a period of “100 years” signifies (KBo 28.61 rev. 9’).

92 The date from Emar for year 2 of the Babylonian king Melishipak—which corresponds to the year 1187 BC, cannot be used for the abandonment of the Hittite capital Hattusha as it is by no means certain that the “Sea Peoples” were responsible for the end of Emar, cf. now Klengel (n. 60), 318 c. n. 35. The destruction of Ugarit thus remains the terminus ante quem, but this only allows an extension into the reign of Siptah, i.e., until 1197 BC (cf. the literature cited by Klengel (n. 60), 318, no. 33, as well as Ras Shamra-Ougarit XI, [1995] with the text published by S. Lackenbacher, RSO XI, 77ff).
the 13th century, allowing for some synchronisms supported by the sources. There is a letter from Kadashman-Turgu I to Hattushili III (KUB 3.71), and these two would appear to have signed a treaty with each other, as indicated by a draught letter prepared at the Hittite court (KBo 1.10+9), but apparently during the reign of Kadashman-Enlil II and to be assigned to Hattushili III who mentions the accession of the young Babylonian ruler in the text. The change of power in the Kassite royal house is set at about 1264/63 BC, but from the Kadesh treaty it is clear that Hattushili III came to the throne before the year 21 of the reign of Ramesses II. Reducing this date by a decade, following the Assyrian regnal years, would appear to be difficult, but there nevertheless remains the margin of uncertainty, amounting to almost a decade for the Babylonian kings, to which repeated reference has been made, and which cannot be further reduced for the moment.

---

93 For this, the best discussion remains E. Edel, Ägyptische Ärzte und ägyptische Medizin am hethitischen Königshof. Neue Funde von Keilschriftbriefen Ramses’ II aus Bogazköy (Opladen, 1976), 123ff.

94 Above we mentioned the indirect references relating to Šagarakti-Šuriaš, from the later correspondence with Tukulti-ninurta I. Whether this Babylonian king’s reign was contemporary with that of Tutkaliya IV (the presumed recipient of the letter) is uncertain, as the relationship between the time the letter was written and the references to Tukulti-ninurta I who conquered Babylon during the reign of Kashtiliash IV (1232–1225 BC) is not clear. It depends upon whether the events mentioned in the text took place at that time, or whether the letter mentioned events which had taken place at some point in the past.
PART III

ABSOLUTE CHRONOLOGY
III. 1 RADIOCARBON DATING AND EGYPTIAN CHRONOLOGY*

Sturt W. Manning

1. Introduction: History of Field

In the beginning, the historical chronology of Egypt was held to offer a test for the utility of the radiocarbon dating method; measurements were thus run on several ancient Egyptian samples and the ability to achieve ages relatively close to the historical age demonstrated that radiocarbon dating worked in approximate terms (or was not ‘beyond reasonable credence’). Egyptian samples thus comprised part of the original ‘curve of knowns’ published in Arnold and Libby to show that the radiocarbon method worked, approximately, over the last several thousand years.

Over the next few decades a number of radiocarbon ages were obtained on Egyptian samples. Egyptian chronology continued to be considered as the known age, and radiocarbon was being compared—tested. Radiocarbon technology through the 1960s was not capable of delivering ages of sufficient accuracy or precision to be of actual utility to Egyptologists. In 1970 Säve-Söderbergh and Olsson published a well thought out critical analysis of radiocarbon dates from Egypt. They highlighted problems of poor association between samples and presumed historical context (or age), of contamination, and of the need

---

* The final text of this paper was submitted 19 August 2003. The paper employs the then standard IntCal98 radiocarbon calibration dataset. A new IntCal04 dataset has since been published in early 2005 (Radiocarbon vol. 46(3), 2004). Use of the new dataset would make only small and fairly insignificant changes to the figures and discussions in this paper. For a comparison of the two calibration curves for the period 500–3500 BC, see Figure III. 1.6 at the end of this paper.

to achieve replication and inter-laboratory checks. But Säve-Söderbergh and Olsson also noted the uncertainties attending the historical dates, especially those prior to the second millennium BC.

Overall, Egyptian chronology contributed positively to the development of radiocarbon dating in the earlier decades: the apparent discrepancies observed between the radiocarbon age of some third millennium BC samples (mainly from Egypt) versus their ‘known’ age led to focussed interest in the investigation of such anomalies. Such work, using especially known age tree-rings, led to the realisation that the relationship between radiocarbon and solar (calendar) years was neither equivalent nor fixed. The development of increasingly accurate and precise records of such secular variation in natural radiocarbon levels became the dominant theme in radiocarbon dating for the next generation; already by the late 1960s to early 1970s calibration curves existed to convert radiocarbon years to calendar years back to beyond 5000 BC.

The advent of calibrated radiocarbon dating, which had the effect of making many prehistoric contexts in Europe older than previously believed, had a radical impact in prehistoric archaeology—in particular leading to the replacement of the previous ‘diffusionist’ models. Calibration also meant that the radiocarbon ages for Egyptian samples needed reconsideration, and a series of papers quickly addressed the radiocarbon dates from Egypt in the light of the initial proposals for an approximate calibration curve. However, although the calibrated ages made general sense, the radiocarbon dates continued to be of

---

neither the accuracy nor precision to be of any real use to Egyptology; furthermore, the routine radiocarbon technology of the time required large sample sizes that were often problematic or impossible in terms of acquisition from archaeological excavations or from monuments or museums.

Over the subsequent quarter of a century radiocarbon dating has dramatically improved in terms of accuracy, precision, and sample size requirements.\(^\text{10}\) In tandem, the natural and anthropogenic cycles and variations in atmospheric radiocarbon levels have become quantified in considerable detail.\(^\text{11}\) The necessity of careful archaeological and other analysis to ascertain the security of association between the sample to be dated and the context for which a date is required is now fully appreciated (seminal paper by Waterbolk 1971).\(^\text{12}\) Programmes of inter-laboratory checking have greatly improved general standards in the field.\(^\text{13}\) New technologies like accelerator mass spectrometry (AMS) permit dating of tiny samples,\(^\text{14}\) and several routine radiocarbon laboratories refined accuracy and precision to what is termed ‘high-precision’ level. Today the leading high-precision laboratories can demonstrate both good correspondence between measured ages and known real tree-ring ages, and good agreement between the laboratories, within the presently possible precision margins of c.2‰—that is within c.10–20 radiocarbon years for the periods discussed in this paper.\(^\text{15}\) The key


Shaw\footnote{I. M. Shaw, “Egyptian chronology and the Irish Oak calibration”, \textit{JNES} 44 (1985), 295–317.} quickly tried out high-precision calibration for existing Egyptian samples using the Irish Oak data of Pearson \textit{et al.}\footnote{F. A. Hassan & S. W. Robinson, “High Precision radiocarbon chronometry of ancient Egypt, and comparisons with Nubia, Palestine and Mesopotamia”, \textit{Antiquity} 61 (1987), 119–135.} He found the calibrated ages to be in general agreement with the historical chronology, but did not see them as able to offer a useful alternative. Shaw was uncomfortable with the ‘wiggles’ in the calibration curve, and the situation where a given radiocarbon age could yield two or more calendar age ranges. It was Hassan and Robinson\footnote{See also B. Weninger, “Theoretical radiocarbon discrepancies”, in: D. A. Hardy & A. C. Renfrew, eds., \textit{Thera and the Aegean world III. 3: Chronology} (London, 1990), 216–231.—B. Weninger, \textit{Studien zur dendrochronologischen Kalibration von archäologischen $^{14}$C-Daten} (Bonn, 1997).} who finally brought methodological sophistication and chronometric hygiene to bear for Egyptian radiocarbon dates. They reanalysed the corpus of radiocarbon data from Egypt against the 1986 high-precision calibration curve. They found that with suitable samples radiocarbon often could yield results compatible with the historical chronology;\footnote{Cf. (n. 19) at p. 129.} and they highlighted the ability of radiocarbon to date directly a whole range of Egyptian contexts not closely tied into written records and the chronology of the pharaohs—a hint of the future real relevance of radiocarbon to (especially non-élite) Egyptian archaeology and its chronology. But they also concluded that the existing corpus of radiocarbon data as of 1987 was not, with a few exceptions, fully satisfactory—they instead looked forward to better measurements in the future and \textit{then} the fulfilment of the promise of radiocarbon dating.\footnote{珍珠 \textit{et al.} (n. 16).}
But sadly there have been at best limited attempts to provide such better quality radiocarbon data for the periods after the Archaic—where increasingly good data exist.\textsuperscript{22} Instead, publications by leading Egyptian chronological specialists concerned with the 3rd through earlier 1st millennia BC in the late 1990s through 2003 largely dismissed or ignored radiocarbon evidence;\textsuperscript{23} with Kitchen stating that “science” cannot solve the intricate problems of detailed Egyptian successions, and the cross-links with the neighbouring Near East; texts alone can do that.\textsuperscript{24} Such scholars cannot see any use for radiocarbon dating versus the believed-in dating accuracy and precision available from textual evidence. Ironically, the potential modern relevance of radiocarbon to Egyptology has been brought to the fore by a set of publications in the 1990s, which sought to question and reject the standard chronological synthesis and instead to propose a radically different (lower) Egyptian chronology for the second and earlier first millennia BC.\textsuperscript{25} These writers appreciated that radiocarbon dating offered an independent check on their claims—they thus sought to dismiss or downplay radiocarbon dating evidence.\textsuperscript{26} In reality, however, radiocarbon evidence from the east Mediterranean indicated the reverse: that the range of the standard chronology was correct.\textsuperscript{27} Radiocarbon perhaps had a use after all for Egyptian chronology.


\textsuperscript{23} E.g. Beckerath, \textit{Chronologie}, 55–56.

\textsuperscript{24} K. A. Kitchen, “Ancient Egyptian chronology for Aegeanists”, \textit{Mediterranean Archaeology and Archaeometry} 2.2 (2002), 5–12 at p. 11.


The problem, historically, is that earlier radiocarbon dating offered at best large possible date ranges for any given measurement and these dates thus seemed an order of magnitude less accurate or precise than those available from the historical chronology of Egypt (the point made by von Beckerath).28 And, as the review of Weinstein showed,29 up until the early 1980s it is true that radiocarbon simply lacked the ability to supply the precision required in calendar years to be relevant to the existing, quite refined, historical chronology for the ancient Near East. But the advent of high-precision calibration curves from the mid-1980s, and increased accuracy and precision for standard radiocarbon dates, dramatically changed the situation. It was now possible to approach the precision of the historical chronology, and radiocarbon dating could thus offer an independent chronology free from the assumptions and step-wise logic transfers inherent in the existing chronological synthesis for Egypt and, there from, for the whole east Mediterranean.30

Recent developments emphasise this position. Following the first internationally recommended high-precision calibration curves of 1986, a second internationally recommended extension, refinement, and revision was made available in 199831—and another (IntCal04) has been published while this text was in press.32 Radiocarbon calibration datasets from tree-ring records from the east Mediterranean33 have confirmed the local relevance of the standard northern hemisphere calibration for most periods (such work has in addition identified some intervals of possible regional/temporal variations for further study linked to key periods of short-term solar irradiance minima and climate change issues).34

---

28 Beckerath, Chronologie, 56.
31 Stuiver et al. (n. 15).
34 See B. Kromer, M. Korfmann & P. Jablonka, “Heidelberg radiocarbon dates for
development and application of stratified archaeological ‘wiggle-matching’ techniques have in turn allowed the exploitation of both (i) refined archaeological knowledge (stratigraphy), and (ii) the now refined and specific history of past natural atmospheric levels of radiocarbon entailed in these calibration curves in order to yield accurate and highly precise calendar age ranges for sets of seriated samples. Radiocarbon dating has thus moved from a resolution of century-scale at best, to now being capable of decadal scale resolution. Radiocarbon can thus now have relevance at the ‘historical’ timescale.

This does not mean that everything is now simple and clear; there remains plenty of scope for ambiguities and inconsistencies—as illustrated in several of the papers in the recent Bruins et al. volume in Radiocarbon. In particular, without selection of directly relevant samples from primary contexts (e.g. short- to shorter-lived samples from secure and specific archaeological contexts relevant to the archaeological event/phase for which a date is sought), and then proper pre-treatment, and accurate and precise measurement in the laboratory, nothing useful will be gained. Old wood is clearly a major problem with some Egyptian samples (see Section 4 below). The need for quality control at radiocarbon laboratories in terms of known-age blind checks is widely appreciated these days. Attention is increasingly moving now to the consideration of the integrity of the sample itself as offering only the


age of interest. Thus does the sample remain intact with only the radiocarbon age from the time the sample was exchanging with the atmosphere, or have contaminating materials become included? And have there been processes of post-depositional diagenesis at work which are relevant? The need to investigate bone samples to ensure good collagen preservation is already appreciated and various strategies have been adopted. Although typically not likely to be a significant issue in general, the need to confirm removal of potentially contaminating humic material from archaeological wood/charcoal/seed samples should be a focus of further work.

3. Radiocarbon and Egypt: An Example of Historically Relevant Data

Integrated archaeological and radiocarbon analyses in other parts of the world carried out over the last decade have shown that, with high quality sampling and analysis, it is possible and practical to resolve chronology accurately and precisely down to the near-historical timescale. Although there has not yet been a significant body of work for Egypt after the Archaic period (e.g. refs. Section 1 above), it is important to appreciate that radiocarbon is now capable of offering relevant and independent dating for the OK through TIP. What is needed are modern research programmes. To demonstrate that radiocarbon can potentially provide useful data which can either confirm and test historical chronology (where available), or can provide near-historical level dating for those many other archaeological contexts in Egypt for which secure historical dates are not available, I review one example. The lack of my ability to note several good examples reflects the history of the field (cf. previous sections), and the failure so far to exploit radiocarbon where it could be most useful.


Tell el-Amarna

Among existing radiocarbon dates from Egypt, one suite demands attention. These are five dates on a range of materials (bone, horn, skin, wood and charcoal) collected specifically and carefully for a high-quality programme of radiocarbon dating from modern excavations at Tell el-Amarna, the short-lived capital of Egypt for most of Akhenaten’s reign, founded in his 5th regnal year or ca. 1350/1346 BC. The city’s relative chronology is based on seventeen successive vintages documented in its epigraphical record, fourteen of Akhenaten himself (years 4 to 17), and three belonging to his successors. The city was deserted before the delivery of an eighteenth vintage. The specific context of the samples taken for radiocarbon analysis was a midden probably deposited early within the site’s history and thus it would date during the 13 years of Akhenaten’s reign at the site. Hence the historical date range might be narrowed to between c.1350/1346 BC to 1338/1334 BC.

The Amarna radiocarbon ages on both known shorter-lived samples (skins, bone and horn) and on the potentially longer-lived wood and charcoal samples, offer a tight and coherent set of results entirely consistent with the historical dates and disprove any radically different chronology: Figure III. 1.1. We can see that the final interpretation of the radiocarbon data is very much determined by the shape of the radiocarbon calibration curve in the 14th–13th centuries BC: see Figure III. 1.2. There is a sharp ‘wiggle’ upwards centred 1325 BC (confirmed for the east Mediterranean from Anatolian trees). The Amarna data (bone sample Q-2505 perhaps apart) clearly do not match the peak of the wiggle, and thus could lie on either side. At 2σ (95.4%) confidence, we see almost equal probability for either 1389–1329 BC or 1323–1260 BC. The former range (and especially the most likely sub-range at 1σ confidence of 1373–1338 BC) matches the historical age estimate very closely. In support, we might note what seems to be an anomaly in the five-date set. The wood sample Q-2401 yields the second youngest (i.e. second most recent) radiocarbon age, and the animal bone sample

---

40 Also Hassan & Robinson (n. 19), 123.
43 Cf. above; Chapter II. 8.
44 Cf. Switsur (n. 41), 181–182.
45 Cf. n. 33.
Figure III. 1.1.A. Calibrated calendar ages for the radiocarbon data reported from Tell el-Amarna, Egypt (Switsur, n. 41, 178–188) compared to the historical date for the context (see text). The upper and lower lines under each histogram indicate respectively the 1σ (68.2%) and 2σ (95.4%) calibrated age ranges. B. Sequence analysis (solid histograms) of the Amarna data (with the individual probabilities from A, indicated by the hollow histograms) as a phase within calculated boundaries. The Amarna data are entirely consistent with the historical age estimate for the context. Calibration and analysis employing OxCal 3.9 (Bronk Ramsey, n. 35 and later versions, with curve resolution set at 4) and INTCAL98 (n. 15). Q-2401, wood; Q-2402, charcoal; Q-2403, skin; Q-2404, horn; Q-2505, bone. Weighted average of all five data: 3050±16 BP (1), weighted average of just the three definitely shorter-lived samples 3054±20 BP (2). 2σ (95.4%) confidence calibrated ranges respectively (1) 1388–1331 BC (46.6%), 1322–1260 BC (48.8%), and (2) 1393–1260 BC (94%), 1228–1222 BC (1.4%).
Q-2405 yields the oldest age, and, in general, the average age of the likely longer-lived samples (wood and charcoal) at 3045±25BP, is (just) younger than the average age of the shorter-lived samples (animal skin, horn and bone) at 3054±20BP. Yet one would expect the wood sample to be older in real calendar terms than the animal bone sample (by a few years or even a few decades or more). Out of the dating possibilities for each sample, the only way for this likely correct sample relationship to occur is for the wood sample to date around the earliest of its three potential intercept ranges with the calibration curve at c.1368–1360 BC (and not c.1315–1289 BC or c.1280–1262 BC), and for the animal bone sample to date around the later of its two possible intercept ranges at c.1336–1320 BC (and not c.1394–1375 BC). And, plausibly, for the other three samples to date around or in between these preferred ranges. In turn, the mid to later 14th century BC date range is most likely for the Amarna samples. This is exactly compatible with, and in support of, the standard Egyptian chronology, and, via
the cuneiform text linkages attested at Amarna,\textsuperscript{46} this finding in turn supports and requires the standard Assyrian-Babylonian chronological range for this period.\textsuperscript{47} Hence again radiocarbon provides useful independent support to Egyptian and ancient Near Eastern chronology, and disproves attempts to install radical chronological alternatives.

4. Past Radiocarbon Fluctuations (the Shape of the Calibration Curve), the Old Wood Problem, and Egyptian OK Radiocarbon Dates

A study by Haas \textit{et al.},\textsuperscript{48} which indicated radiocarbon ages for various OK monuments several centuries earlier than expected, was widely seen as both a problem,\textsuperscript{49} and by some as a good reason to avoid radiocarbon dating in Egyptology. The Haas \textit{et al.} finding was largely repeated in the followup study by Bonani \textit{et al.}\textsuperscript{50} But it is not at all clear that there is any unknown ‘problem’. A key issue is the history of past natural radiocarbon levels; there was in effect a plateau in radiocarbon levels in the period 2900–2500 BC. This means that radiocarbon ages for the period 2900–2500 BC typically could intercept at several places with the radiocarbon calibration curve (i.e. several calendar periods have similar radiocarbon ages). For example, if we consider the OK monuments thought to be constructed c.2600–2500 BC, then the wood employed will, at the latest, have its outermost ring dating then, and the rest of the relevant tree will be progressively older. Depending on species and source of the wood, one might expect an average offset of several decades to a century, give or take a range, for an average wood sample (e.g. compare the +50 ±50 old wood adjustment estimated by Vogel \textit{et al.}).\textsuperscript{51} Thus the ‘average’ wood used in a monument

\textsuperscript{46} Summary in Beckerath, \textit{Chronologie NR}, 23–24; cf. above, Chapter II. 13.
\textsuperscript{47} J. A. Brinkman, \textit{Materials and studies for Kassite History} (Chicago, 1976).
\textsuperscript{49} Hassan & Robinson (n. 19), 129.
built in the reign of Cheops in the mid or third quarter of the 26th century BC (conventional date ranges) likely dates during the first quarter of the 26th century BC give or take about 50 years—let us say 2587±50 BC in broad terms. If we simulate the radiocarbon age, and its calibration, for 2587±50 BC, we get a result like that shown in Figure III. 1.3. And what we find is that the shape of the calibration curve (which represents the history of past natural variations in atmospheric radiocarbon levels) yields a calibrated age that seems 100–300 years too old in the main and only just includes the real date at the very end of the calibrated range at 95.4% probability. But we calibrated the ‘correct’ radiocarbon age! The point is that radiocarbon dating of single context events in this period is problematic because of the history of natural radiocarbon variations. Only use of another approach (like wiggle-matching)\textsuperscript{52} can overcome this limitation.

We can in fact generalise the potential and problems of OK radiocarbon dating by simulating radiocarbon ages for calendar years across this period. Figure III. 1.4 shows two runs of simulated dates at ±50 years dating precision for the period 2750–2300 BC at 25 year intervals and including also the weighted average radiocarbon ages determined and used for calibration by Bonani \textit{et al.}\textsuperscript{53} for the Pyramid of Snofru at Maidum and the Pyramids of Cheops, Khephren and Mycerinus at Giza. Each run of a simulation produces different data from within the possible range. Thus note how the calibrated age for 2525 BC at ±50 precision can vary quite a bit from a ‘low’ date range in Figure III. 1.4.A to a ‘high’ date range in Figure III. 1.4.B. Samples near a slope in the calibration curve have more such potential for movement; other samples are much more stable. What we see is that the four sets of Dyn. 4 pyramid data lie entirely within the expected calibrated range for real dates from c.2750 BC to 2600 BC; they could be consistent with data from as late as c.2475 BC, but clearly prefer a date range starting around 2600 BC and older (compare also Figure III. 1.3 where the data want to lie on the plateau 2850–2600 BC and not so much on the slope following c.2600 BC). Such an outcome seems entirely plausible for the non-specific wood/charcoal samples (including ‘flecks

\textsuperscript{52} For examples at this time period, see e.g. B. Weninger, “Die Radiocarbondaten”, in: M. Korfmann, ed., \textit{Demircihüyük: Die Ergebnisse der Ausgrabungen 1975–78. II. Naturwissenschaftliche Untersuchungen} (Mainz, 1987), 4–13.—Weninger (n. 35).

\textsuperscript{53} Cf. n. 50.
of carbon in mortar’ such as from the Cheops pyramid shown in Lehner et al.\textsuperscript{54} from the Cheops, Khephren and Mycerinus monuments built in the 26th to early 25th century BC where average sample age is probably of the order of c.50±50 years at the time of inclusion into the monument. (We therefore see that the radiocarbon ‘dates’ thus can be valid/correct—\textit{but} they date the ‘old’ wood (etc). and not the cultural/historical target date wanted: the building of the pyramid monument).

The Pyramid of Snofru at Maidum\textsuperscript{55} provided data where six of the seven dates are closely comparable—SMU-1412 on a ‘log’ is either aberrant or very old wood notwithstanding the stated dating of its ‘outer rings’—and five of the determinations are stated to date outer rings from wood from the burial chamber (see Lehner et al.)\textsuperscript{56} or shaft thereto. Thus these samples might be expected to derive from closer to the construction period of the monument (with this period usually assumed to start at year 2 of the reign, onwards). Following the ‘historical’ chronology, work on this monument began c.2600 BC (Stadelmann)\textsuperscript{57} or 2638/2588 BC (Beckerath),\textsuperscript{58} 2616 BC (Kitchen)\textsuperscript{59} or 2574 BC (Baines & Málek).\textsuperscript{60} The calibrated age range of the average of these six similar\textsuperscript{14}C ages given by Bonani et al.\textsuperscript{61} (2855–2583 BC at 1σ, and 2860–2579 BC at 2σ) is entirely compatible at the end of its range (for why it will be just the end, see Figure III. 1.3 above) with the ‘historical’ age estimates (and especially not the lowest of these). The calibrated probability distribution is entirely similar with a real age of c.2600 BC (see Figure III. 1.4). One may therefore conclude that the radiocarbon ages are approximately valid.

The plateau in radiocarbon levels clearly creates difficulties for narrow dating for OK samples. However, we may make some progress with current debates. For example, Spence proposed a rather lower OK chronology based on a hypothetical stellar alignment used by the pyramid builders.\textsuperscript{62} She proposed dates of 2526±7 BC for the start of

\textsuperscript{54} Lehner \textit{et al.} (n. 37), 31 bottom left illustration
\textsuperscript{55} Bonani (n. 50), 1304.
\textsuperscript{56} Lehner \textit{et al.} (n. 37), 31 top right illustration
\textsuperscript{58} Beckerath, \textit{Chronologie}.
\textsuperscript{59} Kitchen (n. 43).
\textsuperscript{61} Bonani (n. 50).
\textsuperscript{62} K. Spence, “Ancient Egyptian chronology and the astronomical orientation of
work at the Snofru pyramid at Maidum, 2480±5 BC for the Cheops pyramid, 2448±5 BC for the Khephren pyramid and 2415±10 BC for the Mycerinus pyramid. However, if one examines Figure III. 1.4, it is evident that the radiocarbon data from these monuments are less consistent with such a very low chronology unless very, very old wood is always assumed. The range of simulated calibrated ages for samples dating 2450–2400 BC are not at all similar with the radiocarbon ages obtained from the Khephren and Mycerinus samples. The latter clearly date much older wood, wood preferably 100–150 years older. The more traditional range of ‘historical’ chronology estimates provides more suitable dates (allowing for a plausible average old wood factor where relevant; cf. also below, Chapter III. 4).

Apart from the general calibration issue discussed above, some other issues may also be noted with regard to the Bonani et al. data sets.63

This team has published an enormous number of radiocarbon dates from OK and MK monuments. There are wide spreads of ages in several of the sets—suggested by the team involved themselves to be partly if not largely accounted for by an ‘old wood’ issue, as all available trees in the region, of widely varying ages, were consumed by the pyramid builders and as older settlement debris was recycled in fires.64 While this is plausible in many cases, nonetheless, some samples are clearly aberrant for unspecified reasons. It is undoubtedly the case that the association of measured age for the sample (biological age unless other contaminating processes were involved) versus the date for monument construction is not demonstrated or clear in a number of instances (e.g. ‘charcoal’ from mudbricks or from mortar—see Bonani et al.65—may easily represent ‘old’ or re-used tree-rings). The limestone and mortar associated with a number of samples may also provide a source of old carbon—for example with reference to samples from ‘flecks of carbon in mortar’ such as from the Cheops pyramid.66 It is certainly interesting that the two secure datasets from early second millennium BC MK monuments (Pyramid of Senwosret II at Illahun and Pyramid of Amenemhet III at Dahshur), a new phase of pyramid building after a significant interval, yielded calibrated ages compatible with historical pyramids", Nature 408 (2000), 320–324. Cf. D. Rawlins, K. Pickering and K. Spence, “Astronomical orientation of the pyramids”, Nature 412 (2001), 699–700.

63 Cf. n. 50.
64 Lehner et al. (n. 37), 33.
65 Cf. n. 50, 1297–1298.
66 Lehner et al. (n. 37), 31 bottom left illustration.
Figure III. 1.3. Simulated radiocarbon age for a calendar date of 2587±50 BC using OxCal 3.9 (Bronk Ramsey, n. 35 and later versions with curve resolution set at 4) and INTCAL98 (n. 15). Note: every simulation run produces a slightly different outcome—this is a ‘typical’ output based on a number of runs. This simulated calendar age is an example of possible typical age of ‘average’ wood from a monument built in the reign of Cheops (reign starts 2604/2593/2554/2551 BC and ends 2581/2570/2531/2528 BC: Beckerath, Chronologie, Kitchen n. 43; Baines & Málek, n. 60), given a typical +50 ±50 year ‘old wood’ adjustment. The calibrated radiocarbon age intersects with the c.2900–2500 BC plateau in the radiocarbon calibration curve, and offers several 1σ ranges within a large 2σ range c.2880–2580 BC. We thus see as a function of the natural history of radiocarbon fluctuations that real dates in the early 26th century BC yield calibrated radiocarbon ranges mainly apparently too early, with the real date just creeping into the last few years of the calibrated age range. It is noteworthy that the average radiocarbon age from the 45 samples used for the Pyramid of Cheops at Giza is in fact 4147±10BP (Bonani et al., n. 50, 1315)—almost exactly the 4154±50BP radiocarbon age derived by the simulation of a calendar date of 2587±50 BC, as shown above. Thus it appears that the Cheops data do, on average, yield a plausible age for wood used in his reign (with this average wood typically +50 or so years in age, give or take a range, versus the actual use date—and the large range within the Cheops data, see below, indicates such a range, or more, in the real wood ages, apart from any contaminating factors from associated mortar/limestone). Because of the history of radiocarbon variations (the 2900–2500 BC plateau), only the very last part of the calibrated range indicates the real age. These data, and the other similar OK data in Bonani et al. (n. 50) where the ‘real’ age at best creeps into the end of the calibrated age range, or lies shortly afterwards, therefore do not provide evidence of any additional offset beyond old wood and the calibration outcomes given the history of natural radiocarbon levels c.2900–2500 BC. They provide no evidence at all for claims of hypothetical 100–300 years too early offsets in Mediterranean radiocarbon ages based on claims of putative upwelling of old carbon (Keenan)67—something for which there is no positive evidence within an order of magnitude (Manning et al. 2002, n. 33).

The data from Archaic contexts also yielded radiocarbon ages largely in keeping with approximate 'historical' estimates—as have other recent studies. These periods both have helpful, non-plateau, radiocarbon calibration curve shapes, and may also plausibly have had less of an exhausted natural supply of wood—contrast the peak OK period of pyramid construction which probably forced much recycling of old material.

For the third millennium BC, Bonani et al. report 17 date sets of the OK as older than their stated historical estimate, 6 as compatible, and 4 as more recent than the historical estimate. This clearly 'seems' to be a problem. But, apart from noting that the historical age estimate is commonly regarded as ±100 years for this period, the interpretation of Bonani et al. is based on two inappropriate starting points. First, there is no allowance for likely average sample age at time of use (i.e. 'old-wood' age for random wood/charcoal samples not known to be outer tree-rings), and second Bonani et al. use average values for the radiocarbon age of sample sets which contain significant internal variation, and this is thus potentially misleading (probably less so as set size increases). To illustrate: examination of Bonani et al. (n. 50, Fig. 1) shows the Cheops Pyramid (object number 13) to yield one of the apparently tighter calibrated age ranges and to be some two centuries older than the estimated historical age. And this despite 46 radiocarbon dates being reported for the monument. But examination of the 46 radiocarbon data reveals ages varying by 1210 radiocarbon years!—and even excluding the two gross outliers in the set, the age range left in the set is still 513 14C years! As shown in Figure III. 1.5, just over one-third of the individual samples—the younger ages—do in fact offer calibrated ages more or less compatible with the estimated historical age of 2589–2566 BC, and most of the remainder offer

---

68 Bonani (n. 50), Fig. 1 and p. 1320.
69 Bonani (n. 50), Fig. 1 object numbers 1–5.
70 E.g. Görsdorf et al. (n. 22).
71 Lehner et al. (n. 37).
72 Bonani et al. (n. 50), 1315 use the historical range of 2589–2566 BC—other standard sources suggest c.2593–2570 BC: Kitchen (n. 43), 48; around 2604/2554 BC to 2581/2531 BC: Beckerath, Chronologie, 188, or 2551–2528 BC: M. Lehner, The complete pyramids (London, 1997), 8.
73 Bonani (n. 50), 1305.
74 Marked by the * and + signs by Bonani (n. 50), 1305.
75 Bonani (n. 50), 1316.
Figure III. 1.4 (A and B). Two outputs of simulations of calibrated radiocarbon ages for calendar years 2750–2300 BC at ±50 dating precision and at 25 calendar year intervals (data from OxCal 3.9 with curve resolution set at 4; Bronk Ramsey, n. 35 and INTCAL98, n. 15). Included also are the weighted average radiocarbon ages used for calibration by Bonani et al., n. 50, 1314–1316) for the Pyramid of Snofru at Maidum, the Pyramid of Cheops at Giza, the Pyramid of Khephren at Giza and the Pyramid of Mycerinus at Giza. For discussion, see text.
<table>
<thead>
<tr>
<th>Calibrated Date</th>
<th>Radiocarbon Date</th>
<th>Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>3500 Cal BC</td>
<td>3450 ± 50</td>
<td></td>
</tr>
<tr>
<td>3000 Cal BC</td>
<td>2950 ± 50</td>
<td></td>
</tr>
<tr>
<td>2500 Cal BC</td>
<td>2450 ± 50</td>
<td></td>
</tr>
<tr>
<td>2000 Cal BC</td>
<td>1950 ± 50</td>
<td></td>
</tr>
</tbody>
</table>

- **R_Simulate 2750BC** -2750 ± 50
- **R_Simulate 2725BC** -2725 ± 50
- **R_Simulate 2700BC** -2700 ± 50
- **R_Simulate 2675BC** -2675 ± 50
- **R_Simulate 2650BC** -2650 ± 50
- **R_Simulate 2625BC** -2625 ± 50
- **Snefru at Meydum** 4110 ± 23 BP
- **R_Simulate 2600BC** -2600 ± 50
- **R_Simulate 2575BC** -2575 ± 50
- **Khufu at Giza** 4147 ± 21 BP
- **R_Simulate 2550BC** -2550 ± 50
- **Khephren at Giza** 4173 ± 27 BP
- **R_Simulate 2525BC** -2525 ± 50
- **R_Simulate 2500BC** -2500 ± 50
- **Menkaure at Giza** 4127 ± 25 BP
- **R_Simulate 2475BC** -2475 ± 50
- **R_Simulate 2450BC** -2450 ± 50
- **R_Simulate 2425BC** -2425 ± 50
- **R_Simulate 2400BC** -2400 ± 50
- **R_Simulate 2375BC** -2375 ± 50
- **R_Simulate 2350BC** -2350 ± 50
- **R_Simulate 2325BC** -2325 ± 50
- **R_Simulate 2300BC** -2300 ± 50

<table>
<thead>
<tr>
<th>3500 Cal BC</th>
<th>3000 Cal BC</th>
<th>2500 Cal BC</th>
<th>2000 Cal BC</th>
</tr>
</thead>
<tbody>
<tr>
<td>3500 Cal BC</td>
<td>3000 Cal BC</td>
<td>2500 Cal BC</td>
<td>2000 Cal BC</td>
</tr>
</tbody>
</table>

Calibrated Date

**B**

Radiocarbon Dating and Egyptian Chronology
variously a little to quite a bit older ages—‘old wood’\textsuperscript{76}—would appear the obvious first hypothesis.\textsuperscript{77} Such a pattern: younger ages corresponding to, or close to, context date and older ages reflecting old wood is quite common and expected when dealing with wood/charcoal samples.\textsuperscript{78} Similar observations may be made about the data sets for: Step Pyramid of Djoser at Saqqara, Temple Complex associated with the Step Pyramid, Pyramid of Sekhem-khet at Saqqara,\textsuperscript{79} Pyramid of Khephren at Giza, Pyramid of Ra’djedef at Abu Rawash, Sphinx Temple of Khephren at Giza (n. 50, 1306), Pyramid of Mycerinus at Giza, Mortuary Temple of Shepseskaf at South Saqqara (n. 50, 1307), Mortuary Temple and Pyramid of Sahure at Abusir (n. 50, 1309) and Pyramid of Teti at Saqqara (n. 50, 1310). In contrast, it is notable that the radiocarbon ages from a modern excavation at the Royal Production Centre at Giza offer both a reasonably consistent set, and calibrated ages more recent than the surrounding OK datasets from the monuments.\textsuperscript{80}

We have already noted the case of the Pyramid of Snofru at Maidum, where six of the determinations date outer rings from wood from the burial chamber or shaft thereto. And thus the usual old-wood effect is likely minimised. The calibrated age range of the average of these six similar \(^{14}\text{C}\) ages given by Bonani \textit{et al.} (2853–2583 BC at 1\(\sigma\), and 2860–2579 BC at 2\(\sigma\)) is entirely compatible at the end of its range (for why it will be just the end, see Figure III. 1.3 above) with the ‘historical’ age estimate employed by Bonani \textit{et al.} (n. 50, 1314) or those estimated by Kitchen (n. 43) or Beckerath, \textit{Chronologie}, (higher range), and also overlaps with the date for the accession of Snofru c.2600 BC and his earlier reign, and thus the construction of this Snofru’s first (of three) pyramids, given by Stadelmann (n. 57). One may observe that the stated calibrated range ends +8/+4 years from the start of the lower ‘historical’ age estimate for Snofru by Lehner from Baines & Málek (n. 60);\textsuperscript{81} this is hardly a significant difference, and the wood in


\textsuperscript{77} See Lehner (n. 37), esp. 31–33.

\textsuperscript{78} For an example from Troy II, see Kromer \textit{et al.} (n. 34), 48 and Fig. 4.

\textsuperscript{79} Bonani (n. 50), 1303.

\textsuperscript{80} Bonani (n. 50), Fig. 1 object 12, contrasted with other objects 10–19. One might speculate that the samples from this context, which are not from major architecture/monuments and their creation industries, do not therefore suffer so much from an average old wood problem.

\textsuperscript{81} Lehner (n. 72).
question could easily have been cut a few years earlier than the start of Snofru’s reign if the lower dates are to be preferred, just as it could have been cut during his reign if the slightly higher dates are preferred. We have already seen how even the correct radiocarbon age for a date around the early 26th century BC only includes the real calendar age within the very end of the calibrated range, as much of the dating probability ends up on the plateau in the radiocarbon curve over the preceding couple of centuries (compare Figure III. 1.3 above). Thus these dates for the Pyramid of Snofru at Maidum are entirely consistent with the estimated ‘historical’ age.

In sum, these OK radiocarbon dates do not in fact indicate any problem with radiocarbon dating and Egyptian chronology; instead they nicely illustrate the importance and impact of the shape of the calibration curve in dating, and they highlight the need to obtain organic samples directly associated with, and relevant to, the human context for which a date is sought. Wood and charcoal samples especially can easily be older, or even much older, than their final deposition context depending on tree species and the uses and perhaps re-uses of the wood. Add in calibration taphonomy and correct radiocarbon ages for organic materials can appear to yield dates that are centuries too old for their historical/archaeological context (see Figure III. 1.3). Aquatic samples, which may include a water/marine reservoir radiocarbon age (versus solely the normal atmospheric reservoir radiocarbon age represented in normal terrestrial plants, and animals eating these), must also be treated with care and caution—again this may explain some of the apparently aberrant radiocarbon ages obtained on ‘reed’ samples in Egypt.

As evident from the Amarna example in Section 3, and other studies cited in Sections 1 and 2, or other studies in the literature, in appropriate circumstances high-quality radiocarbon data from Egypt and the east Mediterranean region can provide accurate and precise dates. When issues occur, such as the completeness of removal of age contamination by humic material, or the old wood offsets evident in the extensive OK radiocarbon measurements published by Bonani et al.

---

83 See also Manning et al. (2002, n. 33).
84 Alon et al. (n. 39).
Figure III. 1.5 (A and B). Calibrated calendar ages for the 46 radiocarbon data reported from the Pyramid of Cheops at Giza (data from Bonani et al. n. 50, 1305). The estimated historical age employed by Bonani et al. (n. 50, 1315) is 2589–2566 BC. The upper and lower lines under each histogram indicate respectively the 1σ (68.2%) and 2σ (95.4%) calibrated age ranges. Calibration employing OxCal 3.9 (Bronk Ramsey, n. 35 and later versions, with curve resolution set at 4) and INTCAL98 (n. 15). For discussion, see text.
<table>
<thead>
<tr>
<th>Phase</th>
<th>ETH-13778</th>
<th>4156±58BP</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ETH-13779</td>
<td>4062±61BP</td>
</tr>
<tr>
<td></td>
<td>ETH-0308</td>
<td>4300±85BP</td>
</tr>
<tr>
<td></td>
<td>ETH-4228</td>
<td>4390±110BP</td>
</tr>
<tr>
<td></td>
<td>ETH-13783</td>
<td>4237±62BP</td>
</tr>
<tr>
<td></td>
<td>ETH-13784</td>
<td>4068±54BP</td>
</tr>
<tr>
<td></td>
<td>ETH-13785</td>
<td>4083±53BP</td>
</tr>
<tr>
<td></td>
<td>ETH-13782</td>
<td>3984±55BP</td>
</tr>
<tr>
<td></td>
<td>ETH-13787</td>
<td>4197±49BP</td>
</tr>
<tr>
<td></td>
<td>ETH-13791</td>
<td>3810±60BP</td>
</tr>
<tr>
<td></td>
<td>ETH-0309</td>
<td>4420±100BP</td>
</tr>
<tr>
<td></td>
<td>ETH-13800</td>
<td>4195±55BP</td>
</tr>
<tr>
<td></td>
<td>ETH-13799</td>
<td>4128±58BP</td>
</tr>
<tr>
<td></td>
<td>ETH-13801</td>
<td>4189±60BP</td>
</tr>
<tr>
<td></td>
<td>ETH-13802</td>
<td>4174±61BP</td>
</tr>
<tr>
<td></td>
<td>ETH-13803</td>
<td>4062±60BP</td>
</tr>
<tr>
<td></td>
<td>ETH-13804</td>
<td>4254±59BP</td>
</tr>
<tr>
<td></td>
<td>ETH-13805</td>
<td>4267±54BP</td>
</tr>
<tr>
<td></td>
<td>ETH-0311</td>
<td>4395±85BP</td>
</tr>
<tr>
<td></td>
<td>ETH-0312</td>
<td>5020±130BP</td>
</tr>
<tr>
<td></td>
<td>ETH-0334</td>
<td>4440±320BP</td>
</tr>
<tr>
<td></td>
<td>ETH-13900</td>
<td>4068±60BP</td>
</tr>
<tr>
<td></td>
<td>ETH-0313</td>
<td>4330±125BP</td>
</tr>
</tbody>
</table>

Calibrated Date

7000BC  6000BC  5000BC  4000BC  3000BC  2000BC  1000BC

Sequence
Phase Khufu
Boundary Bound

Radiocarbon Dating and Egyptian Chronology
(n. 50), they in fact lead us to consider important topics concerning taphonomy, sample diagenesis, social history, economic processes, and the environment. As Lehner et al. conclude with regard to the OK issue:85

If the fair agreement of our 1995 results with historical dates and previous radiocarbon dates for the Archaic period and with the historical dates for the MK hold, the problematic OK dates are boxed in. And therein may lie a hint of multifaceted old wood effects for a period, especially from Djoser to Mycerinus, when any and all wood resources may have been consumed at a whole other order of magnitude than before or after the giant pyramid-building projects...our project...now has us thinking about forest ecologies, site formation processes, and ancient industry and its environmental impact...

5. Caution: The Need to Make Only Secure Historical Associations is Paramount

Radiocarbon dating determines the age of an organic sample. The association of such a sample and its radiocarbon age with history/archaeology is the task of the archaeologist. And one has to be careful and rigorous. Associations must be demonstrated, not casually assumed. A recent example illustrates the potential problems and the need to be even more careful as better precision becomes available in modern radiocarbon dating.

Shoshenq I and Radiocarbon?

A key synchronism for the standard chronology of Egypt (and wider Near Eastern history) concerns the identification of the important Egyptian pharaoh Shoshenq I with the Shishak attested in the Bible (I Kings 14:25–26; II Chronicles 12:3–4) as invading Judah and Israel in the 5th year of Rehabeam.86 Rehabeam year 5 is in turn dated c.926/925 BC by linking the attested names and reign lengths of the 10th–9th century BC kings of Israel and Judah with recorded synchronisms in the 9th century BC between the Israelite kings Ahab and Jehu and the

85 Lehner (n. 37), 33.
86 Kitchen, TIP, esp. xlv, 72–76, 287–302; Kitchen (n. 24), 7–8; Beckerath, Chronologie NR, 30–34; idem, Chronologie, 68–70.
Assyrian king Shalmaneser III. Since the chronology of the Assyrian kings is effectively absolute back to the 10th century BC, this enables precise calendar dates to be applied (of respectively c.853 BC for the last year of Ahab’s reign and c.841 BC for the first year of Jehu’s reign).

In an important and controversial paper, Bruins et al. (2003) recently reported sets of high-precision radiocarbon dates, allied with an interpretative stratified archaeological wiggle-matching analysis, from the site of Tel Rehov in Israel. These samples, on high-quality short-lived samples, provide the basis for a high-resolution chronology for the site in the 12th through 9th centuries BC. But Bruins et al. also suggested that the date for the destruction of Stratum V at Tel Rehov could be associated with the campaign of Shoshenq I and thus their date for this stratum—c.940–900 BC—was argued to support this proposed identification, and in turn the standard Egyptian chronology or one very close to it (with the Shoshenq I invasion dated c.926/925 BC—see above, or various slight alternative calculations, such as the 918 BC of Miller and Hayes, cited by Bruins et al. (n. 35) 317, or 927 BC in Barnes or 922–921 BC in Hayes and Hooker.

However, the critical logical step was missing. There is no evidence at all that the Stratum V destruction links with Shoshenq I—this is merely an unproven and (unnecessary) assumption incorporated into the Bruins et al. paper and its dating model (and so leads to a circular argument). The dating of the site and the dating of Shoshenq I are separate until and unless clear evidence can be produced to show that Shoshenq I caused the specific Stratum V destruction horizon dated by the radiocarbon measurements. Archaeologists must always be aware that non-rigorous and specific (i.e. documented) assumptions that try to bring archaeological and historical evidence together (the event-historical model) are often inherently problematic because the respective evidence types represent fundamentally different facets of

---

87 Bruins et al. n. 35.
88 M. Miller & Hayes, A history of ancient Israel and Judah (Philadelphia, 1986).
historical reality. In the Shoshenq I case, it is fair to note that much is less than certain and very different narratives are possible based on the same limited and likely non-contemporary ‘historical’ evidence/tradition.

This example highlights the need to delineate clearly what is the target date and how and why the relevant organic samples do (or do not) provide associated dating evidence when radiocarbon dated. Without such chronometric care results are not credible, and conclusions may turn out to rest on foundations of sand.

6. Conclusions

High quality radiocarbon dating offers an important but as yet not fully exploited resource for Egyptology. It provides an increasingly accurate and precise test for the historical chronology and can actively inform and resolve disputes in less certain or ambiguous periods. Available dating accuracy and precision from radiocarbon should in principle—i.e. on suitable short-lived samples from primary contexts dated at good precision—offer a chronological precision for the third millennium BC of the order of, or better than, the historical age estimates—which, for this period, are often regarded as having a significant error margin of up to a century. It could test and resolve claims for significantly differing

---


Postscript. Since the present text was submitted in August 2003, there have been several further publications (and much discussion) taking this topic now well beyond the initial publication of Bruins et al. (2003) cited above. However, the logic/methodology point noted in the text remains relevant as outlined (and has since been accepted by the Bruins et al. authorship— I wish to thank Hendrik Bruins and Amihai Mazar for friendly, constructive, and productive discussion). For the latest (AD 2005) situation on the analysis of the important Tel Rehov datasets, see now (i) Mazar, A. et al. “Ladder of Time at Tel Rehov: Stratigraphy, Archaeological Context, Pottery and Radiocarbon Dates”, and (ii) Bruins, H. J. et al. “The Groningen Radiocarbon Series from Tel Rehov: OxCal Bayesian Computations for the Iron IB–IIA Boundary and Iron IIA Destruction Events”, both papers in Radiocarbon Dating and the Iron Age of the Southern Levant—the Bible and Archaeology Today, edited by Thomas Levy and Thomas Higham, Equinox Publishing, Ltd., London (2005), 193–255, and 271–293 respectively.
Radiocarbon Dating and Egyptian Chronology

353
dates, such as those suggested from speculative astronomical conjecture by Spence (n. 62).

For the second millennium BC radiocarbon may also be able to assist. For many non-elite contexts it may offer the best means of dating. For the chronology of the pharaohs it will be of less need, as the dates in the second millennium BC are relatively accurately and precisely determined from a combination of so-called ‘dead-reckoning’ (the compilation of documented names of Egyptian kings and various other persons and attested years of reign/office backwards from an agreed starting point fixed against the Greco-Roman timescale)\(^93\) and analysis of some records of astronomical observations (e.g. Krauss;\(^94\) Beckerath).\(^95\) Recent scepticism, and claims to reject for example all lunar data (Wells\(^96\)—approvingly cited by e.g. Kitchen),\(^97\) have been shown to be based on incorrect or partial understanding of the data and their analysis.\(^98\)

The leading scholars immersed in the details argue that this combination of historical data and astronomical evidence forms a closely dated chronological system for the second millennium BC, with only at most a few years to a decade or so error range, and with several likely absolute placements therein, such as the accession of Tuthmosis III in 1479 BC.\(^99\) Nonetheless, one role for radiocarbon will be to offer an independent check and verification of these chronologies. Without this, complete certainty will never be possible given that there are gaps and uncertainties/ambiguities in the evidence (textual or astronomical), and key assumptions/interpretations have been made by modern scholars. Radiocarbon dating is direct and independent, and can cut through circular debates and assumptions.

\(^{94}\) Krauss, *Sothis*.
\(^{95}\) Beckerath, *Chronologie*, 41–51.
\(^{97}\) Kitchen, n. 24 at p. 11.
\(^{99}\) Kitchen, *TIP*, n. 43; n. 24; Beckerath, *Chronologie NR*; 1997; cf. below, Chapter III. 8.
High-quality radiocarbon dating also offers the independent means to test and reject the several publications of the last decade which have argued that conventional Egyptian (and wider ancient Near Eastern) historical chronology is incorrect.100

Radiocarbon dating should become the friend of Egyptologists. Whereas in its origins Egyptology helped to test radiocarbon dating and to expose the need for calibration, modern radiocarbon dating now offers the means to test, support, extend, and even to refine Egyptian chronology. Certain periods like the OK will be problematic if samples or contexts are dated in isolation thanks to the unhelpful plateau in the calibration curve (see Figure III. 1.3 above); but by exploiting techniques like seriated archaeological wiggle-matching (ideally of short-lived samples tied securely to the context for which a date is sought), even this time period can be made to yield an accurate and precise calibrated radiocarbon chronology by taking advantage of the shape of the calibration curve.101 Radiocarbon dating also offers the route to engage with all those many Egyptian archaeological contexts not specifically linked with the (largely elite centred) textual record (compare the similar but still largely unfulfilled hope expressed twenty years ago by O’Connor).102 The entirety of Egyptian archaeology can then be integrated into an accurate and precise near-historical level timeframe.

---


101 See e.g. Weninger (n. 52); Weninger (n. 35).

Appendix

Figure III. 1.6. The new (AD 2005) IntCal04 radiocarbon calibration curve (black) at 1σ for period 500 BC to 3500 BC, compared to the previous IntCal98 curve (grey) as used in this paper. There is little significant difference—the main change is that the IntCal04 curve is a little more smoothed. Data from Reimer et al. (n. 32) and Stuiver et al. (n. 15).
III. 2 ABSOLUTE CHRONOLOGIES: LUMINESCENCE DATING OF EGYPTIAN ARTEFACTS

Christian Goedicke

The phenomenon of luminescence in solids has been used as a dating method in archaeology since the late 1960s. Since then the method developed as an important and universal tool alongside radiocarbon dating and dendrochronology. It is based on the property of a number of minerals to store and release radioactive decay energy. Two minerals frequently occurring in archaeological contexts, quartz and feldspar, show this effect very distinctly which makes the application of luminescence analysis in archaeology particularly useful. In the field of the geological sciences luminescence dating has caused a decisive increase of knowledge and is regarded meanwhile as indispensable. In the following it will be discussed in which parts of archaeology the use of the method may be inadequate.

Luminescence Dating: Basic Principles

Radioactive traces (U-238, U-235, Th-232, K-40, Rb-87) are constituent in clay, in soil, and in rocks. During spontaneous decay, these elements release energy into the environment. When quartz or feldspar occurs in the environment, the emitted energy may be stored in the crystal lattice of these minerals. After an archaeological storage time the stored energy can be released in form of light. The longer the archaeological storage time, the larger the accumulated energy (phys. the dose) and the stronger the light signal. Luminescence dating is a dosimetric dating method requiring no external calibration. The necessary zero-setting event is achieved by heating or exposure to light when the energy stored in the lattice over geological times is zeroed and the accumulation can begin again.

Due to different ranges and to different effectiveness in producing luminescence, the three types of radioactive decay radiation (alpha-, beta- and gamma radiation) need to be taken into account separately. Consequently, more than one physical quantity must be measured in
the laboratory and, hence, the number of measurements results in a complex error of the age which is one of the major differences from C-14 dating. The total error of a thermoluminescence single date of an object amounts to between 7 to 12% of the total age expressed in years. In absolute numbers this amounts to roughly ±450 years for an \textit{OK} date. The range of uncertainty is much smaller, if several samples from the same archaeological context are analyzed; the so-called context error can be reduced to approx. ±5% which still corresponds to ±230 years for the \textit{OK}.

Thermoluminescence ages are calculated according to the following formula:

\[
\text{age} = \frac{\text{archaeological dose}}{a \cdot \text{dose-rate}_a + \text{dose-rate}_\beta + \text{environmental dose-rate}}
\]  \hspace{1cm} (Eq. 1)

A feature peculiar to Egyptian artefacts is the low radioactive trace-element content which explains the low internal dose-rates frequently encountered in Egyptian artefacts. Consequently, thermoluminescence ages become dependent on the ratio of the internal to external dose-rate (see Eq. 1). Should the two dose-rates come close to or equal each other, the external dose-rate may determine the thermoluminescence age. Fig. III. 2.1 illustrates the effect of the dose-rate ratio on the thermoluminescence age.

Thermoluminescence produces the best results when applied to artefacts as they are excavated, i.e. when the measurement of the environmental dose-rate can be made on-site. No access to the site limits the usefulness of the method, e.g. analysis of museum objects of unknown provenance cannot produce definitive results. The humidity of a sample also requires access to the site, as humidity is a correcting factor for the age of a sample. Variation of the humidity during storage times has to be taken into account.
Luminescence techniques can be used to date:

A. fired materials: ceramics (minimum firing temperature 500°C), stones (firesides), casting cores of bronzes
B. unfired materials: sediments (aeolian, fluvial, colluvial), mortar

**How Useful is Luminescence Dating for Dynastic Egyptian Objects? Answers Based on Published Dates**

Considering the usual error margins of 7–12%, thermoluminescence dating of Egyptian artefacts cannot contribute much to chronological evidence. The method may prove useful for a piece which cannot be attributed to any period on stylistic criteria. Even the range of context errors exceeds the possible imprecision of the Egyptian chronology which in its present state is better than 5% in all periods. Hence it is not surprising that published examples of luminescence dating for Egyptian artefacts are few. Recent culling of various bibliographical sources including CAS (chemical abstracts services) turned up the following papers.
Thermoluminescence Dates Quoted in the Literature

Two nearly identical papers deal with pottery of the fourth dynasty. The instrumentation used and the reported error of 2.3% cast some doubt on the seriousness of both; the standard calculation will not result in an error that small.

A French team notes that the pigment Egyptian Blue results from a thermal reaction thus making dating of this material possible. The attempt to date a large chunk of Egyptian Blue from Karnak is described resulting in a reasonable date. However, dating pigments from paint-layers is not feasible due to dosimetry problems arising from paint-layer thickness which usually is smaller than the range of beta-particles.

Some unpublished results of the author (Rathgen-Forschungslabor in Berlin) on potsherds from excavations at Abu Minshat Omar can be mentioned here. A comparison of the results with radiocarbon data from the same site revealed a systematic deviation towards younger ages.

Samples of vitrified silt from the Early Dynastic tombs at Abydos turned out to be undatable. Secondary firing resulted in a high degree of vitrification making luminescence dating impossible.

For earlier periods with a comparatively fluid chronological framework luminescence dates, even including the above quoted errors, may furnish a valuable chronological contribution. However, even for this period luminescence has rarely been used. Whittle’s early study dealt with potsherds from Hemamieh and Qurna-Tarif. Environmental dose-rate data were obtained in the laboratory by alpha-counting of soil samples. An archaeological evaluation of the data obtained was not attempted. Two additional studies considered Middle Palaeolithic

---


settlements. Dating Neolithic cultures by thermoluminescence and radiocarbon in the Sudan Nile valley was the aim of a French working group.

Outlook

Luminescence techniques other than thermoluminescence, e.g. optically stimulated luminescence (OSL), are not very likely to improve the situation; conversely, the sensitive dependence on the dose-rate ratio will become even more important. Corresponding to the zero-setting event (bleaching by sun-/daylight) these techniques are more appropriate for use in geological sciences. About half a dozen studies devoted to sediment dating and shoreline development have been done.

---


III. 3 DENDROCHRONOLOGY

Otto Cichocki

Definition

Dendrochronology is the science of dating tree rings. It includes investigations of the information provided by/contained in the structures of dated ring sequences and its applications to environmental and historical problems/questions.¹

History

The astronomer Andrew S. Douglass expected to find growth reactions to the sun-spot cycle, when he measured the width of tree rings of old pine trees. What he found was a similar pattern of ring width common to trees growing in the same area at the same time. He applied this discovery to develop a method to date the remains of pueblo settlements in the American Southwest.²

Subsequently the method was continually improved, especially by computer based statistical analysis in laboratories worldwide.

Biological Background

In regions with seasonal variation the growth of trees and other woody plants is not an invariable process but influenced by climatic factors. Particularly outside the tropical and subtropical zones, growth stops

¹ M. Kaennel & F. Schweingruber, Multilingual Glossary of Dendrochronology. Terms and Definitions in English, German, French, Spanish, Italian, Portuguese and Russian (Bern, 1995), 91 (modified).
almost completely in winter, causing a distinct border between each annual increment. Depending on genus and species, these “tree-rings” are composed of different cells in different arrangements. Early wood is springwood formed at the beginning of the growing season for conducting liquids, while late wood grows in late summer and autumn and is composed mainly of cells with thicker walls. Both together form a tree-ring. The thickness of the ring is more or less correlated with precipitation (if this is the determining factor), with density corresponding to the average temperature of the growth season. Of course, other climatic factors, but also insect damage, wounding or the climatic situation of previous years, affect growth as well. Therefore each tree ring is the result of a very complex accumulation of influences.

Trees growing in tropical and subtropical zones also form layers of different cell arrangement, but since they lack distinct borders, these layers cannot be measured for dating purposes. As annual thickness growth is the result of the reaction of trees to ecological influences, in an area with similar influences the growth reactions of different trees on comparable stands in the same year will be similar.

**Sampling, Data Acquisition, and Synchronisation**

Old wood may be preserved in different conditions:

Dry preservation: wood is almost unaltered, but sometimes fragile. It can be found in buildings (used to reinforce walls, construct ceilings, roofs, lintels, or doors), in burials (coffins, other wooden objects, burial chambers), as the ground of a painting (icons, Fayum portraits), sculptures and other objects.

Wet-wood preservation: wood is almost unaltered, but very sensitive to drying (necessitating storage in water, in a cool and dark environment). It can be found in rivers, lakes, caves, at the bottom of wells (often together with other organic remains of importance).

Charcoal preservation: burning changes wood—it is chemically resistant, but very fragile. If thicker beams are visible, they should be excavated separately, bandaged and parts plastered together and packed in plastic but not sealed to allow a very slow drying. Cool and dark storage is best.

To measure the thickness of rings in a particular piece of wood, a cross-section is required. A disc can be cut from wooden architectural elements or a core removed with a drill. After smoothing the surface,
the ring borders become visible. In most cases mixing samples of different wood species is not recommended when constructing a standard, so wood species analysis (identification of anatomical structures of a very small sample with the help of a light microscope) of all objects available for investigation should be the initial step.

If the surface (square or longitudinal) of a wooden object is not covered with paint and has been well smoothed when made in antiquity, the rings can often be measured directly after preliminary cleaning. Measuring devices have been developed for this purpose since most items in museum collections are only available for non-invasive “on the object” measurements. VideoTimeTable equipment uses a digital video camera with macro lens, which is moved along the surface by a step motor. A live video image, displayed on a laptop, can be measured immediately. Plain surfaces can be investigated with the help of a modified high-resolution flatbed scanner. A device capable of drilling a 5mm diameter hole for endoscopic measurement of ring width was designed to measure objects with paint or other surface treatment.

At least two radii of a sample must be measured. The arithmetical mean value of the ring widths is calculated to compensate for biological diversity (e.g. elliptic ring shape, single growth deviations). The result is a list of mean growth-ring thickness for each year contained in the sample. A sample must contain at least 70 rings; otherwise in many cases the statistical methods used for dating cannot work. Exceptions to this rule are separate pieces of a single stem (e.g. charcoal), collected as a unit. In this case much shorter overlaps allow reconstructing the whole ring sequence of the stem because of almost identical ring patterns. It is necessary to collect and measure as many promising samples as possible from one complex (a “time-unit”) in order to calculate a reliable mean value list for further analysis.

**Constructing Standards**

Two samples grown at the same time in the same climatic conditions will show a statistically significant correlation of their distribution of wide and thin rings (respectively their mean values). Such tree-ring

---

patterns are significant for a certain time period, and a certain climatic region, but in many cases only for a single genus (or species) of trees. Cross dating (the statistical comparison of two mean value lists) aims at the synchronization of different samples and determining relative time span between them.

If two samples do not completely overlap in time, their mean pattern will be longer than one of the individual samples. Many successfully cross-dated overlapping samples from different periods—the youngest one being of known age (e.g. a recently cut tree)—allow constructing a tree ring standard (a dated chronology) valid for one species and a limited growth area. If a gap is open (a sample is missing), the isolated part is called a floating chronology.

**Dating of Samples**

Dating a sample means comparing a sample with a standard on a year-to-year basis to find the best matching position. In many cases statistical tests result in more than one possible date. To find the correct position, “pointer years” and additional statistical tests are used. When setting up a standard by cross-dating all contained samples, certain years form pronounced peaks in the graph. If more than 75 percent of the rings from one year have the same trend (increasing or decreasing growth compared with the preceding ring), this year with especially strong influence on growth is called a “pointer year” and is specially marked. In dubious cases, in a second match, only these pointer years are compared with the corresponding rings of the sample. The correct position will then show a significantly higher correlation of these special years than the other theoretically positions.

The skeleton plot is a special method for dry areas using minimum pointer years. Here, only very narrow rings are observed, as they are formed by drought, that makes moisture the factor limiting growth. In years with poor environmental conditions some species cannot create distinct rings in the entire circumference of a stem or branch. If these missing rings go undetected, the sample will not match well with the standard. If this occurs when the standard is being set up, results will be negatively effected. Detection is possible by comparing many samples, because the same ring is not usually missing in all of them. The best way to detect incomplete rings is by comparing different radii on cut discs.
Another misleading growth pattern may occur in years with a temporary period of low temperature or drought during the growing season which produces a “false ring”. This “late wood formation” within the ring has a much smoother outer border than the real late wood formed at the end of the growth season. Hence, it can be detected under the microscope. As climatic factors are the reason certain rings are formed, it is possible to extract a basic part of this information contained in the ring. Dendroclimatology is concerned with reconstructing precipitation and temperature as major climatic factors.4

Wood grows annual layer upon annual layer. To avoid confusion, the age of a sample is usually defined as the absolute age of the outermost ring preserved in the sample. If this ring is the last grown before the death of the tree (the so-called waney edge, in some cases preserved with bark), it is possible to date the cutting year and to identify the cutting season. Problems can arise from samples of wood in secondary use or from undetected repairs, for they may give a false higher or lower age, respectively, for their context.

Dendrochronology in Egypt and the Near East

The wood species to be investigated depend on their occurrence in the objects available for investigation and their suitability for this special method. Wood species analyses on Egyptian objects have been carried out on coffins and other objects in the British Museum,5 on statues, wooden toilette objects, musical instruments and objects from the Coptic period in the Louvre,6 and on various objects in the Munich collection.7

---

Table III. 3.1 provides a rough idea of the range of wood species used in ancient Egypt for various purposes. Unfortunately the majority of these species grow in Egypt (Ficus sycomorus, Tamarix sp., Acacia sp.) and since they do not form distinct ring borders, they are unsuitable for dendrochronological analysis. Only the gymnosperms can be used: *Cedrus libani* grows in Mediterranean mountain climate and has distinct ring borders. Its growth age is said to be as much as 500 years. Due to over-deforestation there are only a few small areas where it grows today in Lebanon, larger ones in Turkey (Taurus, Antitaurus), and in Syria. The sub-species *Cedrus libani atlantica* grows in the Atlas Mountains of Algeria and Morocco, *Cedrus libani brevifolia* in a very limited area in the mountains of the island of Cyprus. There are no anatomical features that distinguish these three sub-species of cedrus.

Cedar was imported to Egypt from the time of the Old Kingdom. Different interpretations of Egyptian texts mentioning imports of wood from certain countries, continue to fuel a heated debate about the origin of cedar found in Egypt.8 Another contentious issue is the correct translation of different hieroglyphic terms obviously characterizing different species of wood.

Nili Lipschitz carried out wood species analysis and dendrochronological investigations on several historical and archaeological sites in Israel.9 She worked with wood of Cedrus libani, Cupressus semperv-

<table>
<thead>
<tr>
<th>Type of Wood</th>
<th>Nibbi 1981 Louvre</th>
<th>Grosser 1992 Munich and others</th>
<th>Davies 1995 British Museum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ficus sycomorus</td>
<td>32</td>
<td>138</td>
<td>230</td>
</tr>
<tr>
<td>Tamarix sp.</td>
<td>&gt; 100</td>
<td>106</td>
<td>158</td>
</tr>
<tr>
<td>Acacia sp.</td>
<td>35</td>
<td>42</td>
<td>53</td>
</tr>
<tr>
<td>Cedrus sp.</td>
<td>5 (7)</td>
<td>44</td>
<td>88</td>
</tr>
<tr>
<td>Juniperus sp.</td>
<td>2</td>
<td>10</td>
<td>16</td>
</tr>
<tr>
<td>Pinus sp.</td>
<td>9</td>
<td>3</td>
<td>37</td>
</tr>
<tr>
<td>Cupressus sp.</td>
<td>–</td>
<td>2</td>
<td>7</td>
</tr>
</tbody>
</table>

---

8 Davies (n. 5); R. Meiggs, *Trees and Timber in the Ancient Mediterranean World* (Oxford 1982); Grosser et al. (n. 7); Nibbi (n. 6); idem, “Some Remarks on the Lexicon Entry: Zeder, Cedar”, *DE* 7 (1987), 13–27.

Dendrochronology

virens, Pinus nigra, Quercus cerris and Pistacia khinjuk. Dating the roof beams of the El-Aqsa mosque in Jerusalem produced a 231 year floating chronology with 14-C dates of the Byzantine period.10

The Aegean Dendrochronology Project (directed by Peter I. Kuniholm) is working on many archaeological sites in Turkey, Greece, and Italy. In the International Treering Data Base, standards for the 2nd millennium AD from Turkish forests are published for Cedrus libani, Juniperus sp., Quercus conferta, Pinus nigra, Pinus sylvestris and Abies nordmanniana.11 A floating chronology for Bronze Age and Iron Age by 14-C wiggle matching is based on data for different tree species.12,13

Fritz Schweingruber published several modern standards for Cedrus libani brevifolia from Cyprus in the International Treering Data Base. A dendrochronological attempt at dating for Egypt continues/is carried out within the long-term scientific project “The Synchronization of Civilizations in the Eastern Mediterranean in the Second Millennium BC” at the dendrolab of VIAS, University of Vienna. The dendrochronological investigations try to develop a dating approach independent of other archaeological and scientific methods.14 First results are a 507 year floating Cedrus libani chronology for the 2nd millennium BC, and several shorter floating chronologies. To date this chronology includes/subsumes the coffin of Sebekhetepi, the inner coffin of Gua, and a canopic box (British Museum, London); the garden model of Meketre (Metropolitan Museum of Art, New York); the coffins of Ashait, Djehutinakht, Khnumhotep, Neferi, the outer coffins of Amenemhat and Mesehti, and the shrine of Aubre Hor (Egyptian Museum, Cairo).

Wood samples from modern trees (Besharre, Barouk, Horsh Ehden) and from several buildings from Deir el Kamar and Qadisha valley (Lebanon) cover the centuries back to 1369 AD for further construction of a standard for absolute dating. Analysis of Bronze age charcoal

11 http://www.ncdc.noaa.gov/paleo/ftp-treering.html
samples from Arqa (Lebanon), Qatna, and Ebla (Syria) will enable testing of the standard for the 2nd millennium BC with 14C and should aid in determining whether Cedar wood was imported from Mount Lebanon or from other forests.

Dendroclimatology studies the impact of climate on trees through patterns of growth. As different factors (moisture, temperature, length of vegetation period) interact in a very complex system, the investigated parameters (ring width, early wood/late wood ratio, density) contain a varying mean of signals. Investigations in the Near East carried out by a team lead by Ramzi Touchan reconstructed precipitation for southern Jordan. Currently this project has expanded to take in Turkey, Lebanon, and Syria.\textsuperscript{15} Knowledge about climate impact on ancient economies may aid analyses of political crises or warfare, which in turn influenced wealth and long-distance trade.

III. 4 DATES RELATING TO SEASONAL PHENOMENA AND MISCELLANEOUS ASTRONOMICAL DATES

Rolf Krauss

The rising and falling of the Nile and the harvesting of grain and fruit occur regularly at certain times within the solar year. When their dates were recorded in terms of the Egyptian calendar, they can be converted into absolute dates. Occasions of quarrying expeditions have also been traditionally considered examples of seasonal dates, since Egyptologists conjectured that such work was not undertaken during the summer. Even if so, the conversions yield intervals that are too broad to be of much use for chronology. For if cool weather lasts for 120 days, from November to February, then a “cool season date” spans an interval of $4 \times 120$ years = 480 years. Although there might have been a tendency to send expeditions to quarries during the cooler months, there are nevertheless attestations for expeditions at the hottest time of the year. Thus conversion of expedition dates can result in chronological contradictions.

**Dates of the Nile Flood**

The Nile flood results principally from monsoon rains that fall over the Ethiopian plateau between mid-May and September. In modern times the dams constructed at Aswan beginning around 1900 have prevented the annual flooding of the Nile Valley. Data recorded in the 19th century and the Middle Ages provide information about the onset and duration of the flood which are crucial for evaluating pharaonic dates. The Nile sunk to its lowest level in April/May; towards the end of

---

May and the beginning of June it began to rise. The biography of Weni, a Dyn. 6 official, seems to mention a low water date. Weni reports that he brought an altar from Hatnub to the pyramid of Merenre within 17 days in III Shemu, “although there was no water on the ḥzw”. Lieblein, who dated Merenre far too early at ca. 2525 BC, calculated that III Shemu 17 corresponded to March 5 Greg., a time when the river falls fast. Gardiner paraphrased Weni’s description with “when the river was at its lowest”. If so, Merenre would have reigned between ca. 2817 and 2694 BC when III Shemu 30 coincided with May 31 (Greg.) and III Shemu 1 with April 1 (Greg.).

Following Gardiner and using the standard chronology for the OK, Eyre correctly calculated the Gregorian months December and January as corresponding to III Shemu, but he wrongly designated these months as “a time of low, if not the lowest, water”. There are various possibilities to resolve the contradictions in Weni’s report: the translation of ḥzw as sandbanks may be wrong; the flood might have been low and run off very early that year; Weni may even have exaggerated.

Another low water date refers to a difficult passage through the channels of the Semna rapids at Uronarti in 19 Senwosret III. Correlated with the Dal inscription of year 10 of Senwosret III, the Uronarti inscription “provides evidence for an extraordinary variability in the Nile levels of late winter during the reign of Senwosret III”. Seasonal dates that diverge from the statistical mean cannot be used to establish absolute chronology. In the following paragraphs the basic data are presumed to be samples of the statistical mean.

64 Gregorian maximum flood dates on record from the Middle Ages and the 19th and early 20th centuries refer to the Nile gauge at Roda (Old Cairo), whereas the pharaonic high flood dates refer to Karnak temple. At Roda the maximum height was reached between September

---

6 The correct correspondance of III Shemu 17 in 2525 BC is March 7 Greg.
7 Gardiner, Egypt, 97.
8 If Merenre reigned in ca. 2222 ± 6 BC, then III Shemu corresponded in his reign to ca. December 8 to January 7 (Greg.).
9 Eyre (n. 1), 16.
11 Borchardt, Mittel, 91.
12 B. Bell, AJA 79 (1975), 238.
25 and October 5.\textsuperscript{13} The earliest maximum date is August 14 and the latest October 27. Using Borchardt’s incomplete Nile flood data, Beckerath presumed that the maximum occurred at Roda as early as August 25 and as late as October 27, but 4 days earlier at Luxor.\textsuperscript{14} For the latter, Borchardt relied on the fact that in 1925 the maximum travelled from Luxor to Roda within 4 days.\textsuperscript{15} However, the speed differed considerably in other years: “The Nile at Assuán reaches its maximum about the 5th September, and would under ordinary circumstances be at its highest in Lower Egypt about the 11th September, but as the basins of Upper Egypt are being filled in August and September, and emptied in October, the maximum in Lower Egypt is ordinarily about the 10th October.”\textsuperscript{16} The delay apparently resulted from interaction between the filling of the irrigation basins and the size of the flood. For example, in 1887 the Nile reached its maximum at Aswan on September 1, at Armant on September 6, and at Roda on September 25.\textsuperscript{17} In that case 19 days elapsed between maxima at Luxor and Roda, instead of 4 days as Borchardt had presumed.

Application of the 19th century flood data for Roda to the pharaonic period presupposes a comparable irrigation system. Irrigation works of some kind are first attested in the FIP,\textsuperscript{18} but very little information survives for later pharaonic history. There is no indication that a fully developed system of basin irrigation existed in the NK or even earlier. Under these circumstances it is preferable to use the maximum flood dates of Aswan, instead of Roda, when calculating dates for the Luxor region. The maximum required was at most 4 days for the distance Aswan: Luxor.\textsuperscript{19} There are 34 maximum dates for Aswan on record,\textsuperscript{20} the earliest is August 18, the latest October 1, yielding maximum dates for Luxor between August 21/22 and October 4/5. Based on a comparison of the dates at Aswan and Roda, it follows that the maximum

\textsuperscript{13} W. Popper, \textit{The Cairo Nilometer} (Berkeley, 1951), 87–88.
\textsuperscript{14} Borchardt, \textit{Annalen}, 7; Borchardt, \textit{Mittel}, 90; Beckerath, \textit{Chronologie}, 52.
\textsuperscript{15} Borchardt, \textit{Mittel}, 90 n. 5.
\textsuperscript{16} Willcocks (n. 3), 10.
\textsuperscript{17} Willcocks (n. 3), 31, 184–185.
\textsuperscript{19} For varying velocities of the Nile, see W. Willcocks, \textit{Egyptian Irrigation} (London, 1913), 143–144.
gauge occurred between 4 days (1882) and 63 days (1894) at Roda later than at Aswan. Borchardt’s Roda-based maximum dates for Luxor tend to be much too late, yielding an interval of ca. $4 \times 64$ years = 256 years for a pharaonic maximum date. By contrast, the Aswan-based interval for maximum dates at Luxor results in a period of ca. $4 \times 45$ years = 180 years. Records for only three events at high flood are preserved:

(1) Sebekhotep VIII, Epagomenae of year 4: flooding of Karnak temple.
(3) Shebitku, year 3, I Shemu 5: royal visit to Karnak temple after a high flood.

(1) Provided Sebekhotep VIII ruled ca. 1600±150 years, then August 22 (Greg.) corresponds to September 5 (Jul.) and October 5 (Greg.) to October 19 (Jul.). These Julian dates correspond to the E(pagomenae) as follows:

$$E_1 = \text{Oct 19 Jul in } 1709/06 \text{ BC}$$
$$E_5 = \text{Oct 19 Jul in } 1693/90 \text{ BC}$$

The flood in 4 Sobekhotep VIII occurred, then, between 1709 and 1513 BC; the mean year is 1611 BC. By contrast, Beckerath obtained the limits 1869 and 1534 BC and the mean year 1701 BC.

(2) Provided Osorkon III ruled around 700 BC, then August 22 (Greg.) corresponds to August 29 (Jul.) and October 5 (Greg.) to October 13 (Jul.). The Julian dates for III peret 22 are:

$$\text{III peret 22 = Oct 13 (Jul.) in 861/858 BC}$$
$$\text{III Peret 22 = Aug 29 in 681/678 BC}$$

---

21 For the maximum dates at Roda see Lyons (n. 20) 321 and M. Clerget, *Le Caire I* (Cairo, 1934), 44 (correct “1880 août” to “1880 septembre”).
23 Reading after Schott; see Borchardt, *Mittel*, 91.
Therefore the flood in 3 Osorkon III occurred between 861 and 678 BC; the mean year being 770 BC.\textsuperscript{25} By contrast, Beckerath obtained the limits 932 and 677 BC and 805 BC as the mean year.

(3) The text that relates to Shebitku’s appearance in Karnak mentions the Nile level “of his time (m h\textit{w.f})”. Borchardt interpreted the visit as coincidental with a maximum flood whose occurrence was slightly delayed.\textsuperscript{26} He conceded that the maximum flood could have occurred before the king’s visit. I Shemu 5 corresponded to October 9 (Greg.) in 705 BC = 3 Shebitku.\textsuperscript{27} It cannot be excluded that the visit coincided with a much delayed maximum flood, although more probably the maximum occurred earlier, in September.

\textit{Opening of the Basin Canals in the Theban Area?}

Ramesside graffiti record dates when “this day, the water returned/came to inundation”\textsuperscript{28} which were thought to refer to the falling of the flood or the feast “night of the drop” or the onset of the flood.\textsuperscript{29} More recently Janssen believes the dates to refer to the opening of the basin canals that took place in the 19th century around August 12. He supposes that “the situation in Pharaonic times was not essentially different than in the nineteenth century AD,” and that the Ramesside flood dates also fell around August 12 (Greg.).\textsuperscript{30} Beckerath presumes that the dams were opened depending on the height of the flood, with the mean August 12 (Greg.).\textsuperscript{31} Both authors overlook the recorded individual dates for the opening of basin canals in the 19th century. In Kena province, and thus at Luxor, the dates deviated from August 12 by +3 days and −6 days at most.\textsuperscript{32} August 12 was a deadline set by the Khedive that

\textsuperscript{25} Borchardt, \textit{Mittel} 91 n. 6, noted that the day coincided with a procession of Amun (line 5 of the text); he expected a full moon. He may have been correct coincidentally, if the \textit{Tepi Shemu} date I Shemu 6, year 18 (Fitzwilliam 68d) is correctly ascribed to Osorkon III as Kruchten, \textit{Annales}, 144, 240 suggests.

\textsuperscript{26} Borchardt, \textit{Mittel}, 91.

\textsuperscript{27} Cf. above Jansen-Winkeln, Chapter II. 10, and Zibelius-Chen, Chapter II. 12.


\textsuperscript{29} Meyer, \textit{Nachträge}, 39–42; with additional literature.

\textsuperscript{30} Janssen (n. 28).

\textsuperscript{31} Beckerath, \textit{Chronologie}, 52.

\textsuperscript{32} Willcocks (n. 19), 335.
could be missed if a harvest of sorghum was imminent in a basin.\textsuperscript{33}

The interpretations of Janssen and Beckerath presuppose that the system of basin irrigation existed already in Ramesside times and was managed as in the 19th century. No NK sources support this idea. The Ramesside flood dates may refer instead to the flooding of the valley after the Nile had breached the levees.

\textit{Grain Harvesting Dates}

Ploughing and sowing were done as soon as the flood had receded. According to one MK source, the fields were measured for tax assessment when the seed had sprouted,\textsuperscript{34} whereas NK sources seem to indicate the measuring of ripening fields.\textsuperscript{35} Thus the measuring of fields cannot be used to establish absolute chronology.

Traditionally, Egyptologists assumed that barley was harvested between the end of February and the beginning of March (Greg.), and wheat in April (Greg.).\textsuperscript{36} By contrast, in pharaonic times the harvest could have began as early as February and ended as late as in May (Greg.).\textsuperscript{37} The delivery of grain occurred later, after time-consuming threshing,\textsuperscript{38} winnowing, and cleaning.\textsuperscript{39} Most references to collection and delivery of grain are Ramesside and date to summer and fall months (Greg.),\textsuperscript{40} they are only suited for a rough determination of Ramesside chronology.\textsuperscript{41} By contrast, the correct harvest date is crucial for the hypothetical coregency of Thutmose III with Amenhotep II.\textsuperscript{42}

\textsuperscript{33} Willcocks (n. 19), 38 (304).
\textsuperscript{36} Cf. for example, Beckerath, \textit{Chronologie}, 53.
\textsuperscript{37} R. Krauss, “März, April und Mai als durchschnittliche Monate der Getreidernte im antiken und neuzeitlichen Ägypten” \textit{DE} 27 (1993), 27–34
\textsuperscript{38} For threshing dates as late as August/September (Greg.), see Krauss (n. 37).
\textsuperscript{40} For example, pTurin 1895+2006 lists collection dates between May 29 and September 4 (Greg.); cf. A. H. Gardiner, \textit{JEA} 27 (1941), 22–37.
\textsuperscript{41} Beckerath, \textit{Chronologie}, 53.
\textsuperscript{42} Cf. above Hornung, Chapter II. 8, and below Krauss, Chapter III. 8.
Wine Delivery Dates

Since the Middle Ages and down to the present, grapes ripen in Egypt towards the end of June, vintaging and wine-making occurred in August (Greg.). If the same conditions prevailed in the NK, the sealing of the wine jars would have taken place after fermentation towards the end of August/beginning of September (Greg.). Jar labels mention the regnal year of the sealing; the month is very seldom cited. The labels name the chief vintner and the wine estate, but not the ruling king. Great quantities of dated wine jars were excavated at Malqata and Amarna, at the Ramesseum, and in Deir el-Medina. At Amarna wine jar labels of 1+16 successive vintages were found. The labels document the later part of Akhenaten’s reign, and the reigns of two successors.

A wine jar from the funerary temple of Amenhotep II bears the date “regnal year 26”. If the year is ascribed to Amenhotep II, then the sealing of the jar took place in ca. II Akhet 10 months after the beginning of year regnal 26. It may be surmised that the reign of 25 y + 10 m that Manetho (Flavius Josephus) ascribes to Mephramuthoses, the precursor of Thmose < Thutmose IV, belongs to Amenhotep II.

Harvesting of Flax

In the tomb of the nomarch Djehutinakht (Bersheh 1), a scene of harvesting flax is dated to IV Akhet 23. The nomarch is datable to around year 31 of Senwosret I. Meyer, and then Borchardt relied

---

44 C. Pellat, Cinq calendriers égyptiens (Cairo, 1986), 247, s.v. vin.
45 R. Krauss, MDOG 129 (1997), 227; idem, SAK 23 (1996), 238–239; with additional literature.
46 Cf. Hornung, Untersuchungen, 78 n. 51.
47 W. C. Hayes, JNES 10 (1951), 41–56.
48 W. Spiegelberg, ZAS 58 (1923), 25–36; Beckerath, Chronologie NR, 40.
49 Beckerath, Chronologie NR, 40.
50 See above Hornung, Chapter II. 8.
51 Urk. IV, 1365; Beckerath, Chronologie NR, 94; idem, Chronologie, 109.
52 II Akhet 1 = September 9 Jul. = August 26 Greg., in 1400 BC.
53 See above Hornung, Chapter II. 8.
54 PM IV, 177.
57 Borchardt, Mittel, 89–90.
on information in the *Description de l’Égypte* that flax harvesting took place in the region of Asyut at the beginning of April and lasted 8 to 10 days. But rather than this isolated date, the general date for flax harvesting in Egypt should be used, viz. March to April.\(^{58}\) Furthermore, the date is not necessarily contemporaneous with Djehutinakht, for the scene with its date could have been copied from another earlier tomb. IV akhet 23 corresponds to March 15 Greg. = March 31 Jul. in 1893/1890 BC and to April 15 Greg. = May 2 Jul. in 2021/2018 BC. Harvesting of flax as early as March 15 Greg. or later is compatible with the low chronology (Senwosret I reigned 1920–1875 BC), but also with a slightly higher one.

### Seasonal Finds in the Tomb of Tut’ankhamun

Provided the times of flowering and ripening are known and if the material did not come from storage, the season when plant material was deposited in a tomb can be determined in terms of the Egyptian calendar. By far the most important example is the tomb of Tut’ankhamun with its great diversity of plant remains. The flowers that were used in the wreaths (Picris asplenoides L., Centaurea depressa, Whitania somnifera (L.) and Nymphaea caerulea Sav.) blossom in April; the Christthorn fruit (Zizyphus spina Christi), of which great quantities were found, also ripens in April. The absence of oil seed and fruit common in other tombs, which was harvested in the summer months (Balanites Aegyptiaca, Ricinus communis; Cyperus esculentus, Punica granatum and Ficus carica), indicates that the burial took place when these fruits were already used up. Thus it is to be concluded that the burial took place in April (Greg.).\(^{59}\) Provided the burial followed a regular mumification process of 70 days, the king would have died between January 21 (Greg.) and February 20 (Greg.). If he died in or ca. 1322 BC the interval corresponds to III peret 18/IV peret 18 which would also subsume the accession date of Aya, otherwise not known.\(^{60}\)

---


\(^{60}\) Cf. above Hornung, Chapter II. 8.
Tut‘ankhamun’s death in January/February raises an obstacle to his identification with Nipkhururia, who apparently died at the end of summer or early in the fall.\textsuperscript{61}

\textit{Solar and Lunar Eclipses}

There are no reports of solar and lunar eclipses from pharaonic Egypt. Thus ancient Egyptian data are absent in modern astronomical analysis of recorded eclipses.\textsuperscript{62} A text from year 15 of Takelot II was thought to refer to a lunar eclipse. If the verb in question is understood as $s\text{d}m.f$, then the translation is “the sky did not devour the moon”,\textsuperscript{63} if the form is interpreted as $n\ s\text{d}m.f$, then the translation is “before the sky swallowed the moon”.\textsuperscript{64} Regardless, it was already known in the 19th century that there was no lunar eclipse which would fit the standard chronology of the period;\textsuperscript{65} it seems possible that the text refers to a delayed appearance of the new crescent.\textsuperscript{66}

A solar or lunar eclipse supposedly occurred when Psammetichus I died.\textsuperscript{67} The source is the Demotic papyrus Berlin 13588, written in late Ptolemaic or early Roman times.\textsuperscript{68} The papyrus relates how a priest heard that the sky swallowed the disk ($jtn$) when Psammetichus I died; later the priest copied the “Book of Breathing” onto the mummy wrappings of Psammetichus I. The reported time of the supposed eclipse does not suit the solar eclipse of September 30, 610 BC; instead, it would fit the lunar eclipse of March 22, 610 BC. The context of the eclipse is fictitious, insofar as it would date the “Book of Breathing”—a creation of the Ptolemaic period—to the time immediately after the

\textsuperscript{61} Cf. above Klinger, Chapter II. 13.
\textsuperscript{63} Caminos, \textit{ Chronicle}, 88–89.
\textsuperscript{64} K. Jansen-Winkeln, $\textit{SAK}$ 21 (1994), 127.
\textsuperscript{68} W. Erichsen, “Eine neue demotische Erzählung”, \textit{Akademie der Wissenschaften und der Literatur Mainz. Abhandlungen der geistes- und sozialwissenschaftlichen Klasse} 1956, Nr. 2, 49–81.
death of Psammetichus I. An eclipse that is reported in a fictitious tale cannot be deemed historical.  

Eclipses that were recorded in the Near East such as the solar eclipse of 15 June 763 BC (see above Klinger, p. 308) are of indirect importance to Egyptian chronology. The solar omen of year 10 of Murshili II would be important for the chronology of the Amarna period and its aftermath, if it were indeed an eclipse. The text says that the sun god “gave an omen”; the kind of heavenly phenomenon (eclipse?) is open.

Miscellaneous Astronomical Phenomena

The observations of the planets Mercury (Seth) and Venus (Horus, Eye of Horus) that are reflected in the Cairo “Calendar of lucky and unlucky Days” are datable to 1298/97 BC, whereas the manuscripts are at least 80 years younger.

There are, for example, no Egyptian reports about periodic comets, singular Novae or occultations. Whether the “star miracle of Thutmose III” reflects an actual event or phantasy is moot.

J. Herschel dated the Giza pyramids on the assumption that the orientation of the ascending corridors was determined by the position of the “polar star” at the time when the pyramids were laid out. Herschel subsequently retracted his proposal and accepted the explanation that the angle of the corridors was chosen to facilitate their filling with large blocks after the burial of the pyramid’s owner. But this was overlooked by later astronomers and Egyptologists who criticized his original idea.

---

69 Krauss (n. 66).
72 Uruk IV 1238; cf. D. Meeks, Lf IV, 117–118.
According to a hypotheses proposed by K. Spence, the pyramids of Dyns. 4 and 5 were oriented towards north utilizing the “simultaneous transit method”, i.e. projecting the chord joining two circumpolar stars on opposite sides of the celestial north pole at the moment of their respective upper and lower culmination. In the course of decades and due to precession the method would yield first values east (west) of north, then true north, later values west (east) of north. If the method was applied in the 26th and 25th century BC to the stars Mizar (ζ UMa) and Kochab (β UMi), then the resulting pattern seems to fit known pyramid alignments. But the orientation of Djedefre’s pyramid which became known in 2001, does not fit into the sequence, and thus the hypothesis cannot be correct.

Moreover, Spence presumes that it was the west sides of the pyramids which were astronomically aligned; in fact, the corridors on or parallel to the central axis are decidedly closer to true north than the west sides and it is likely that they were the features to be astronomically aligned. However, the orientation of the corridors does not adhere to a scheme that could have been related to precession and thus the pyramids cannot be dated by this means.

Finally, it should be emphasized that the angles of the air shafts in the “Great Pyramid” (pyramid of Cheops) are useless for dating the structure astronomically. Another senseless exercise involves using the presence or omission of certain planets in the representation of the astronomical ceiling in the tomb of Senenmut for dating purposes.

---

Astronomy can offer a third dating option, over and above the analysis of lunar and Sothic dates, viz. the possibility of dating monuments using solar, lunar or stellar alignments depending upon the variation of stellar coordinates due to precession or the variation of ecliptic obliquity. For such analysis, astronomy on the horizon is the most relevant tool. The pioneering work in this area is Norman Lockyer’s *The Dawn of Astronomy*,\(^1\) considered today by some archaeoastronomers as the first “serious” book in their discipline. The author made ample use of precession to date Egyptian temples to support the long chronology which was accepted in his day (Dyn. 1, ca. 5000 BC). When Egyptologists discarded such chronologies any possibility of their using archaeoastronomy as a chronological tool disappeared with it. In the 1970s Gerald Hawkins\(^2\) reopened the discussion; although the topic was promoted by Edwin Krupp,\(^3\) there was no noticeable response from Egyptologists.

Astronomical alignments are either directed towards the horizon or towards lower zenithal distances, including alignments towards zenith pass. The latter has seldom figured in archaeoastronomical studies, although it has the advantage of offering fewer problems. But its existence is difficult to demonstrate, except in the case of zenith pass for which Mesoamerica furnishes several good examples, but Egypt none.\(^4\)

---

The controversial theories relying on simultaneous star transit to explain pyramid alignments for dating purposes exemplifies the problem. Part of the “Cosmology of Nut” system, present in the tomb of Ramesses IV and the Osireon of Abydos, and the Ramesside clock devices in the tombs of Ramesses VI, VII and IX probably also related to stars in positions far from the horizon.

Astronomy dealing with phenomena near the horizon includes heliacal risings (and settings) which are basic for the understanding of decanal star clocks. However, in what follows I shall concentrate on possible stellar or (luni)solar alignments on or near the horizon as a means of dating pharaonic monuments.

In Fig. III. 5.1 there are three problems, two of atmospheric origin (refraction and extinction), and one of a topographic nature (rough horizon). In the case of (luni)solar observations, the size of the solar disc presents a fourth problem. The azimuth $a$ of the rising or setting of a celestial object can be calculated in principle by using simple spherical trigonometry. Consequently, if a building were oriented with reference to a certain celestial body, it might be possible to calculate the date of the building’s foundation.

Simple spherical trigonometric calculations would apply only to a planet without atmosphere and with a flat surface. In reality, a celestial body is never seen rising or setting at $a$; Figure 1 illustrates the following actual possibilities:

$a'$: The setting of the star, if only refraction is taken into account, e.g., at a flat desert horizon. This also varies because refraction is especially dependent on atmospheric conditions such as humidity, temperature,

---


and the presence of dust or haze near the horizon, an extremely frequent occurrence in Egypt.

\textit{a’’}: The azimuth of the actual last visibility of the star is due not only to refraction but particularly to atmospheric extinction. According to a rule of thumb, a star becomes visible above the horizon, if its angular height is at least equal to its magnitude. Accordingly, under the best circumstances only Sirius, Vega, Rigil Kentaurus or Arcturus,
or the brightest planets, would be visible at 0° altitude. However, this too, is very dependent on atmospheric conditions; dust clouds ("calimas") or haze can severely affect visibility. In particular, Figure 1 represents a setting of Venus in southern Tenerife when the planet had the magnitude minus 2. However, sighting of Venus was lost when it was still more than 2° above the horizon. It was a dusty day, as often occurs at Saharan latitudes like the Canary Islands or Egypt.

\[ a''': \text{Setting azimuth of the star taking into account refraction and rough horizon. This would have been the actual setting azimuth of Venus on this occasion, provided the atmosphere would have been much clearer and more stable on that night.} \]

\[ a'''': \text{Theoretical setting azimuth considering only rough horizon and no atmosphere. This value is obtained from standard azimuth (a_{mes}) and height (h_{mes}), with measurements taken either with a theodolite or a} \]

\[ \text{a tandem when aligning a specific structure. For the sun or the moon, one should consider, apart from parallax, the size and shape of the disc (the latter dependent also on refraction and extinction) which at a rough horizon, can substantially change the position of the last contact event (or first contact for rising), and, consequently, the alignment of a building.} \]

On this basis I can affirm without reservations that a precision of ½° in determination of azimuth is perhaps the best one can expect for solar or very bright star observations near the horizon in Egyptian latitudes. For fainter stars, like those of the Foreleg (mshtywy) or Orion (s/bh), or important asterisms, like the Pleiades (b/\text{w}), the error in azimuth can range between one and several degrees of arc.\(^9\) Because of this variation, Haack’s theory of pyramid orientation was not taken seriously and his discovery of the error versus time trend ignored.\(^10\) For the same reason Isler\(^11\) and Edwards\(^12\) were forced to abandon horizontal astronomy in favor of a cast shadow system or an artificial horizon, respectively.


\(^12\) I. E. S. Edwards, *The Pyramids of Egypt* (Harmondsworth, 1993).
Does this mean that astronomical alignments are completely useless for chronological issues? The answer is yes and no. A recent study by Gabolde illustrates the problem for a solar alignment. There is general agreement that Amun’s temple at Karnak was aligned towards the rising sun on a winter solstice. However, Gabolde’s attempt to fix the date as the winter solstice following July 27 in 1946 BC, during the reign of Senwosret I, for laying the temple axis should be viewed with extreme caution. The change of solar declination due to variation of ecliptic obliquity is of the order of only 0.46° per year. Therefore the change of ½° occurs only after 3900 years, which is approximately the time elapsed between Senwosret I and the present. Thus the minimum error equals the variation, making dating tenuous. Either those who set the axis were extremely good topographers and precise technicians working under perfect atmospheric conditions, or I should conclude that we are faced with a very lucky situation, one in which fine calendrical determination and timing, splendid weather and the technical skill of ancient Egyptians conspired to yield an almost perfect alignment. If standard chronology did not support this epoch, I would have never been confident about fixing the date of Senwosret I’s tenth regnal year just using solar alignment.

For stars, the situation is different. Precession can substantially change the coordinates of a certain star and thus its rising and setting azimuths or, in general, its position in relation to the local horizon (e.g. angular height and moment of culmination). Sirius is exemplary for the case of horizontal astronomy. Between 3000 BC and 500 AD, the declination of Sirius changed from –22°.7 to –15°.8 and its rising azimuth changed from 116°.5 to 108°.3 for the latitude of Cairo (30°). The rising azimuth would change from 115° to 107°.3 for the latitude of Philae or Aswan (nearly 24°), where important temples of Isis or Satet were located, the divinities who manifest themselves in Sirius. Presuming

---


15 According to my personal impression the foundation blocks of the original MK temple do not permit a much better precision even with the use of a theodolite.

astronomy on the horizon and dating

an error of $\frac{1}{2}^\circ$, we can obtain a precision on average of nearly a quarter of a millennium or, under excellent atmospheric conditions, perhaps a little better. Obviously, the azimuth dating device is not very precise, but not useless. If there is textual evidence, as, for instance, in Dendera and perhaps in Philae, we might be able to date alignments to Sirius within some centuries.

In the case of fainter stars their coordinate variation and their magnitudes are decisive, but, in general, the results are less reliable than for Sirius. Consequently, for other stars or planets, such as the bright stars of the Foreleg, and for other epochs, we can make estimates perhaps to the nearest century in the best cases, even though, on some occasions, we might be very lucky, as in the example of Karnak.

Astronomy near the horizon cannot be used as an appropriate, and certainly not as a definitive tool by itself for establishing the precise parameters of pharaonic chronology. However, the approach is useful nevertheless, for it provides insights into the role of astronomy within the culture of ancient Egypt, particularly in the religious sphere.

---

17 Except for stars where precession can produce a substantial change in coordinates. Alnilam ($\epsilon$ Ori), the central star of the $\eta$ constellation, is a good example; its declination changed from $-17^\circ.3$ in 3000 BC to $-3^\circ.4$ in 500 AD. A still better example is Arcturus (probably to be identified as a bright star of the constellation $\eta$), which changed from $48^\circ.6$ to $27^\circ.6$ in the same period. In these cases, $\frac{1}{2}^\circ$ error in azimuth would permit a precision of 110 and 60 years, respectively, for the latitude of Cairo.

III. 6 LUNAR DAYS, LUNAR MONTHS, 
AND THE QUESTION OF THE ‘CIVIL-BASED’ 
LUNAR CALENDAR

Rolf Krauss

The Days of the Lunar Month

The ancient Egyptians observed the phases of the moon; they counted and named the days of the lunar month as well. Early on Brugsch compiled a list of the names of the lunar days; they are readily accessible in Parkers’s Calendars.\(^1\)

The earliest attestations for lunar days occur in private and royal inscriptions of Dyns. 4 and 5. The Palermo stone preserves the earliest royal example: LD 6 = snwt, a day of offering at Heliopolis in regnal year 6 of Weserkaf.\(^2\) The lunar days \(\text{psdntyw}, \text{bd}, \text{snwt, dnjt} \) and \(\text{smdt}\), i.e. LD 1, 2, 6, 7 and 15 are attested as days of rituals in the Pyramid Texts.\(^3\) Spalinger has collected and analysed the private feast lists of all periods.\(^4\) The early lists mention the lunar days \(\text{bd}\) and \(\text{smdt}\) as well as \(\text{st}\),\(^5\) but not \(\text{psdntyw}\). As Spalinger notes, “when one descends in time from the Old Kingdom to the very last phases of Pharaonic civilization, the number of lunar-based feasts diminishes”\(^6\). But lunar days are attested throughout Egyptian history and can be utilized for chronological analysis, if they are combined with dates of the civil calendar.\(^7\)

---

\(^1\) Parker, *Calendars*, 11–12; cf. also Belmonte, “Questions”, 35.
\(^3\) For example PT § 657, 716, 794, 1260, 1711, 2056.
\(^7\) For the non-chronological background to the Egyptian lunar days, see Spalinger, “Dating”, 383–387.
Beginning of the Lunar Month

Historians presumed that the ancient Egyptian lunar month began on new crescent day down until 1864 when Brugsch suggested that the lunar month started with conjunction. He cited a Ptolemaic text in Karnak: “He (Khonsu, the moon-god) is conceived on $p$sdntwy; he is born on $\tilde{s}bd$; he grows old after $smdt$”.\(^8\) Ninety years later Parker paraphrased the text as follows: The moon-god is conceived in the darkness of invisibility on the first day of the lunar month, he is born as the new crescent on the second day, and he wanes after the day of full moon, the 15th day.\(^9\) Parker also cited an earlier, MK text with a similar assertion: “I know, O souls of Hermopolis, what is small on $[\tilde{s}bd]$ and what is great on $[smdt]$; it is Thoth.” Parker commented: “Thoth is, of course, the moon, small on the day of new crescent and great on the day of full moon”.\(^10\)

Brugsch’s contemporaries were less enthusiastic than Parker.\(^11\) Only Mahler, and later Sethe, accepted conjunction as the beginning of the lunar month. Subsequently others disagreed, arguing that conjunction is not observable and thus cannot have marked the beginning of the lunar month.\(^12\) Around 1920 Borchardt realized that the Egyptian lunar month must have begun with the first day of invisibility after old (or last) crescent day,\(^13\) i.e. with an observable event.\(^14\) Shortly thereafter Schoch came to the same conclusion independently.\(^15\) Parker argued in detail that the Egyptians reckoned the lunar month from the first calendar day of the moon’s invisibility, coinciding with the day of conjunction in ca. 88% of the cases, the day before conjunction in ca. 10.5% and the day after conjunction in ca. 1.5%.\(^16\) Parker based his

\(^{8}\) H. Brugsch, Matériaux pour servir à la reconstruction du calendrier des anciens égyptiens (Leipzig, 1864), 58–60; Parker, Calendars, 9, 12.

\(^{9}\) Parker, Calendars, 9–10.

\(^{10}\) Cf. also Book of the Dead, title of Spell 135.

\(^{11}\) Cf. Parker, Calendars, 9.

\(^{12}\) For example, Meyer, Chronologie, 49–50; D. R. Fotheringham, PSBA 18 (1896), 101; and E. F. Edgerton, AJSL 53 (1937), 195.

\(^{13}\) L. Borchardt, OLZ 28 (1925), 620 n. 2; idem, Mittel, 19, 30 n. 10.

\(^{14}\) Actually two events: the first day of invisibility can only be recognized with certainty if the crescent had been observed the day before.

\(^{15}\) C. Schoch, Die Neumondfeste (Berlin-Steglitz, 1928); Reprint: Astronomische Abhandlungen. Ergänzungshefte zu den Astronomischen Nachrichten Bd. 8, Nr. 2 (Kiel, 1931), B11–B13; cf. W. Hirschberg, Zeitchrift für Ethnologie 66 (1933–34), 245.

\(^{16}\) Parker, Calendars, 9–13.
argument on the ancient texts cited above and on the correspondances of the days of Egyptian terminology for the lunar month with lunar phases. There is more circumstantial evidence. For example, in the Pyramid Texts $\text{psdnty}_{\text{w}}$ and $\text{bd}$ occur together as first and second day of a statue ritual that is also known from the Neferrrkare archive. On $\text{psdnty}_{\text{w}}$ the royal statues were dressed, and they “appeared” on $\text{bd}$. Apparently, the statues’ “appearance” equated metaphorically with the appearance of the new crescent on $\text{bd}$. Thus the earliest known instances of $\text{psdnty}_{\text{w}}$ seem to identify this day as one of invisibility.

It is astronomically possible that a last crescent is visible in southern Egypt on a certain day, but not in northern Egypt. In such a case, the counting of the lunar days would have been out of step for one month. In Egyptian latitudes the new crescent appears in ca. 70% of the cases after a single day of invisibility, in ca. 30% of the cases after invisibility lasting two days. This circumstance could be understood to suggest that the lunar month was reckoned from the second day of invisibility. But, if the second day of invisibility were counted as lunar day 1, how was the first day of invisibility counted? The observers did not, and could not, know beforehand whether the moon would be invisible for one or two days. This would have been clear only on the evening of the day that followed the first calendar day of morning invisibility: if the new crescent was observable, the moon had been invisible for a single day; if the new crescent did not become visible, the moon would be invisible for two days. In other words, the theory that the lunar month could have begun on the 2nd day of invisibility would mean that for about 36 hours, or 1½ calendar days, neither the observers nor the Egyptians who relied on them (for making offerings on the appropriate lunar days) would have known whether the current calendar day was to be counted as lunar day **31 or **0 or 1 or 2. If this impracticable if not to say nonsensical procedure had

17 Parker, *Calendars*, 12.
18 Posener, *Archives* I, 52–57.—For a chronological analysis of these lunar dates see below Chapter III. 8 (end).
19 For example, the old crescent of December 23 in 1828 BC was visible below Coptos, but not in ME and LE.
20 Parker, *Calendars*, § 44.
21 Cf. for example, the lunar days 1, 2, 4, 5, and 6 enumerated by King Ahmose (Urk. IV 24.4–7) as appropriate for offerings to the dead.
obtained, then a second day of invisibility that was recorded as apparent “lunar day 1” would be equivalent to a positively incorrect lunar date (see below, Chapter III. 8). Down to the present no discrepancy of this kind has been detected.

Lunar Calendar: ‘Civil-based’ Lunar Year

Observation of lunar phases, counting of lunar days and lunar-civil double dates do not constitute a lunar year that comprises and counts successively 12 or occasionally 13 lunar months. The existence of an Egyptian lunar year was first suggested by Brugsch; his idea met with disapproval. Borchardt developed Brugsch’s ideas, but it was Parker who argued consistently in favor of two lunar calendars, one referring to the heliacal rising of Sirius and one to the first day of the civil calendar. The ruling principle, as formulated by Parker, was that the beginning of the lunar year must not lie before the beginning of the civil year. To conform to this rule, a 13th lunar month had to be intercalated from time to time, usually each third year. This lunar calendar ran parallel to the civil year, and therefore it may be called a civil-based lunar calendar.

For his interpretation Parker relied on the lunar cycle in pCarlsberg 9, which dates from 144 AD or later. The cycle consists of 309 lunar months or 25 civil calendar years. It begins on I Akhet 1 to which it supposedly returns after 25 years. The cycle dates are correct in only 70% of the cases, as Parker was well aware. The cycle comprises nine “great” years of 13 lunar months each and 16 “small” years of 12 months. Nowadays there are doubts whether it reflects a system that was actually used. It is equally doubtful whether the same cycle was

---

22 Cf. in detail, Depuydt, Calendar, 153–157.
23 Cf. for example, Ginzel, Handbuch I, 168.
24 W. Barta, ΖÄS 106 (1979), 1–10, computed a series of 25 year cycles beginning in 2388 BC and ending in 155 AD. Because he misunderstood Parker, Barta used astronomically incorrect first cycle years; for a correction see idem, GM 94 (1986), 7–12. Furthermore he did not compute first lunar days, but the respective conjunction days, which renders his cycle tables useless.
used for the Macedonian year, which was in effect during in Ptolemaic times alongside the Egyptian calendar.27

As proof for the existence of the civil-based lunar calendar Parker cited double dates that not only counted civil and lunar days, but also months differently.28 The earliest example is the date of an oath taken before the moon god Khonsu on a calendric full moon day in year 12 of Amasis (559 BC).29 According to Parker, the date is expressed in civil and lunar terms as “regnal year 12 of Amasis, (civil month) II Shemu 13, being the 15th lunar day of (lunar month) I Shemu”.30 This interpretation implies that the months of a lunar year were counted from the first LD 1 after (civil) I Akhet 1.

In 1997 L. Depuydt published a study of the civil-based lunar calendar,31 “which subsumes and supercedes previous studies”.32 He concluded that “there is no doubt about the existence of the civil-based lunar calendar, first discovered by Brugsch. The proof is of the best kind: astronomical. Civil and lunar double dates are not numerous, but they provide unquestionable evidence for the existence of this calendar”.33 But as early as 1955 Gardiner had challenged Parker’s views, rejecting the existence of any lunar calendar.34 In the late 1980s Spalinger began analyzing various aspects of Parker’s calendric studies; he concluded that no civil-based lunar calendar existed.35 And recently, when J. A. Belmonte scrutinized Depuydt’s arguments in favor of the civil-based lunar calendar, he also concluded that the data are liable to different interpretation.36 Thus there is no consensus among the specialists.

As Spalinger has pointed out, it is possible to analyse presumed civil-lunar double dates without considering the validity of the civil-based lunar year itself:37 “. . . chronographers do not need it, . . . Parker and

28 Parker, Calendars, 26.
30 Depuydt, Calendar.
31 Depuydt, Calendar.
33 Depuydt, Calendar, 217.
later Egyptologists have never used it . . .” The assertion is correct, in general, but the Heqanakht papyri may represent an exception. In his letters Hekanakht refers to the months šf-bdt, ṛkh-ROLL, and ḫnt-hty-prtj. The internal chronology of the letters depends on whether these months are civil or lunar. For example, Spalinger sees “no indications of a lunar calendar operating in this correspondence”;38 Belmonte likewise asserts that the months are not lunar, but “are clearly mentioned in a civil calendar context”.39 By contrast, the very use of these month names in the Heqanakht papyri suggests to Allen “that farmers also followed the lunar calendar—understandably so, since the phases of the moon were much easier for them to keep track of than the artificial sequence of numbered days in the civil calendar.”40 Allen identifies this presumed lunar calendar as the civil-based lunar calendar, without discussing the possibility that it might be the Sothis-based lunar calendar.41 Hekanakht would have meant September/October (Greg.) when he referred to the month ḫnt-hty-prtj as the 10th month of the civil calendar or the civil-based lunar calendar; or March/April (Greg.) if ḫnt-hty-prtj was the 10th month of the Sothis-based lunar calendar.42 In the former case Hekanakht “postponed the beginning of the household’s new salary schedule to late September”, although it would have been possible to start “two or even three lunar months earlier”.43 Perhaps this and other difficulties could be resolved by assuming that Hekanakht meant months of the Sothis-based lunar calendar, rather than the civil-based lunar calendar. This discussion illustrates how the vagueness of the ancient sources, as exemplified in the calendric material contained in the Hekanakht papyri, are capable of very different interpretations, depending on the bias of the scholar.

40 Allen (n. 32), 135–136.
42 Based on Allen’s assignment of year 8 in the papyri to Senwosret I.
43 Allen (n. 32), 137 n. 47.
III. 7 LONG-TERM VARIATION IN THE MOTIONS OF THE EARTH AND THE MOON

Kurt Locher

Of the three sidereally defined periods—the year, the lunar month, and the day—, the year is the most stable in terms of modern methods of time-keeping such as atomic time based on molecular or electron-tilting oscillations. Its slight long-term variation is irrelevant for Egyptian chronology, because the artificial 365.0-day civil year, which was kept through all epochs, would always yield an unambiguous number of days elapsed between any two historical dates of relative chronology.

This is far from true for the lunar month and the day: The number of days elapsed between any pair of the same moon phases many centuries apart is affected by two long-term variations. The slowing of the earth’s rotation over time must be studied with the greatest possible care, both empirically, using historical astronomical data gathered from non-Egyptian records, and theoretically, by calculating its physical cause (the amount of kinetic energy released from rotational momentum and transformed into heat by tidal friction). Thanks to Stephenson’s recent extensive work\(^1\) we now know that the actual number of days elapsed from any OK date until today differs by just under one day from what it would have been if the velocity of the earth’s rotation remained constant.\(^2\)

Long-term variation in the orbiting period of the moon has essentially the same physical cause: the slowing of the earth’s rotation means a decrease in angular momentum, which the motion of the body exerting the causing force, i.e. the moon, must compensate by acceleration. The total number of lunar months elapsed between any OK date and today differs from the number they would have amounted to without such an acceleration by roughly one hundredth of a month.\(^3\)

---

2. Ibidem, Figs. 1.6, 2.1, 14.1, 14.2.
Since both differences result from an integration over time of a linear effect, each increases quadratically with respect to the time elapsed. Moving back in time from today towards the OK, the result reduces, e.g., to one fourth if we move back halfway.

\textit{Relevant Peculiarities of the Motion of the Moon}

There are also periodic short-term variations in lunar motion. One of them arises from the elliptic shape of its orbit and the dynamical consequences implied which results in variations in speed.

Since the sun appears, simply spoken in the ancient way, to move through exactly 12 zodiacal signs in the course of a year, and since there are 12 (exceptionally 13) new moons within this same period, the sign in which a new moon is seen from earth is the one adjacent (to the left as seen from northern latitudes) to the sign where the preceding new moon was seen.

Thus every month the breadth of roughly one sign is covered twice by the moon moving through the zodiac; if the moon happens to be in that part of its orbit where its speed is smallest (both absolute and apparent-angular), the month will be considerably longer than average. Such minimum speed occurs near apogee (\(\alpha\pi\gamma\lambda\nu\), “away from the earth”), the point on the elliptic orbit most distant from the earth. Since Ptolemy noted the effect of this variable velocity on the position of the moon (or a planet), the phenomenon has been called “the anomaly” (\(\alpha\nu\-\omega\alpha\lambda\zeta\), “uneven”).\(^4\) Calculating the anomaly in the case of the moon’s orbit is a complex procedure, because it is considerably perturbed dynamically by the gravity of a third body (the sun); however, this perturbation is negligible in the case of a planetary orbital ellipse. The perturbation in the moon’s case is the reason why the apogee is spatially (more exactly: sidereally) not always on the same side of the earth, but moves slowly around it, completing a full cycle in roughly 9 years, a fact which has been termed apsidal motion (\(\alpha\psi\zeta\), “apse” (of the ellipse) since Hipparchus.

The fact that the beginning of an Egyptian lunar month depended on the observation of last visibility of the waning moon at dawn must also be taken into account. Unlike all other effects considered above,

\(^4\) Ptolemy, \textit{Almagest}, § IV 2, Edition Heiberg (Leipzig, 1898), 269.
the success of such an observation depended not only on the lunar coordinate measured along the ecliptic, but also at right angles to it, i.e. on the ecliptical latitude. Egypt’s geographic position, which is to the north of the equator, favours observation of the moon if it is situated north of the ecliptic, by contrast to a symmetrical position south of it, especially for marginal situations which always occur near the horizon.\footnote{Ibidem, Heiberg, 270.}

The orbit of the moon is inclined against the ecliptic by roughly 5°, so that the moon crosses it twice every month at points called the nodes. Like the apogee, these nodes are not fixed, but they revolve around the earth in a cycle of roughly 18 years.

The position of the moon near a node is crucial for the occurrence of an eclipse; both solar and lunar eclipses are relevant for the chronology of most ancient civilizations, but, exceptionally, not for Egypt. Oddly enough, there are very few, if indeed any reports of eclipses from Egypt. For that reason, eclipse theory need not be included here.
III. 8 LUNAR DATES

Rolf Krauss

Computation of Old and New Crescent

An initial attempt to compute old and new crescent was made by the astronomer K. C. Bruhns around 1880.¹ He based his calculations, which were unsuccessful, on observations recorded at Athens by the astronomer J. Schmidt. 15 years later F. Wislicenus also admitted defeat, asserting: “if the sky is clear, but under otherwise differing astronomical conditions, the first appearance of the crescent can occur 1 to 3 days after conjunction”.² It was K. Fotheringham who first successfully calculated old and new crescent, utilizing Schmidt’s observations, in addition to others.³ The basic parameters of Fotheringham’s calculation are lunar altitude and lunar and solar azimuth.⁴ For the old or new crescent to be considered visible, it must have a minimal altitude h which is dependent on the distance Δ in azimuth of the sun and moon at the moment when the centre of the sun is in the mathematical horizon; the position of the crescent is computed geocentrically, i.e. without parallax.⁵ M. Maunder,⁶ P. V. Neugebauer and C. Schoch⁷ improved upon the minimal altitudes h of Fotheringham. In an earlier version of his astronomical tables P. V. Neugebauer incorporated crescent visibility criteria of Fotheringham and Maunder;⁸ in his later Astronomische Chronologie,

³ Mommsen (n. 1), 69–73.
⁷ C. Schoch, Planetentafeln für Jedermann (Berlin-Pankow, 1927); idem, in: Neugebauer (n. 9), I 79, Tafel E 21.—Use of Schoch’s data is now known as “Indian method” following adoption by the Indian Astronomical Ephemeris in 1966.
devised for the use of historians and astronomers, he used Schoch’s criteria. Between the publication of Neugebauer’s Tables in 1929 and ca. 1990 Egyptologists used them for astronomical computations involving solar, lunar, planetary, and stellar data. Neugebauer anticipated that his Tables would become obsolete after half of a century. And indeed the situation changed in the 1980’s when astronomical software to be used with computers became available. (All astronomical calculations for Chapters III. 8 and 10 were made with the program *UraniaStar Release 1.1* [M. Pietschnig & W. Vollman, Vienna, 1995]. The program was developed under the supervision of the astronomer Hermann Mucke. For the program’s reliability, see M. G. Firneis & M. Rode-Paunzen, “Progress-Report on Egyptian Astrochronology”, in: Bietak, ed., *SCIEM Haindorf* 2001, 48).

Especially for lunar positions, modern astronomical computation yields results different from Neugebauer’s Tables. One reason is that research has significantly changed the values for $\Delta t$ (delta t), the difference between Universal Time and Terrestrial Time that results from the slowing of the earth’s rotation. Regardless, in many cases the ancient date of observability of old or new crescent remains the same, whether calculated with the outdated parameters of Neugebauer or according to the most recent ones.

In the late 1980’s B. Schaefer, following an earlier attempt by F. Bruin, developed a model for reckoning old and new lunar crescents taking into consideration: (1) the physiology of the human eye, (2) the brightness of the twilight sky, (3) the surface brightness of the moon, (4) the extinction in the atmosphere, and (5) the local conditions. According to Schaefer, there is a general shift from clear skies in winter to hazy skies in summer, and thus in the northern hemisphere the minimal altitude is lower in winter and higher in summer. This rule does not seem to apply to all regions, but it is valid for Egypt. Thus Schaefer’s model represents an improvement over the visibility

---

10 Neugebauer (n. 9, I), V.
11 See above Locher, Chapter III. 7.
12 Krauss (n. 5), 52–53.
criteria of Schoch and others, as far as they do not take into account the seasonal variation of extinction and its daily random variability.

Table III. 8.1 lists a selection of Schoch’s and Schaefer’s minimal crescent altitudes \( h \), relating to \( \Delta \). In the Table months apply only to Schaefer’s figures;\(^\text{15}\) Schoch’s do not change during the year.

For example, if the distance \( \Delta \) in azimuth is 0°, then according to Schoch the crescent ought to be visible throughout the year if \( h \geq 10.4^\circ \). By contrast, Schaefer defines the minimal altitude as a mean value \( h \) together with its mean square root error \( \sigma \). If \( \Delta = 0^\circ \), then for example, in December \( h = 10.2^\circ \pm 0.6^\circ \), i.e. for ca. 68% of crescents \( h = 10.2^\circ \) is the minimal altitude; for 16% it would be 10.2° to 10.8°, and for the remaining 16% it would be 10.2° to 9.6°. If the crescent is within \( h \pm \sigma \), then visibility or invisibility of the crescent depends on extinction at the time of observation. Thus \( h \pm \sigma \) is a zone of uncertainty, because extinction cannot be predicted exactly. If the crescent is above \( h \pm \sigma \), then visibility is to be expected; if the crescent is below \( h \pm \sigma \), it ought to be invisible, although an outlier is a rare possibility.

<table>
<thead>
<tr>
<th></th>
<th>Schaefer ( (\Delta = 0^\circ) )</th>
<th>Schoch ( (\Delta = 0^\circ) )</th>
<th>Schaefer ( (\Delta = 10^\circ) )</th>
<th>Schoch ( (\Delta = 10^\circ) )</th>
</tr>
</thead>
<tbody>
<tr>
<td>December</td>
<td>10.2° ± 0.6°</td>
<td>8.8° ± 0.8°</td>
<td></td>
<td></td>
</tr>
<tr>
<td>March/Sept</td>
<td>11.0° ± 0.8°</td>
<td>10.4°</td>
<td>9.5° ± 0.9°</td>
<td>9.3°</td>
</tr>
<tr>
<td>June</td>
<td>11.6° ± 0.7°</td>
<td>10.1° ± 1.1°</td>
<td>7.9° ± 0.8°</td>
<td></td>
</tr>
<tr>
<td></td>
<td>( h (\Delta = 15^\circ) )</td>
<td>( h (\Delta = 15^\circ) )</td>
<td>( h (\Delta = 20^\circ) )</td>
<td>( h (\Delta = 20^\circ) )</td>
</tr>
<tr>
<td>December</td>
<td>8.5° ± 1.2°</td>
<td>8.0°</td>
<td>7.6° ± 0.9°</td>
<td>6.2°</td>
</tr>
<tr>
<td>March/Sept</td>
<td>8.5° ± 1.2°</td>
<td>8.0°</td>
<td>7.6° ± 0.9°</td>
<td>6.2°</td>
</tr>
<tr>
<td>June</td>
<td>8.5° ± 1.2°</td>
<td>8.0°</td>
<td>7.6° ± 0.9°</td>
<td>6.2°</td>
</tr>
</tbody>
</table>

\(^{15}\) I owe specific numerical values for \( h \pm \sigma \) and the permission to use them in publications to a generous personal communication from Schaefer in November 1999; see also R. Krauss, “An Egyptian Chronology from Dynasties XIII to XXV”, in: Bietak, *SCIEM Vienna 2003*, n. 25; in press.
Negative and Positive Errors in Lunar Observation

Provided the weather was fine, old crescent ought to have been always visible at dawn of a LD 29. The critical day was LD 30. If the crescent was still visible at dawn of a LD 30, then the current lunar month had 30 days and the following lunar month began on the next calendar day. If the crescent was not visible at dawn of LD 30, then a new lunar month had begun and the expired lunar month had 29 days. The new crescent appears on the second or third calendar day after morning invisibility; an observer could determine the first day of invisibility with certainty only when he had been able to see the crescent on the previous morning. According to Parker, mistakes could occur on either day: “An Egyptian lunar date as given in the civil calendar and as calculated by modern tables may lack agreement by a day . . . due to faulty observation or any other reason”. 16 Parker left open whether there is a 50% chance that a lunar date is correct, or whether it is more probable that a lunar date is correct than wrong. Nevertheless, it is clear that Egyptian lunar dates exhibit random qualities, and therefore analysis of them mandates taking into consideration the mathematical probability of correct and mistaken lunar dates.

By definition, an ancient lunar date is “correct” if it is confirmed by modern astronomical computation. A Egyptian lunar date is negatively (or positively) incorrect if the respective lunar phase is one day too early (or too late). A negative error results when the observer does not see an old crescent that is visible under favorable meteorological conditions somewhere else. A negatively incorrect lunar date implies the beginning of an Egyptian lunar month one day too early. A positive error implies a delay of the beginning of an Egyptian lunar month by one day, i.e. the month would begin one day too late. A positive error should not result from direct observation, because a crescent which is not present cannot be seen. A positive error may occur on a cloudy day when the observer guesses that the crescent is present above the clouds. Late or early lunar dates are evidently not symmetrical errors; therefore the likelihood of each occurring should not be the same.

---

Error Quotas in Lunar Dates

The three possible sources of error in Egyptian old crescent observation are: a) the observer himself, who might falsify data; b) observational difficulties when the crescent is in the zone of uncertainty; c) observational difficulties resulting from unfavourable weather conditions, i.e., haziness or overcast skies due to clouds or a sandstorm. Presumably the accuracy of Egyptian old crescent observation was the same as Babylonian new crescent observation. In both cultures observations were made under similar meteorological conditions by experienced observers. C. Schoch and P. H. Huber investigated the accuracy of Babylonian lunar observation. They concluded that at least 85% of the recorded lunar dates were correct new crescent observations. Recent analysis suggests that Schoch used not only observed crescents, but predicted ones as well, whereas Huber’s data consist of observed crescents only.

F. R. Stephenson’s team analysed the circumstances of visibility for 209 observed Babylonian new crescents published by Hunger. When topocentric lunar positions were plotted against different versions of the geocentric visibility lines of Schoch, 8 of 209 crescents were below the visibility line. If geocentric lunar positions are plotted, only 2 crescents are to be found just below Schaefer’s visibility line, which if slightly adjusted, includes them also.

According to Schaefer’s criteria, ca. 10% of the 209 new crescents were sighted one day too late, presumably because of high extinction or some other reason. Thus the relative frequency of negative errors in these 209 Babylonian crescent observations is ca. 10%. The 95% confidence interval for the true probability of negative errors in a sample of 209 new crescents is 6% to 14%. Correspondingly it can be expected that 86% to 94% of Egyptian old crescent observations were correct, the quota of negative errors stemming from extinction being 6% to 14%.

21 Cf. n. 20.
22 Sachs & Hunger, Diaries.
This result is supported by a computation (sic) of about 150 old crescents for the years between 2001 and 2013 AD at the latitude of Illahun, yielding about 84% crescents (95% confidence interval: 78% to 90%) that should (have) be(en) visible without difficulty; about 16% of the crescents (95% confidence interval: 10% to 22%) would (have) be(en) situated within the zone of uncertainty.  

Presuming that high and low extinction are equally possible, it is to be expected that in 84% + 8% = 92% of the cases (95% confidence interval: 89% to 94%) the sightings would (have) be(en) correct, and in 8% (95% confidence interval: 5% to 11%) negatively incorrect. Thus it may be expected that under favourable weather conditions Babylonian and Egyptian crescent observations yielded ca. 90% correct lunar dates and ca. 10% negatively incorrect ones.

In the 1990’s Doggett and Schaefer organised “moon watches” to establish the Lunar Date Line for specific months. Their evidence for negative mistakes is indirect:24 “Of 520 negative reports, 5 were made by observers who missed an easy sighting on the following night. We suspect the rate of negative errors is greater (and probably much greater) than 1%”. The evidence for positive mistakes is direct: “Of the 20 observers in the northeast [of North America where the moon should not have become visible], 3 reported sighting the Moon. In all three cases, the reported time of sighting, orientation of the horns, and direction of the Moon were grossly in error. The large errors in reported details confirm that these three observations were positive errors. From our small sample [from Moonwatch 5], the positive error rate is 15%”. But, the three reports might just as well be spurious; in fact, no modern series of observations provides a reliable basis for extrapolating the quality of professional ancient Egyptian (and Babylonian) old (and new) crescent observations.

23 Krauss (n. 15).
Mistakenly Conjectured Lunar Dates

If the sky is overcast, visibility or invisibility of the moon has to be conjectured. There are statistics available for the average monthly cloudiness at Egyptian sites. The mean cloudiness decreases between the Delta and UE. Presuming the climate in Egypt has not changed since the end of the OK, modern regional conditions are applicable to the MK. Around Illahun the yearly mean cloudiness amounts to 20%, i.e. during the year the probability that clouds obscure old crescent amounts to $p = 0.2$, complemented by the probability of $q = 0.8$ that old crescent is visible. Under these circumstances it is to expected that over the years, at most ca. 20% of the old crescents went unobserved.

The proportion between lunar months of 29 and 30 days is 47:53; the total of 20% old crescents on overcast days divide into 9.4% old crescents on a LD 29 and 10.6% on a LD 30. On a overcast LD 29, the assumption that the crescent is present is correct, the opposite supposition negatively incorrect. Thus 4.7% of all lunar dates are correct and 4.7% negatively incorrect. If it is a LD 30 and the sky is overcast, then the assumption concerning the presence of the crescent is (a) correct, and the opposite assumption (b) negatively incorrect. If it is not a LD 30 but rather a LD 1 of the next lunar month, then the assumption that the crescent is present is (c) positively incorrect and the opposite assumption (d) correct. These possibilities result in 5.3% correct and 2.65% negatively or positively incorrect lunar dates each. Thus the 20% conjectured lunar dates divide into 10% correct dates, 7.35% negatively incorrect and 2.65% positively incorrect dates. Altogether (20% conjectured and 80% observed crescents) there are 82% correct dates, 15.35% negatively, and 2.65% positively incorrect dates. The percentages of correct and incorrect observations following from 20% at Illahun and 12.5% conjectures at Luxor are expressed in Table III. 8.2 as rounded decimal values.

---

26 For example the mean yearly cloudiness in Cairo amounts to 2 octas or 25%, in Luxor to 1 octa or 12.5%, (cf. n. 25).
28 The result was obtained by first computing the probabilities that during 62 lunar months or ca. 5 years in exactly 0, 1, 2, 3...62 instances old crescent was hidden by clouds. According to standard procedure it follows that the crescent was hidden in at most 12 to 14 of altogether 62 instances, corresponding to a mean of ca. 20%.
Figs. III. 8.1–3 (below) present the observability of the Illahun lunar dates in simplified schemes, according to three different absolute dates proposed for year of 1 Amenemhet III. The lunar positions are plotted against the visibility line of Schaefer. To avoid a three-dimensional representation only one visibility line is used and each crescent is plotted against it, as if it were its own visibility line. Different values for Δt are considered, resulting in different positions of one and the same crescent; the positions are represented as a single line corresponding to a difference in Δt of roughly ± 1 h.

Fig. III. 8.1 represents the positions of the old crescents when the Illahun lunar dates (ILD) are computed as if 1 Amenemhet III = 1844/43 BC. Fifteen of 21 crescents would have been observable above the visibility line. There would have been one negatively incorrect observation, since crescent ILD 10 should have been visible in position 10*. The crescents ILD 6 and 12 would have been just below the visibility line, whereas ILD 13, 14 and 15 would have been far below, altogether corresponding to five positively incorrect observations.

Fig. III. 8.2 shows that for 1 Amenemhet III = 1819/18 BC, the two crescents ILD 2 and 16 would have been negatively incorrect observations. 19 of 21 ILD would have been observable above the visibility line and none below.

Fig. III. 8.3 demonstrates that for 1 Amenemhet III = 1794/93 BC sixteen crescents would have been visible, two would have been unobservable as positively incorrect and three would have been missed as negatively incorrect.

The situation changes if P. J. Huber is followed with Δt computed according to a formula of Morrison and Stephenson. Then Δt is 12.6 h, 29

<table>
<thead>
<tr>
<th>Conjectures</th>
<th>Correct</th>
<th>Negatively Incorrect</th>
<th>Positively Incorrect</th>
</tr>
</thead>
<tbody>
<tr>
<td>20%</td>
<td>0.82</td>
<td>0.153</td>
<td>0.026</td>
</tr>
<tr>
<td>12.5%</td>
<td>0.85</td>
<td>0.134</td>
<td>0.016</td>
</tr>
</tbody>
</table>


LUNAR DATES

Fig. III. 8.1

Fig. III. 8.2
instead of Spencer Jones’s 10.56 h for ca. 1800 BC. The increased value for $\Delta t$ results in a decrease of lunar altitude at the moment when the centre of the sun is in the horizon. In other words, if the larger $\Delta t$ is presumed, those crescents in Figs. III. 8.1–3 that are just below the visibility line were definitely below it. Of interest is ILD 13 in Fig. III. 8.2, because it is close to the lower limit of visibility. This crescent would have tended to be visible if $\Delta t \leq 12.6$ h, invisible if $\Delta t > 12.6$ h.

**Partial Repetition of Lunar Dates after 25 Egyptian Years**

The lunar positions represented in Figs. III. 8.1–3 are 25 Egyptian years apart; contrary to expectation the positions differ markedly with respect to the visibility line. Egyptologists generally assume that lunar dates repeat after 25 Egyptian years, because 25 Egyptian years

---

correspond to 309 mean (synodic) lunar months of 29.53059 days each, the difference being only about an hour:32

25 Egyptian years = 25 × 365 days = 9125 days = 309 mean synodic months = 309 × 29.53059 days = 9125 days minus 1 hour and 7 minutes.33

Actually an observer counts either 29 or 30 full days in a lunar month and arrives at the length of the mean synodic month by calculation based on the observation of a great number of lunar months of either 29 or 30 days.

A lunar date repeats on the same calendar day, if 9125 days comprise 309 lunar months of which 164 are lunar months of 30 days and 145 are lunar months of 29 days: (164 × 30 days) + (145 × 29 days) = 4920 days + 4205 days = 9125 days. Because the movement of the moon is irregular, there can be 165 lunar months of 30 days and 144 lunar months of 29 days in a series of 309 lunar months. If so, a lunar date does not repeat on the same calendar day after 25 years = 9125 days, but rather after 9126 days.34 Or if there are 163 lunar months of 30 days and 146 lunar months of 29 days in a series of 309 lunar months, then a lunar date does not repeat after 25 years on the same calendar day, but rather after 9124 days.

Apparently the irregularity results because the mean synodic movement (a) comprises (b) the anomalistic and (c) draconitic movement of the moon, which do not share a common period of 9125 days = 25 Egyptian years. The mean anomalistic velocity is not the same after 25 years, whereas the mean draconitic movement results in a different latitude of the moon.

9125 days = (a) 309 × 29.53059 d + 0.04 d =
(b) 331 × 27.55455 d + 4.44 d =
(c) 335 × 27.21222 d + 8.91 d

On average only about 70% of the dates in a set repeat on the same day after a single 25 year shift.35 For multiples of 25 years, percentages

---

32 So for example, Beckerath, Chronologie, 48–49.
33 Within the sidereal and synodic months the moon travels at a mean velocity of 13.176° per day. Within 25 Egyptian years = 24.982 sidereal years, the sun travels in the mean 24 × 360° + 353.683°, whereas the moon travels 333 × 360° + 354.272°. In 25 Egyptian years the positions of sun and moon have decreased by about 6.317° and 5.728° respectively, whereas their original distance has decreased only by about 0.52°, i.e. the distance that the moon travels in an hour.
34 For a specific example see Krauss, in: Bietak, SCIEM Haindorf 2001, 190–192.
of correct repetitions decrease. Shifts of $2 \times 25$ and $3 \times 25$ years yield exactly repeated dates in only 50\% of the cases.\textsuperscript{36} Under these premises a large set of Egyptian lunar dates tends to have one solution with a maximum of correct dates whereas shifts of $\pm 25$ years have less correct dates. This is exemplified by 37 alternative solutions for the Illahun lunar dates between 2286 and 1387 BC. The calculations use 37 alternatives for 1 Amenemhet III, each separated by 25 years from the next.

As Fig. III. 8.4 shows, the alternatives differ in the percentages of correct and incorrect dates, both negative and positive. There is one

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{fig_iii_8_4.png}
\caption{Fig. III. 8.4}
\end{figure}

\textsuperscript{36} Krauss, \textit{Sothis}, 27.
set with ca. 90% correct dates (1 Amenemhet III = 1819/18 BC), whereas the remaining 10% are negatively incorrect. There are seven sets with 60% to 80% correct dates and varying percentages of negatively and positively incorrect dates. The other sets display small percentages of correct dates, whereas their percentages of negatively or positively incorrect dates are high. The trend is clearly to more negatively incorrect dates for shifts backwards and to positively incorrect dates for shifts forwards. An increase in the number of correct lunar dates after multiples of 150 Egyptian years is to be noted. This results from the fact that the synodic, anomalistic, and draconitic months have an approximate common period of 150 Egyptian years. Nevertheless, instead of yielding a series of various solutions, which are all astro-
nomically equally possible, there is practically only one astronomically workable solution for the Illahun lunar dates.

The different astronomical possibilities can be evaluated by computing the respective probabilities. The appropriate tool to deal with lunar dates and their three properties is the trinomial formula for probability $P$:

$$P = \frac{n!}{x!y!z!} \times p_1^x \times p_2^y \times p_3^z$$

$n = x + y + z$; $x =$ correct lunar dates; $y =$ negatively incorrect lunar dates; $z =$ positively incorrect lunar dates; $p_1, p_2,$ and $p_3$ are the probabilities of $x$, $y$ and $z$ (see Table III. 8.2). Table III. 8.3 contains the respective probabilities if the ILD are computed for different first years of 1 Amenemhet III, including Luft’s suggestion that this might be 1855/54 BC.\(^{37}\) As Table III. 8.3 implies, only 1 Amenemhet III = 1819 BC ± 25 years is by any means probable (cf. also Figs. III. 8.1–3).

<table>
<thead>
<tr>
<th>Table III. 8.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Amenemhet III correct</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>1869/68 BC</td>
</tr>
<tr>
<td>1855/54 (Luft)</td>
</tr>
<tr>
<td>1844/43</td>
</tr>
<tr>
<td>1819/18</td>
</tr>
<tr>
<td>1794/93</td>
</tr>
<tr>
<td>1769/68</td>
</tr>
</tbody>
</table>

\(^{37}\) Luft, Fixierung, 228; cf. below Krauss, Chapter III. 10.
Dates of a Lunar Feast (Tepi Shemu) in the Bubastide Period

The reign of Psammetichus I began in February 664 BC and the reign of Taharqa, 26 years earlier, in 690 BC. According to the Tang-i Var inscription, Shebitku ruled from at least 707/706 BC. The highest attested date for Shabaka is year 15. Thus 1 Shabaka corresponds to 722/721 BC at the latest. It is possible, but not assured that Shabaka defeated Bocchoris in the former’s year 2; thus 6 Bocchoris might be 723/722 BC = 2 Shabaka or slightly earlier.

The Bocchoris-Apis was the successor of the Apis that died in 37 Shoshenq V. According to data concerning the three Apis bulls buried between 28 Shoshenq III and 37 Shoshenq V, and presuming that Pami’s reign ended in a year 7, 95 years elapsed between 1 Shoshenq III and 37 Shoshenq V (inclusive). If the Bocchoris-Apis was born very soon after the death of its predecessor and had a life span of 26 years at most (the maximum life span attested), the upper limit for 1 Shoshenq III is 723/722 BC + 26 + 95 = 844/843 BC. This limit would need to be adjusted upwards, if Shebitku’s reign began before 707/706 BC and/or Shabaka occupied the throne longer than 15 years.

When reckoning the lower limit, it must be borne in mind that Shepsesre Tefnakhte may or may not have ruled in Memphis as predecessor of Bocchoris for at least 7 full years. Tefnakhte’s initial takeover of Memphis occurred at the earliest in the course of 38 Shoshenq V. In his 20th (?) year Piye drove an apparently non-royal Tefnakhte out of Memphis; subsequently the kings Shepsesre Tefnakhte and Bocchoris may have ruled for at least 12 full years (7+5) or more before the death of the Bocchoris-Apis. Then, the lower limit for 1 Shoshenq III would be ca. 722 BC + 12 + 2 (?) + 95 = 831 BC or 722 BC + 5 + 2 (?) + 95 = 824 BC, if Shepsesre Tefnakhte did not rule as king in Memphis.

Aston concluded that the rival kings Takelot II and Petubaste I ruled Thebes when Shoshenq III reigned in LE. The synchronism 5 Petubaste

---

38 For the TIP cf. above Jansen-Winkeln, Chapter II. 9, and Zibelius-Chen, Chapter II. 12.
39 Krauss (n. 15).
I = 12 [Shoshenq III] is attested while [4 Takelot II = 1 Shoshenq III] or [5 Takelot II = 1 Shoshenq III] is deducible.31 If 1 Shoshenq III lies between 844 and 824 BC, then 1 Petubaste I falls in 837 to 817 BC and 1 Takelot II in 848 to 827 BC. The lunar dates of the Tepi Shemu feast provide a means for determining exact dates.32 The feast is documented at Karnak from the NK to the Saite Period,33 according to MHC 1451ff., it began on LD 1 and lasted till LD 5. Parker computed the latest known example which is dated to 14 Psammetichus I.44 Vernus and Krauss followed Parker to interpret Bubastide examples of the Tepi Shemu feast as lunar dates.45 According to Vernus and Kruchten, the inductions of priests took place during the Tepi Shemu feast.46 Bubastide examples of the *Tepi Shemu feast and/or of inductions are:47

*(A) 11 Takelot II: I Shemu 11  (B) 7 Petubaste I: I Shemu [1]
(C) 8 Petubaste I: I Shemu 19  *(D) 39 Shoshenq III: I Shemu 26

The figures in Table III. 8.4 assume that 11 Takelot II fell between 838 and 817 BC. It lists the lunar days which could correspond to the explicit Tepi Shemu feast date A; there are six possible years in which LD 1 to 5 (± 1 day) corresponded to A (bold type). (Lunar days are counted forward as positive from lunar day 1 to 15; starting with the last lunar day, whether day 30 or 29, the lunar days are counted backward as negative down to lunar day 16.)

Kruchten identified D as a day of the feast of Tepi Shemu.48 The distance between A and D amounts either to 32 a + 15 d (if 5 Takelot II = 1 Shoshenq III) or to 33 a + 15 d (if 4 Takelot II = 1 Shoshenq III). In the latter case the lunar day of D is ca. 11 days later than that of A, i.e. D is not the date of the Tepi Shemu feast, and neither is B or C. In the former case the lunar day of D nearly coincides with that of A; thus A and D are days of the Tepi Shemu feast as well as the dates B and C. Table III. 8.5 contains the acceptable and the

---

32 Krauss (n. 15); Krauss, Sothis, 168–177, is outdated.
33 Schott, Festdaten, 104–105.
34 Parker, Oracle Papyrus, 7–8.
36 Vernus (n. 45); Kruchten, Annales, 244 n. 3.
37 G. Daressy, RecTrav 35 (1913), 130; Kruchten, Annales, 239–240: B–D.
38 Kruchten, Annales, 80.—Cf. also Spalinger, “Dating”, 393.
nearest unacceptable possibilities which result when the lunar day equivalents of the feast dates of Shoshenq III and Petubaste I are also computed and correlated with those of Takelot II within the limits for their first regnal years.

There are only two acceptable alternatives: either 1 Takelot II corresponds to 845 or to 834 BC. In 834 BC two of four lunar dates would have been negatively incorrect (cc--), but in 845 BC there is only one error of this kind (ccc–). Table III. 8.6 lists the probabilities for the combinations of correct (c) and negatively incorrect (–) lunar dates for Luxor as the place where the observations were made (see Table III. 8.2).

1 Takelot II = 845 BC is definitely preferable, because it is far more probable that exactly 1, instead of exactly 2, of 4 lunar dates are too early. If Takelot III = 845 BC, the Julian calendar equivalences for A–D are:
Lunar Dates

*(A) 11 Takelot II: = LD 30 = November 25, 835 BC
I Shemu 11
(B) 7 Petubaste I: = LD 5 = November 13, 828 BC
I Shemu [1]
(C) 8 Petubaste I: = LD 4 = November 11, 827 BC
I Shemu 19
*(D) 39 Shoshenq III: = LD 1 = December 2, 803 BC
I Shemu 26

The figures imply that 1 Shoshenq III = 841 BC and 38 Shoshenq V = 743 BC, so that ca. 21 to 20 years elapsed between 38 Shoshenq V and 6 Bocchoris. (Kitchen maintains that Shoshenq III ruled after Takelot II.49 Under his premise the Tepi Shemu dates A–D result in a single astronomical solution: 1 Takelot II = 856 BC; dead reckoning yields ca. 951/953 BC instead of 945 BC for 1 Shoshenq I which is not acceptable.)

The Lunar wrš Date in Year 5 of Shoshenq [I]50

The larger Dakhla stela can be ascribed to Shoshenq I with confidence.51 The text mentions a wrš feast on the occasion of a procession of the god Seth on IV Peret 25 in 5 [Shoshenq] I.52 According to other attestations, wrš designates the lunar month and/or a lunar day, possibly day 1: Demotic papyrus CG Cairo 30801;53 magical papyrus London-Leiden (X 22 and XXI 19);54 Spiegelberg, Mythus vom Sonnenauge, VIII 20;55 Ny Carlsberg Tebtunis-Papyri;56 Demotic Chronicle II,

50 For Dyn. 21 see above Jansen-Winkeln, Chapter II.9.
52 A. Gardiner, JE 419 (1933), 19–30.
building inscription of Parthenios (Moscow stela). Thus it is feasible to search for a match between the date mentioned and a lunar day appropriate for a procession. The sum of the highest attested regnal dates for Osorkon II, Takelot I, Osorkon I, and Shoshenq I, added to 841 BC as year 1 of Shoshenq III, yields 934 BC at the latest for year 5 of Shoshenq I. Between 950 and 930 BC, only IV Peret 25 = December 5 in 939 BC is an acceptable match for the wrircraft date as shown in Table III. 8.7. Consequently 1 Shoshenq I began in November 943 BC at the latest, and at the earliest in December 944 BC.

The stela records a judgment on the ownership of a well in Dakhla. According to Gardiner’s understanding of the text, the mother of the claimant is mentioned as the owner in a document dated to year 19 of a king Psusennes. Because at least 80 years separate 5 Shoshenq I and 19 Psusennes I, it is unlikely that the document was written in 19 Psusennes I, but rather in 19 Psusennes II.

Three Lunar Dates of the Tepi Shemu Feast in Dyn. 21

Two of the priestly inductions known from Dyn. 21 apparently occurred during the lunar Tepi Shemu feast: (a) 2 ‘Akheperreš setepenreš: I Shemu 20, induction of a man, (b) whose son was inducted in 17 Siamun : I Shemu [1]. E. Young assumed that the two inductions would have been separated by 20 to 30 years, i.e. a generation. Provided that both dates correspond to lunar days 1 to 5, at least 21 y minus 19 d separate them; other astronomical possibilities are 24, 27 and 30 years. The distance of 21 years is methodologically preferable, because young men were inducted when they were 20 years old; furthermore a distance of 21 years yields 6 regnal years for ‘Akheperreš setepenreš, as in the Manethonian tradition for “Osochor”, successor of Amenemope.

58 W. Spiegelberg, ZÄS 66 (1930), 422–443; Borchart, Mittel, 39. Parker, Calendars, 18.
59 Gardiner (n. 52), 28.
61 E. Young, JARCE 2 (1963), 99–111.
62 Induction date b cannot be later than LD 3, because the 9th lunar month could not begin before IV Peret 28. On the other hand, the distance between induction dates a and b implies that b is 3 to 2 lunar days earlier than a.
63 Kruchten, Annales, 206.
Provided that 1 Shoshenq I = 943 BC and that Psusennes II ruled at least 19 years, induction date b occurred at the earliest in 962 BC.

Table III. 8.8 contains the LD equivalents for dates a and b. Between 981 and 962 BC there are three viable alternatives (bold type). Only one of them is left, if the oracular text no. 6 of Djehutimose is taken into consideration. According to Kruchten, the oracular text implies that the last and fifth day of Tepi Shemu fell on I Shemu 10 (or 9 or 8) in year 3 of either Amenemope, Osorkon, or Siamun. If the induction dates (a) and (b) are correctly ascribed to Osorkon and Siamun in relative chronology, then the oracular date would correspond to LD 8–10 in 3 Siamun. It would correspond to LD 15–18 in 3 Amenemope if he ruled 9 full years and a fraction of a year, as usually assumed; the date would correspond to LD 4–6 if 11 years are ascribed to Amenemope. By contrast the oracular date coincides with LD 1 to 5 in year 3 of Osorkon, if induction date (a) corresponds to LD 1 to 5, i.e. the oracular date must be attributed to Osorkon.

In table III. 8.8 only years 970, 973 and 981 BC suit induction date (b) in 17 Siamun, and 990, 993 and 1001 BC for induction date (a) in 2 ‘Akheperre’ (Osorkon). The corresponding distances between 17 Siamun and 1 Shoshenq I = 943 BC amount to 26, 29 or 37 years. If a reign of 19 years is supposed for Siamun on the basis of Manetho, then 24, 27 or 35 years are possible for Psusennes II. But because Djehutimose oracle date no. 6 does not work with 992 and 1000 BC as year 3 of ‘Akheperre’ (Osorkon), we are left with 989 BC = 3 ‘Akheperre’ (Osorkon) as the only possibility.

---

64 The distance is throughout 21 years minus 19 days.

65 J.-M. Kruchten, Le grand texte oraculaire de Djehoutymose: intendant du domaine d’Amon sous le pontificat de Pinedjem II (Brussels: MRE 5, 1986), 237.

66 Cf. above Jansen-Winkeln, Chapter II. 9.
About 85 years elapsed between 1 Smendes and 10 Amenemope. 200 to 201 years separated the accession of Ramesses II and the latest attestation of Ramesses XI. If these figures are added to 992/991 as year 1 of ‘Akheperre Osorkon, then 1 Ramesses II fell in 1279/1277 BC. The ship’s log pLeiden I 350 records a LD 1 that coincided with II peret 27 in 52 Ramesses II; on that day the ship moored in Piramesses, hence the designation Piramesses date. This lunar date can be combined with dates that refer to the feast-of-the-valley. According to MHC 135 the feast began on LD 1 in II Shemu. On that day the cult statue of Amun crossed the Nile, went to the temple of Djeser-akhet, toured Deir el-Bahri in a procession, and spent the night in the funer-

---

*Ramesside Lunar Dates*

About 85 years elapsed between 1 Smendes and 10 Amenemope. 200 to 201 years separated the accession of Ramesses II and the latest attestation of Ramesses XI. If these figures are added to 992/991 as year 1 of ‘Akheperre Osorkon, then 1 Ramesses II fell in 1279/1277 BC. The ship’s log pLeiden I 350 records a LD 1 that coincided with II peret 27 in 52 Ramesses II; on that day the ship moored in Piramesses, hence the designation Piramesses date. This lunar date can be combined with dates that refer to the feast-of-the-valley. According to MHC 135 the feast began on LD 1 in II Shemu. On that day the cult statue of Amun crossed the Nile, went to the temple of Djeser-akhet, toured Deir el-Bahri in a procession, and spent the night in the funer-

---

67 For the NK see above Hornung, Chapter II. 8.
69 For a preliminary analysis under the outdated supposition that the reign of Ramesses V extended into a year 5, see Krauss, *Sothis*, 136–144.
70 *Urk.* IV, 929.
ary temple of the ruling king\textsuperscript{71} where Amun received offerings on LD 1 and 2, according to \textit{MHC} 159. Four Dyn. 19/20 graffiti from the Djeser-akhet temple in Deir el Bahri (DB) attest spending the night or receiving offerings in II or III Shemu;\textsuperscript{72} the dates imply lunar days 1 or 2.

DB 3: year 7, II Shemu 28; Amun rests in the funerary temple of Twosre\textsuperscript{73}
DB 10: year 7, III Shemu 9; Amun rests in the funerary temple of Ramesses III\textsuperscript{74}
DB 9: year 6, III Shemu 9; Amun rests in the funerary temple of Wesermare setepen ///\textsuperscript{75}
DB 32: year 3, II Shemu 20; Amun rests in the funerary temple of Ramesses II

Combining the Piramesses date with DB 3 and DB 10 allows the chronology between Ramesses II and Twosre to be fixed.\textsuperscript{76} According to DB 10 Amun rested in the funerary temple of Ramesses III in a year 7, presumably of Ramesses III himself.\textsuperscript{77} The dead-reckoned minimum distance between DB 3 and DB 10 amounts to either 9 years + 11 days or 10 a + 11 d. The astronomically correct distance between DB 3 and DB 10 is 10 a + 11 d = 124 LM − 0.8 d = 3661 days, resulting in a correct LD 2 for DB 10, provided that 1 Ramesses II = 1279 BC. According to oCG 25293 the highest attested dates for Queen Twosre are either IV \text{[prt x]} and \text{[I]} Shemu \text{[y]} or IV \text{[Shemu x]} and \text{[IV]} Shemu \text{[y]} of regnal year 8;\textsuperscript{78} thus the queen ruled either 323 ± 15 days or 412 ± 15 days subsequent to the date of DB 3. Sethnakhte ruled into a year 3, corresponding to a reign of at least 731 days or an arithmetical mean of 912 days. There are 2234 days between Ramesses III’s accession and DB 10. These distances add up to 323 ± 15 (412 ± 15) days + 731 to 912 days + 2234 days = 3288 ± 15 days to 3558 ± 15 days, approximating the distance of 3661 days between the lunar dates of DB 3 and DB 10.

\textsuperscript{71} Or in the funerary temple of an earlier king, if the ruling king had not yet a temple of his own.
\textsuperscript{72} Marciniak, \textit{Inscriptions}.—Peden, \textit{Graffiti}, 106–107, 120–123.
\textsuperscript{73} \textit{KRI} IV 376.
\textsuperscript{74} \textit{KRI} V 337.
\textsuperscript{75} \textit{KRI} VI 102; but cf. Peden, \textit{Graffiti}, 122 n. 395.
\textsuperscript{76} For details, see R. Krauss, \textit{SAK} 24 (1997), 175–177.
\textsuperscript{77} Thus also \textit{KRI} IV, 376.—Cf. table III. 10.10 for the astronomical possibility that DB 10 belongs to Ramesses VII.
\textsuperscript{78} Beckerath, \textit{Chronologie NR}, 74–76.
If Amenmesses was a usurper in control of Nubia and UE in the mid-reign of Sety II, then the interval between the Piramesses date and DB 3 amounts to 36 a + 121 d = 449 LM + 2 d. This figure corresponds to the proper interval between a first LD and a LD 1–2 as a feast-of-the-valley date (± 1 day). If, by contrast, the interval between the two dates is lengthened by a chronologically independent 4 year reign of Amenmesses, then the interval amounts to 40 a + 121 d = 498 LM + 15 d: then DB 3 would correspond to a LD 15 (full moon), but not to a LD 1 or 2 as expected. If the distance is shortened, then DB 3 would coincide with a LD 5 or 23. It follows that the reign of Sety II subsumes that of Amenmesses.

Table III. 8.9 presents astronomically possible years for DB 3, 9, 10, and 32, provided that 1 Ramesses II = 1279 BC and that the only unresolved issue in Ramesside chronology is whether Ramesses’ VII reign extended into a year 9 and/or Ramesses’ VIII reign into a year 2. Possible years are also given for DB 31, a graffito dated to year 22, II Shemu 22 (sic); written “during the feast-of-the-valley”. Since neither the resting of Amun nor offerings to him are mentioned, it is unclear whether the date can be considered to be a LD 1–2.

Table III. 8.9 demonstrates that DB 9 is attributable to Siptah (sic) and DB 32 to Ramesses VI, whereas DB 10 could be a date of Ramesses III or VII. The attribution of DB 31 to Ramesses XI is problematic, because a rock fall might have already destroyed Djeser-akhet during his reign.79 If attributed to Ramesses II, then the date relates to a LD 3 which might have been a feast day in early Dyn. 19. If attributed to Ramesses III, “during the feast-of-the-valley” could relate to all of (lunar) II Shemu as the month of the feast. The Julian calendar equivalents for the lunar days of the graffiti are:

<table>
<thead>
<tr>
<th>DB 9: III Shemu 9, Year 6 [Siptah]</th>
<th>LD 2: April 21, 1192 BC</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB 3: II Shemu 28, Year 7, Twosre: [Ramesses III]</td>
<td>LD 2: April 10, 1191</td>
</tr>
<tr>
<td>DB 10: III Shemu 9, Year 7, [Ramesses VI]</td>
<td>LD 2: April 18, 1181</td>
</tr>
<tr>
<td>DB 32: II Shemu 20, Year 3 [Ramesses VI]</td>
<td>LD 2: March 21, 1143</td>
</tr>
<tr>
<td>[DB 31: II Schemu 22, Year 22 [Ramesses XI]</td>
<td>LD 2: March 8, 1085</td>
</tr>
</tbody>
</table>

The DB-graffiti document the feast-of-the-valley in II and III Shemu, whereas in MHC 135+159, only II Shemu is mentioned. As Table III. 8.10 shows, the feast dates fall in LM 11 or 10. The respective LM could have been determined by the beginning of the first lunar month within the civil year. The feast might have begun on LD 1 in LM 11, if the first LM in the civil year began on I Akhet 15 at the latest; if after I Akhet 15, then the feast began on LD 1 in LM 10. The reference to II Shemu in MHC might reflect the situation in the year when the calendar was devised.

The lunar dates of DB 3, 9, 10 and 32 (DB 31 being not considered) are astronomically only compatible with 1 Ramesses II = 1314 or 1279 BC. In Table III. 8.11 all alternatives between 1304 and 1265 BC are tested. If 1 Ramesses II were 1290 or 1265 BC, then the DB graffiti dates would coincide with LD 3–4 (positive errors), instead of LD 1–2. If 1 Ramesses II were 1268 BC, the graffiti dates would correspond to LD 1–2, but the Piramesses date would be off by +2 days (positive error). It follows that only 1304 and 1279 BC are astronomically possible for 1 Ramesses II. But 1304 BC is excluded on the basis of the relative chronology of Dyns. 19 to 21, whereas 1279 BC accords.80

---

80 Thus the observation of the Piramesses date was negatively incorrect, and for that reason A. Dodson (BiOr 57, 2000, 51 n. 5) suggested 1265 BC as year 1 of Ramesses

---

**Table III. 8.9**

<table>
<thead>
<tr>
<th>Ruler</th>
<th>DB 3</th>
<th>DB 9</th>
<th>DB 10</th>
<th>DB 32</th>
<th>DB 31</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ramesses II</td>
<td>27</td>
<td>–</td>
<td>7</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Merneptah</td>
<td>20</td>
<td>–</td>
<td>28</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>Sety II</td>
<td>27</td>
<td>–</td>
<td>6</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>Amenmesses</td>
<td>–</td>
<td>–</td>
<td>27</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>Siptah</td>
<td>2</td>
<td>–</td>
<td>10</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>Twosre</td>
<td>2</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>Sethnakhte</td>
<td>–</td>
<td>–</td>
<td>25</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>Ramesses III</td>
<td>21</td>
<td>2</td>
<td>28</td>
<td>26</td>
<td></td>
</tr>
<tr>
<td>Ramesses IV</td>
<td>6</td>
<td>–</td>
<td>14</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>Ramesses V</td>
<td>–</td>
<td>–</td>
<td>19</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>Ramesses VI</td>
<td>24</td>
<td>5</td>
<td>2</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>Ramesses VII</td>
<td>20</td>
<td>1</td>
<td>28</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>Ramesses VIII</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>Ramesses IX</td>
<td>27</td>
<td>9</td>
<td>6</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>Ramesses X</td>
<td>–</td>
<td>–</td>
<td>20</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>Ramesses XI</td>
<td>25</td>
<td>6</td>
<td>4</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>
Supplementary Lunar Dates

A visitor’s graffito, written at a pyramid in Saqqara on IV Shemu 24, in 34 Ramesses II attests the “day of the feast of Ptah-south-of-his-wall”; Peden presumed that the feast day was a public holiday. The distance between it and the Piramesses date shows that the feast day coincided with LD 4 or peret Sem, appropriate for a feast day of Memphite Ptah whose main priest was the Sem. Another visitor’s graffito from Saqqara attests two Memphite officials enjoying a stroll (swtwt) on II peret 25 in 47 Ramesses II. The absence from work of a treasury-scribe and a scribe of the vizier predicates a public holiday. The dates of these two graffiti coincide with the same lunar day and thus support, but do not prove that 1 Ramesses II = 1279 BC.

Table III. 8.10

<table>
<thead>
<tr>
<th>Graffito</th>
<th>LD 2</th>
<th>LM</th>
<th>LD 1 of LM 1</th>
<th>Graffito</th>
<th>LD 2</th>
<th>LM</th>
<th>LD 1 of LM 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB 9</td>
<td>III S 9 11</td>
<td>I A 13</td>
<td>DB 32 II S 20 10</td>
<td>I A 23</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DB 3</td>
<td>II S 28 11</td>
<td>I A 2</td>
<td>DB 10 III S 9 11</td>
<td>I A 1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table III. 8.11

<table>
<thead>
<tr>
<th>1 Ramesses II</th>
<th>LD of Pir</th>
<th>LD of DB 3</th>
<th>LD of DB 10</th>
<th>LD of Graffito Year 34</th>
<th>LD of Graffito Year 47</th>
</tr>
</thead>
<tbody>
<tr>
<td>1304 BC</td>
<td>−1</td>
<td>2</td>
<td>1</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>1290</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>1279</td>
<td>−1</td>
<td>2</td>
<td>2</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>1268</td>
<td>−2</td>
<td>1</td>
<td>−1</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>1265</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>6</td>
<td>5</td>
</tr>
</tbody>
</table>

II, or 1214 BC respectively as year of the Piramesses date when the observation would have been correct. But Egyptologists should be prepared to find now and then a negatively incorrect lunar date in their sources.

81 G. Jéquier, *Deux pyramides du Moyen Empire. Fouilles à Saqqarah* (Cairo, 1933), 13–15; *KRI* III, 436.
83 L. Borchardt, ΖΑΕΥ 70 (1934), 97–98, 100 n. 9; idem, *Mittel*, 52, speculated that the date was related to full moon.
A Lunar Date for the Foundation of Amarna?

R. A. Wells presumed that the axis of the Small Temple at Amarna (Hwt Jn) was aligned towards the sun when it rose over the entrance to the royal wadi on IV Peret 13 in 5 Akhenaten. On that day the king took an oath to found Akhetaten. It may be presumed that Akhenaten’s oath was followed by a foundation ceremony. If the ceremony took place on a LD 1 (attested for an earlier foundation ceremony of Thutmose III at Karnak (see below) and a later one of Ramesses II at Luxor), then the year would have been 1348 BC, when IV Peret 14 (March 6 Jul) coincided with a LD 1.

The Lunar Date of Amenhotep II

According to pSt. Petersburg 1116A, grain to brew beer for consumption on a LD1 was allotted at the earliest on III Shemu 6 and at the latest on III Shemu 9 in year 19 or 20 [of Amenhotep II]. Reckoning from the lunar dates of Thutmose III, Beckerath concluded that the LD 1 occurred close to III Shemu 9, provided (1) the papyrus dates to year 20, and (2) there was no coregency of Thutmose III and Amenhotep II. Parker objected to Beckerath’s conclusions on the following grounds: 1) In early 19th century Nubia brewing beer took 3 to 4 days. If 1 Thutmose III = 1490 BC and if there was no coregency, then 20 Amenhotep = 1417 BC. In that year LD 1 fell on III Shemu 8, providing insufficient time for brewing beer. 2) Grain of year 18 was allotted before II Shemu 17, a date corresponding to the beginning of May (Greg.) around 1400 BC, when grain from the harvest of the current year would have been available, the harvest being over before May (Greg.). It is not to be expected that grain of year 18 would still be in the granaries after the harvest of year 20 became available. Therefore the papyrus should date to year 19.

84 Murmanc & van Siclen, Stelae, 38–40, 48.
85 D. B. Redford, JEA 57 (1971), 114; cf. KRI III, 346.
86 R. Krauss, GM 103 (1988), 44.
Parker’s arguments are invalid. The NK sources oCG 25780; 8 and oCG 25782; 4, 7 report consumption of beer on the day after brewing.\(^91\) The grain harvest actually continued well into May (Greg.); at the beginning of the month deliveries from the new harvest would not yet have arrived at the granaries.\(^92\) Thus it is quite possible that pSt. Petersburg 1116A dates to year 20 of Amenhotep II. Provided 1 Thutmose III = 1479 BC, the alternatives for a LD 1 close to III Shemu 10 in 20 Amenhotep II are as shown in Table III. 8.12.

If the papyrus dates to year 19, then there was a coregency which lasted for 2y + 4m. But if to year 20, then there was a coregency of only four months. There was no coregency at all, if the death date of Thutmose III in the tomb of Amenemheb (TT 85) is emended from III Peret 30 to III *Akhet 30 to conform with IV Akhet 1 as accession date of Amenhotep II.

**Lunar Dates of Thutmose III**

In 1957 Parker computed the possible solutions for the Akhmenu foundation date under the traditional assumption that it took place in 24 Thutmose III on II peret 30, the day being a LD 1.\(^93\) In 1975 Wente argued that only the order for preparing the foundation ritual was given on II peret 30 and that LD 1 occurred on III peret 1;\(^94\) Parker criticized Wente’s interpretation.\(^95\) In 1986 Beckerath published a new translation of the text, based on a more complete copy.\(^96\) He concluded that

<table>
<thead>
<tr>
<th>year of Amenhotep II</th>
<th>LD 1 in III Shemu</th>
<th>duration of coregency</th>
</tr>
</thead>
<tbody>
<tr>
<td>19 = 1409 BC</td>
<td>11</td>
<td>2 years + 4 months</td>
</tr>
<tr>
<td>20 = 1406 BC</td>
<td>9</td>
<td>4 months or none</td>
</tr>
</tbody>
</table>

\(^92\) Cf. also Beckerath, *Chronologie*, 53.
\(^93\) R. A. Parker, *JNES* 16 (1957), 39–43.
the order for the foundation ritual was given on II peret 30 and that the ritual took place on the same day. In other words, if the proper day for the ritual was a LD 1, then the text implies that II Peret 30 was a LD 1.\textsuperscript{97} Parker, Wente and Beckerath relied on astronomical calculations that were based on the slightly outdated parameters of P. V. Neugebauer.\textsuperscript{98} According to computation with modern parameters, II Peret 30 was a LD 1 rather than an old crescent day in 1455 BC as year 24 of Thutmose III, corresponding to 1 Thutmose III = 1479 BC. We do justice to both uncertainties by reckoning with II Peret 30 as well as III Peret 1, as possible first lunar days.

The date of the Battle of Megiddo is (\textit{Urk. IV}, 657): \textit{rnpt-zp} 23, \textit{typy šmaš sw} 21, \textit{hrw ãš}b \textit{n pšdnjw r-mtj}:\textsuperscript{99} “Regnal year 23, I Shemu 21, day of the feast of lunar day 1, exactly.” Although the text asserts the exact coincidence of the civil date and a LD 1, Parker accepted Faulkner’s argument for emending the day to I Shemu 20.\textsuperscript{100} Faulkner had pointed out that Thutmose III arrived at Megiddo on I Shemu 19 and thus the battle “should” have taken place on the next day, I Shemu 20, a day that is not mentioned in the report. By contrast, Wente maintained that Helck “convincingly” demonstrated that no such emendation of the text is required.\textsuperscript{101} Whereas Beckerath accepted Wente’s judgment, Parker cited Spalinger who he believed had shown that “Helck’s argument lacks foundation.”\textsuperscript{102} Under these circumstances it is advisable to proceed using both possible dates for the Battle of Megiddo.

Table III. 8.13 shows that there are two astronomically workable possibilities: Either 1 Thutmose III = 1479 BC (Megiddo date = I Shemu 21, Karnak date = II Peret 30 or III Peret 1), or 1 Thutmose III = 1504 BC (Megiddo date = I Shemu 20, Karnak date = III Peret 1). It is impossible to reconcile 1 Thutmose III = 1504 BC with 1 Ramesses II = 1279 BC and 9 Amenhotep I = 1506 BC (see chapter III. 10); thus only 1 Thutmose III = 1479 BC remains. In that case

\textsuperscript{97} Cf. most recently Spalinger, “Dating”, 387–390.

\textsuperscript{98} Parker did his own computations; Wente used Parker’s computations. Beckerath asked for the assistance of astronomers who also used Neugebauer’s Tables; there are (copying?) mistakes in Beckerath’s figures.

\textsuperscript{99} For the “exact” feast of (lunar) \textit{wr}, see Quack (n. 55), 472.

\textsuperscript{100} Parker, \textit{Calendars}, 73; cf. idem, \textit{JNES} 16 (1956), 40, referring to R. O. Faulkner, \textit{JEI} 28 (1942), 4; 11.


\textsuperscript{102} Parker (n. 95), 146, citing A. J. Spalinger, \textit{MDAIK} 30 (1974), 221–229.
the battle was fought on I Shemu 21. The text’s assertion that the date corresponded to a LD 1 “exactly” can imply that both armies waited for the moon’s invisibility to go to battle.

The Lunar Date of the Ebers Calendar

According to the interpretation of both Parker and Hornung, the rising of Sothis and the first day of the lunar month web renpet coincided in regnal year 9 of Amenhotep I on III Shemu 9. As argued below in chapter III. 10, it is highly likely that this is correct. Nevertheless, for now we shall refrain from using III Shemu 9 in 9 Amenhotep I as a LD 1.

The Monthu Feast in pBoulaq 18 as a Lunar Date

Gardiner, Borchardt and Quirke read the royal name in pBoulaq 18/L as [Shk]-htp and in pBoulaq 18/S as fmn-m-ḥt stbk-ḥtp, identifying this king with Sobekhotep II, the predecessor of Khendjer according to TC. By contrast, Ryholt recognizes only “doubtful traces”, arguing that the TC’s Sobekhotep II was in fact the first ruler of Dyn. 13. pBoulaq 18/L,S/ attests a vizier Ankhew who is a known contemporary of Khendjer. By the reign of Sobekhotep III, Ankhew’s son Ressonb

<table>
<thead>
<tr>
<th>1 Th III</th>
<th>LD of I Shemu 21</th>
<th>Error</th>
<th>LD of I Shemu 20</th>
<th>Error</th>
<th>LD of II Peret 30</th>
<th>Error</th>
<th>LD of III Peret 1</th>
<th>Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>1504 BC</td>
<td>2</td>
<td>–</td>
<td>1</td>
<td>0</td>
<td>–1</td>
<td>+</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>1493</td>
<td>–1</td>
<td>+</td>
<td>–2</td>
<td>++</td>
<td>–2</td>
<td>++</td>
<td>–1</td>
<td>+</td>
</tr>
<tr>
<td>1490</td>
<td>2</td>
<td>–</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>–</td>
<td>3</td>
<td>–</td>
</tr>
<tr>
<td>1479</td>
<td>1</td>
<td>0</td>
<td>–1</td>
<td>+</td>
<td>1?</td>
<td>0?</td>
<td>1?</td>
<td>0?</td>
</tr>
<tr>
<td>1468</td>
<td>1</td>
<td>0</td>
<td>–1</td>
<td>+</td>
<td>–2</td>
<td>++</td>
<td>–1</td>
<td>+</td>
</tr>
<tr>
<td>1465</td>
<td>2</td>
<td>–</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>–</td>
<td>3</td>
<td>–</td>
</tr>
</tbody>
</table>

---

103 For the MK and SIP, see above Schneider, Chapter II. 7.
104 Cf. Beckerath, Zwischenzeit, 47–49.
105 S. Quirke, The Administration of Egypt in the Late Middle Kingdom (Whitstable, 1990), 27 n. 12.
106 Ryholt, Situation, 319.—Cf. above Schneider, Chapter II. 7.
had succeeded him as vizier, and thus pBoulaq 18 and the other sources that mention Ankhew can be dated prior to Sobekhotep III.\textsuperscript{107} The attribution of pBoulaq 18 to one of the kings between Khendjer and Sobekhotep III (Seth, Inyotef V or Imiramesha)\textsuperscript{108} is contradicted by the poor documentation for these kings.\textsuperscript{109} Thus it is preferable to date pBoulaq 18 to Khendjer’s immediate predecessor, be he Sobekhotep II or not.

According to pBoulaq 18/L, in Medamud a Monthu feast was celebrated on III Akhet 17 and 18 in year 3 of the predecessor of Khendjer.\textsuperscript{110} A Monthu feast is also attested in the Illahun archive. The instances are dated to II Akhet 14 and 22 respectively\textsuperscript{111} and coincided with $hnp\textsuperscript{3}w$, a feast on lunar day 2.\textsuperscript{112} Provided the Monthu feast of Boulaq 18 on III Akhet 17 was also celebrated on lunar day 2, the difference of one civil month can be explained like the shift of the $w\textsuperscript{3}gj$ feast in the Illahun archive: it shifted during the reigns of Senwosret III and Amenemhet III from II to III Shemu; presumably it took place in the 2nd lunar month after $peret\textsuperscript{13}Sepdet$.\textsuperscript{113} If, for example, the Monthu feast was fixed on LD 2 of the 7th lunar month after $peret\textsuperscript{15}Sepdet$, then it would have taken place mostly in II Akhet during Dyn. 12, but never before III Akhet 1 during Dyn. 13.

For an estimate of the period of pBoulaq 18 we rely provisionally on the $TC$ and the stèle juridique. Provided 1 ‘Ahmose = 1539/34 BC, the figures of the $TC$ and the few preserved regnal dates yield 1591/86 BC at the latest for year 1 of Sewadjenre Nebiriau I. The genealogical and historical information contained in the text of the stèle juridique indicates an interval of ca. 55 ± 15 years between the first years of Sewadjenre and Merhetepre Ini.\textsuperscript{114} Considering ca. 2 more years for the immediate predecessor of Khendjer,\textsuperscript{115} 5 years for Khendjer,\textsuperscript{116} 8

\textsuperscript{107} Ryholt, \textit{Situation}, 193, 243.
\textsuperscript{108} Ryholt, \textit{Situation}, 194, 244.
\textsuperscript{109} Cf. Ryholt, \textit{Situation}, 342.
\textsuperscript{110} A. Scharff, \textit{ZÄS} 57 (1922), 63.
\textsuperscript{113} Krauss, \textit{Sothis}, 94.
\textsuperscript{114} Beckerath, \textit{Untersuchungen}, 182; Ryholt, \textit{Situation}, 233–234.
\textsuperscript{115} Provided that year 5 of pBoulaq 18/S belongs to the same reign as pBoulaq 18/L with the Monthu feast in year 3; cf. Ryholt, \textit{Situation}, 194 with n. 688.
to 9 years for Sobekhotep IV,\textsuperscript{117} and the figures in the \textit{TC} for Sobekhotep III through Merhetepre\textsuperscript{6} Ini, the distance between regnal year 3 of pBoulaq 18 and year 1 of Merhetepre\textsuperscript{6} Ini amounts to ca. 65 to 67 years. Thus regnal year 3 of pBoulaq 18 fell \textit{at the latest} in 1712/07 BC $\pm$ 16 years. III Akhet 17, the date of the Monthu feast coincided with a LD 2 in 1745, 1734 and 1684 BC.\textsuperscript{118} The regnal years that are preserved in the \textit{TC} between Wegaf and the predecessor of Khendjer add up to 8 to 14 years at least; the regnal years of ca. 8 kings are lost. Thus nothing prohibits equating year 3 of pBoulaq 18 with 1734 BC, provided the last year of Dyn. 12 corresponds to ca. 1760 BC (see next paragraph).

\textit{The Illahun Lunar Dates (ILD)}

In 1992 Luft presented the lunar dates that are contained in the Illahun archive,\textsuperscript{119} relying on earlier studies of Borchardt, Dévaud, Möller, Parker and Kaplony-Heckel. Details of Luft’s original presentation have been corrected in the following list.\textsuperscript{120} 21 Illahun lunar dates (ILD) are useful for chronological analysis:

\begin{itemize}
  \item ILD 1: pBerlin 10003; 9 [Senwosret III]
  \item ILD 2: pBerlin 10248; 14 Senwosret III
  \item ILD 3: pBerlin 10016; 18 [Senwosret III]
  \item ILD 4: pBerlin 10090; 3 [Amenemhet III]
  \item ILD 5: pBerlin 10056 A; 8 [Amenemhet III]
  \item ILD 6: pCairo 58065; 9 [Amenemhet III]
  \item ILD 7: pBerlin 10103; 29 [Amenemhet III]
  \item ILD 8–19: pBerlin 10056; 30/31 [Amenemhet III]
  \item ILD 20–21: pBerlin 10006; 32 [Amenemhet III]
\end{itemize}

\textsuperscript{118} In 1709 BC a LD 1 coincided either with III Akhet 15 or 16, resulting in III Akhet 17 being a LD 3 or 2.
\textsuperscript{119} Luft, \textit{Fixierung}.
Commentary

ILD 1: Report of the 4th phyle that withdraws from monthly temple service and of the 1st phyle that takes over. Luft dates the protocol to [III Peret 9], the day before the first preserved dated entry. This is confirmed by the distances between III Peret 9 in 9 Senwosret III and ILD 3, 5, and 6.

ILD 2: copy of a letter announcing two festivals: one on II Akhet 18, corresponding to LD 2, and another on II Akhet 20, corresponding to LD 4. According to Luft the letter might have arrived on II Akhet 16, i.e. one day before the lunar month that is referred to would have begun. Therefore it possible that the lunar dates do not correspond to observation, but to expectation and are off by one day.

ILD 3: letter concerning the moveable w3gj festival. After II Shemu 17, the date of w3gj, there is added: “2-nw n mddj-nt = the second (day) of LD 15”. Evidently the addendum identifies the date of w3gj as LD 17. Thus II Shemu 17 coincided with LD 17 as the day of w3gj, and the corresponding LD 1 was II Shemu 1.

ILD 6: list of offerings for the Wagi festival. Here Wagi coincided with II Shemu 29; if it were LD 17, then the corresponding LD 1 was II Shemu 13.

ILD 4: The entries mention offerings on III Shemu 15, followed by “sw3 hr III Shemu 16” in turn followed by “LD 1”. According to Luft “sw3 hr III Shemu 16” means that III Shemu 16 was skipped. If so, the LD 1 mentioned after III Shemu 16 has to be III Shemu 17.

ILD 5: list of offerings, including those made in year 8. Luft recognized the date IV Akhet 26 in year 8 as a LD 1.

ILD 7: In a letter dated I Shemu 15, an official complains that a LD 9 had occurred, without the delivery of a bull for an offering which had been due. Luft argued that the non-delivery should have prompted an immediate reaction, “so that in view of the small distances between the offices the 9th lunar day in all probability coincided with I Shemu 15”, i.e. LD 1 would fall on I Shemu 7.

---

121 Luft, _Fixierung_, 86–88.
122 Luft, _Fixierung_, 86 ff.
124 Luft, _Fixierung_, 70–73.
ILD 8–19: account for a “year” (rnpt) overlapping regnal years (rnpt zp) 30 and 31 of Amenemhet III. Borchardt recognized this “year” (rnpt) as a lunar year of 354 days with the account covering the months 2, 4, 6, 8, 10 and 12. The lunar intervals of 29 or 30 days are indicated by first and last dates linked by nefjtt-r (until):

II Shemu 26 nefjtt-r III Shemu 25
IV Shemu 25 nefjtt-r year 31, I Akhet 1[9]
year 31, II Akhet 20 nefjtt-r III Akhet 19
IV Akhet 1[9] nefjtt-r I Peret 18
II Peret 18 nefjtt-r III Peret 17
IV Peret 17 nefjtt-r I Shemu 16

Parker interpreted the dates before nefjtt-r as first days, and the ones after as last days of an Egyptian lunar month.126 Reckoning the distances between ILD 8–19 and the other ILD, Luft realized that “LD 2 nefjtt-r LD1” is meant.127

ILD 20–21: Rt III of pBerlin 10006 contains an account for the 29 days from II Akhet 9 to III Akhet 7 in 32 [Amenemhet III]; the interval is called a “month” (3bd).128 According to Luft, this “month” designates a lunar month of temple service which started on a LD 2 and ended on a LD 1. Rt II records the delivery of offerings for LD 1 and 2 and III Akhet 6 and 7. Parker presumed that the dates coincided with the lunar days;129 according to Luft, the deliveries were one day ahead.

Reckoning the distance between the lunar dates shows that the ILD derive from two different reigns, one of them included ILD 1, 2 and 3 from regnal years 9, 14 and 18 of a king who ruled 19 years and who is clearly Senwosret III. The remaining lunar dates come from regnal years 3, 8, 9, 29, 30/31 and 32 of a different king who is just as clearly Amenemhet III. In the context of the Illahun archive, these reigns can only be arranged as a reign of at least 32 years that succeeded a reign of 19 years. Whether or not Senwosret III took Amenemhet III as coregent at the end of his regnal year 19 is irrelevant since the following regnal years were counted as Amenemhet III’s (see above

126 Parker, *Calendars*, 64, after Wheeler.
129 Parker, *Calendars*, 63.
Schneider, Chapter II. 7). Thus the ILD span a period of 42 calendar years; the earliest is 9 Senwosret III, the latest is 32 Amenemhet III. The ILD constitute a set of interconnected lunar dates. If one of them is ascribed to a certain year BC, the others follow. The set can be expressed either in relation to 1 Senwosret III or 1 Amenemhet III. As demonstrated above, the astronomically correct solution is 1 Senwosret III = 1837/36 BC and 1 Amenemhet III = 1819/1818 BC.

In 6 Senwosret III the temple service was organized by civil months; the phyles were not numbered, but named after civil months. Three years later, in 9 Senwosret III, ILD 1 attests temple service by lunar months, beginning on LD 1. Some 40 years later, in years 30–32 of Amenemhet III, the monthly temple service started on a LD 2 and ended on a LD 1 as Luft has recognized. It is clear that the lunar month itself and the counting of its days were not affected by the changes within the temple service. Nevertheless, when analysing the ILD, there are two sets of dates: a) ILD 8–21, dependent on the beginning of the temple service in the lunar month and b) ILD 1–7, independent of it. If 1 Amenemhet III = 1869/68 BC, then six dates of ILD 1–7 are correct and one is positively incorrect, yielding \( p = 0.05 \). If 1 Amenemhet III = 1844/43 BC then of ILD 1–7 six dates are correct and one is negatively incorrect, yielding \( p = 0.32 \). Thus 1 Amenemhet III = 1844/43 BC is preferable over 1 Amenemhet III = 1869/68 BC.

The Khozam Lunar Date

The inscription Cairo JE 43290 equates IV Akhet 25 in year [1] of an unnamed [Herakleopolitan] king with lunar day 15. Fischer associated the inscription with Khozam (Coptos) and dated it to the last years of the Herakleopolitan’s hold over the Coptite nome, i.e. to the early years of Dyn. 11. Dead reckoning yields 2046 BC at the very latest for the beginning of Dyn. 11. The regnal years of the kings of early Dyn. 12 are well attested; nevertheless, there is the problem of

---

131 Cf. Figures III. 8.1–2.—The probabilities for ILD 8–21 are correspondingly \( p = 0.16 \) and \( p = 0.014 \).
132 Goedicke, MDAIK 50 (1994), 72; see above Baud, Chapter II. 5.
133 Fischer, in: Manuelian, Studies Simpson, 267–270.
the historicity of coregencies during the first four reigns. Uncertainties amount to 16 years, and thus 1 Amenemhet I is either 1940 BC or 1956 BC, if 1 Senwosret III is 1837/36 BC.

The highest attested dates for Dyn. 11 yield 106 years. There are no regnal years preserved for three rulers, and for at least three others, the highest attested dates are presumably different from their last regnal years. Thus dead reckoning implies a date well before 2046 or 2062 BC for the beginning of Dyn. 11.

The total of 143 years in the TC for 6 kings of Dyn. 11 represents a tradition that goes back to the common source of TC and Manetho: Manetho’s 16 kings of Dyn. 11 who ruled for 43 years are clearly secondarily garbled from 6 kings ruling 143 years. The highest attested dates do not contradict the figures in TC, although it gives 49 years for Horus Wah-ankh Inyotef II, whereas the date of the so-called dogstela is his year 50; presumably the TC rounded off from 49 y + x m + y d. The total of 143 years seems to be of correct magnitude, but it might be incorrect in detail, if only a few years are missing because the figures are rounded off. Addition of the TC’s 143 years to 1 Amenemhet I = 1940/39 or 1956/55 BC yields 2083/82 or 2099/98 BC for the beginning of Dyn. 11. These figures must be reconciled with the Khozam lunar date that corresponds to the following absolute dates as shown in Table III. 8.14:

<table>
<thead>
<tr>
<th>Year BC</th>
<th>LD of IV Akhet 25</th>
<th>Year BC</th>
<th>LD of IV Akhet 25</th>
</tr>
</thead>
<tbody>
<tr>
<td>2053</td>
<td>15</td>
<td>2092</td>
<td>14</td>
</tr>
<tr>
<td>2064</td>
<td>16</td>
<td>2103</td>
<td>15</td>
</tr>
<tr>
<td>2067</td>
<td>14</td>
<td>2114</td>
<td>16</td>
</tr>
<tr>
<td><strong>2078</strong></td>
<td><strong>15</strong></td>
<td>2117</td>
<td>14</td>
</tr>
<tr>
<td>2089</td>
<td>16</td>
<td><strong>2128</strong></td>
<td><strong>15</strong></td>
</tr>
</tbody>
</table>

2053 BC, the earliest astronomical possibility for the Khozam lunar date, is historically too early. The years 2078, 2089, and 2103 BC are compatible with the suppositions made here about Dyns. 12 and 11.135

135 The year 2092 BC should not be considered, because it would imply a positively incorrect lunar date.
Lunar Dates of Late Dyn. 5136

Analysis of the lunar dates preserved in the Neferirkare’s archive presupposes an estimate of the minimum distance between Dyns. 6 and 11. We rely on the judicious estimate of Hayes and Fischer that the FIP lasted between 30 and 40 years. Baud estimates a “generation” or ca. 30 years for Dyn. 8 and at least 83 to 85 years for Dyn. 6 (if only the attested (m-)ḥt zp years are considered) or a minimum of 147 to 153 years (assuming a regular biennial count). He notices the imbalance of zp years and (m-)ḥt zp years during the reign of Pepy II, but tends to accept a regular biennial count throughout Dyn. 6 nevertheless (see above, Chapter II. 5).

Baud’s point of view is supported by the following argument. From all of Dyn. 6, 10 m-ḥt zp years and 12 zp years are preserved. At least 72 zp years actually occurred, i.e. 83.3% of the zp years are missing from the record. There is no reason why more or less m-ḥt zp years than zp years should be missing. Thus it is likely that at most 60% of the regnal years of Dyn. 6 were zp years and at least ca. 40% m-ḥt zp years; if so, at least 120 to 144 regnal years must be attributed to Dyn. 6, implying a regular biennial count and thus the dynasty’s duration for 147/153 years. If the Khozam lunar date corresponds to 2078 or 2103 BC, our figures for the FIP, and Dyns. 6 and 8, result in ca. 2293 or 2318 BC at the latest for the first year of Dyn. 6.

The highest date for Wenis is IV Shemu in mpt zp 8, corresponding to regnal year 16 at most. If Wenis reigned for 16 years, his year 1 fell between ca. 2334 and 2309 BC at the latest, whereas a 44 year reign of Isesi would have begun between 2378 and 2353 BC.

Posener-Kriéger identified two lunar dates in the Neferirkare’s archive: (I) pLouvre E.25279 recto: LD 1 and 2 = IV Shemu 17 and 18, corresponding to the year before mpt zp 4 that is mentioned on the verso, i.e. regnal year 7 or 6; (II) pBM 10735 recto: II Shemu 18, statue

---

136 For Dyns. 4 to 5, see above Verner, Chapter II. 4.
138 This yields a total of ca. 183 years for Dyns. 6 and 8 which is reminiscent of the total of (181 + 6) years + 6 months + 3 days in TC.
139 Posener-Kriéger, Archives II, 491.
140 Posener-Kriéger, Archives II, 486–488.
141 As a rule the first count occurred after rnp tAwj; for an exception see Baud, “Ménès”, 125. Thus the year before mpt zp 4 is regnal year 7, rather than 6.
The verso is dated to mpt zp 21 or rather 22; i.e. regnal year 42 or rather 44, if the count was biennial.

There are two models for interpreting the lunar dates I and II. In model A lunar date I belongs to 7 Izezi and II belongs to year 21 of Izezi. In model B lunar date I belongs to 7 Wenis and II occurred 11, 25, or 36 years earlier, corresponding to year 15, 26 or 40 of Isesi, provided he ruled for 44 years. If so, then in relative chronological terms at least ca. 250 years elapsed between his year 7 and the Khozam lunar date. Only 261 y + 119 d or 286 y + 119 d are proper lunar distances for model A. Table III. 8.15 contains the possibilities for 1 Isesi between 2393 and 2335 BC, if model A is followed. The only astronomically viable possibility would be 7 Isesi = 2346 BC and 21 Isesi = 2325 BC, implying 208 years between year 1 of Dyn. 6 and 2078 BC for the Khozam lunar date, or 183 years, if the Khozam lunar date corresponds to 2103 BC. Both intervals are apparently too short and thus model A does not seem to work, in harmony with Posener-Krieger’s slight preference of model B over A, which we share.

For model B only 211 y, 236 y, or 261 y (+ 119 d each) are proper lunar distances. Table III. 8.16 contains the possibilities for 1 Wenis between 2382 and 2296 BC and the corresponding earlier years of Izezi.

---

Table III. 8.15

<table>
<thead>
<tr>
<th>Izezi Year 1</th>
<th>Izezi Year 7</th>
<th>LD 1 in IV Shemu</th>
<th>Izezi Year 21</th>
<th>LD 2 in II Shemu</th>
</tr>
</thead>
<tbody>
<tr>
<td>2335</td>
<td>2328</td>
<td>19</td>
<td>2314</td>
<td>19</td>
</tr>
<tr>
<td><strong>2346</strong></td>
<td><strong>2339</strong></td>
<td><strong>17?18?</strong></td>
<td><strong>2325</strong></td>
<td><strong>18</strong></td>
</tr>
<tr>
<td>2357</td>
<td>2350</td>
<td>16</td>
<td>2336</td>
<td>17</td>
</tr>
<tr>
<td>2360</td>
<td>2353</td>
<td>18</td>
<td>2339</td>
<td>20</td>
</tr>
<tr>
<td>2371</td>
<td>2364</td>
<td>18</td>
<td>2350</td>
<td>18</td>
</tr>
<tr>
<td>2382</td>
<td>2375</td>
<td>16</td>
<td>2361</td>
<td>17</td>
</tr>
<tr>
<td>2385</td>
<td>2378</td>
<td>19</td>
<td>2364</td>
<td>20</td>
</tr>
<tr>
<td>2393</td>
<td>2386</td>
<td>15</td>
<td>2372</td>
<td>16</td>
</tr>
</tbody>
</table>

---

143 See above Verner, Chapter II. 4.
144 Posener-Krieger, Archives II, 487.
Model B allows for three astronomically workable possibilities for year 7 of Wenis. Of them 2289 BC implies unacceptable 200 years between year 1 of Dyn. 6 and 2078 BC for the Khozam lunar date. The remaining possibilities for 7 Wenis are 2314 or 2339 BC; they imply acceptable 225 years between year 1 of Dyn. 6 and the Khozam lunar date of 2078 or 2103 BC. Thus the earliest lunar dates that are available for chronological analysis yield two possibilities for the end of Dyn. 5 which are 25 Egyptian years or a lunar cycle apart.

<table>
<thead>
<tr>
<th>Wenis</th>
<th>‘7 Wenis’</th>
<th>‘40 Izezi’</th>
<th>‘26 Izezi’</th>
<th>‘15 Izezi’</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>LD 1 in</td>
<td>LD 2 in</td>
<td>LD 2 in</td>
<td>LD 2 in</td>
</tr>
<tr>
<td>IV Shemu</td>
<td>II Shemu</td>
<td>II Shemu</td>
<td>II Shemu</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2296</td>
<td>17</td>
<td>18</td>
<td>19</td>
<td>18</td>
<td>17</td>
<td>18</td>
<td>20</td>
<td>18</td>
<td>20</td>
<td>18</td>
<td>17</td>
<td>18</td>
<td>20</td>
<td>18</td>
<td>17</td>
<td>18</td>
<td>17</td>
<td></td>
</tr>
</tbody>
</table>
III. 9 THE HELIACAL RISING OF SIRIUS

Teije de Jong

The heliacal rising of Sirius, the brightest star in the sky, was used in antiquity, both in Egypt and in Mesopotamia, to synchronize the calendar to the solar year. On the day of its heliacal rising Sirius is seen again for the first time in the morning twilight sky after having been invisible for about 70 days (at the geographical latitude of Memphis). On that day it appears a few degrees above the Eastern horizon and disappears again after about 15 minutes due to the brightening of the sky just before sunrise. The date of heliacal rising depends on the relative positions of Sirius and the Sun with respect to the horizon and on atmospheric conditions.

According to Parker in the ancient Egyptian lunar calendar an additional 13th month was intercalated in the next year whenever the first visibility of Sirius (associated with the Goddess Sothis) occurred during the last 11 days of the last month Wep renpet of the lunar year.1 In this way the Egyptians could make sure that the first month Toth of their lunar calendar always began shortly (within one lunar month) after the first visibility of Sirius. The heliacal rising of Sirius plays a crucial role in Egyptian chronology because it is supposed to fix the zero-point of the Egyptian civil calendar of 365 days by postulating that at the time of its installation the first visibility of Sirius occurred on the first day of the first month.

One of the earliest references to the use of Sirius for intercalation in the Mesopotamian lunar calendar is found on Tablet II of MUL.APIN where we are told that if Sirius rises in the month Du’uzu (the 4th month) this year is normal but if it rises in the month Abu (the 5th) an extra month has to be intercalated that year.2 On Tablet I the nominal date of the first visibility of Sirius in the lunar calendar is given

---

as “the 15th of Du’uzu” (the 4th month) as part of a list of first visibility dates of about 30 stars. This list was based on observations carried out in Babylon during the 13th century BC. Later (during the 5th to 1st centuries BC) dates of the first appearance of Sirius are given in the Astronomical Diaries. Sachs has shown that in the Babylonian 19-year calendar cycle, introduced in the early 5th century BC and used without any further change during five centuries throughout the ancient near-East, the intercalation pattern was arranged in such a way that Sirius always rose in the 4th lunar month Du’uzu.

Starting with Ptolemy (~130 AD) in his *Almagest* (Book VIII.6), astronomers have discussed the heliacal rising (also referred to as first visibility or first appearance) of stars and planets in terms of the so-called *arcus visionis*, the distance between a star/planet and the sun, measured in degrees perpendicular to the horizon when it becomes visible again for the first time in the morning twilight sky. In the second book of his *Φάσεις ἀπλανών ἀστέρων καὶ συναγωγῆς ἐπισημασιών*, Ptolemy gives the dates of first and last visibility of some 30 bright stars at different geographical latitude zones (*κλίματα*) from which values of the *arcus visionis* can be deduced. For Sirius Ptolemy apparently uses a value of about 11°.

In the 1920’s Carl Schoch was the first to attempt to determine values of the *arcus visionis* for Sirius and for the planets from Babylonian observations. He derived a value of 7.7° degrees for Sirius. The recent edition of the Astronomical Diaries by Sachs and Hunger allows a reanalysis of the Babylonian observational material. We now know that the number of genuine observations of the date of first visibility of Sirius in the Diaries is quite small since Sachs showed that almost all dates during the Seleucid Era (last three centuries BC) are computed

---

4 Sachs & Hunger, *Diaries*.
6 See Toomer, *Almagest*.
rather than observed. This is probably the reason that Schoch’s value is rather small, because the Babylonian computational scheme is apparently based on dates observed under optimal atmospheric conditions.

It turns out that there are only two genuinely observed dates of the first appearance of Sirius listed in the Diaries: day 18, month IV, year 12 of Darius III (22 July 325 BC) and day 13, month IV, SE 22 (20 July 290 BC). An analysis of these data results in \( \text{arcus visionis} \) values of 11.0° and 8.6°, respectively.

To determine the best value of the \( \text{arcus visionis} \) of Sirius for the purpose of calibrating the Egyptian civil calendar in studies of Egyptian chronology L. Borchardt and P. V. Neugebauer in 1926 organized an observing program of the first visibility of Sirius in Egypt. Results of this study are summarized and discussed in a recent paper by Pachner. He shows that the 1926 program resulted in the determination of \( \text{arcus visionis} \) values for Sirius of 8.7°–9.2°.

The problem was discussed again by Schaefer without taking the results of Pachner into account. He suggested a value of the \( \text{arcus visionis} \) for Sirius of about 11°, similar to the value derived by Vogt from Ptolemy’s \textit{Phaseis}. His analysis was based on a theoretical model of stellar visibility adopting a visual extinction for the atmosphere near ancient Memphis of 0.35 magnitudes per air mass (one air mass is a measure of the thickness of the atmosphere at zenith). This extinction estimate was based on data for Jerusalem. In his paper he also listed the expected dates of heliacal rising of Sirius between 3500 BC and 500 AD for his adopted value of the extinction.

To put things into perspective I have computed values of the \( \text{arcus visionis} \) and dates of the heliacal rising of Sirius in Egypt using the model of de Jong and Inklaar, which is an improved and updated version of the earlier model of Inklaar. In this model the visibility of stars and planets is computed based on the brightness of the twilight

---

9 See n. 5.


sky as a function of the depression of the Sun below the horizon, on the transparency of the atmosphere and on the sensitivity of the human eye in twilight conditions. The physical principles underlying this model are similar to those adopted in the earlier models of Bruin\textsuperscript{14} and of Schaefer\textsuperscript{15} but some of the assumptions and parameters used are different.

Using this model I have computed the parameters in Table III. 9.1 characterizing the heliacal rising of Sirius in 1000 BC for a location at geographical latitude 30° North, representative for ancient Memphis along the Nile. Visual magnitude, position and proper motion of Sirius were taken from \textit{The Bright Star Catalogue}\textsuperscript{16} and precession was calculated according to algorithms in the \textit{Explanatory Supplement to the Astronomical Almanac}.\textsuperscript{17} Results are given for three different values of the visual atmospheric extinction $k(V)$ in column (1) by averaging over 4 years around 1000 BC. Values of the apparent altitude of Sirius above the horizon when it first becomes visible are given in column (2) and of its true altitude (without atmospheric refraction) in column (3) as well as the true solar depression below the horizon in column (4). In column (5) I list the actual average $\text{arcsin visionis } <h>$, the distance between Sun and Sirius perpendicular to the horizon at first visibility (column (4) subtracted from column (3)). In columns (6) and (7) I list the Julian date and the local time of the first visibility of Sirius and in column (8) the duration of its visibility. The averaging takes account of the fact that the ecliptic longitude of the Sun at sunrise on any Julian date varies from year to year and returns to the same value every four years (due to Julian intercalation). Notice that if one wants to compute the date of heliacal rising based on a value of the $\text{arcsin visionis}$ one should use a minimum value $h_0$ which is $\sim 0.5^\circ$ (one half the daily motion of the Sun) smaller than the average values listed in Table III. 9.1.

The day on which the heliacal rising of Sirius (Sothis) was observed in ancient Egypt clearly depends on the prevailing atmospheric conditions. In Table III. 9.2 I show values of the average visual extinction as measured at different locations on Earth at different epochs.


\textsuperscript{16} D. Hoffleit, \textit{The Bright Star Catalogue} (New Haven, 1982).

Not surprisingly, the data show that by far the clearest skies (lowest extinction values) are found in dry regions at high altitudes where present-day astronomical observatories are located (McDonald Observatory on Mount Locke, Texas, USA\textsuperscript{18} and the European Southern Observatory on La Silla, Chile).\textsuperscript{19} According to the data in Table III. 9.2 much poorer atmospheric conditions are found in humid climates at sea level (Leiden Observatory, the Netherlands,\textsuperscript{20} no longer in use) and at low altitudes (Jena Observatory in Grossschwabhausen, Germany).\textsuperscript{21} It is instructive to realize that an increase in extinction of 0.1 magnitudes corresponds to a small decrease in the intensity of starlight of 10\% at zenith but to a large decrease by a factor 4 at 3° above the horizon.

One important uncertainty that affects estimates of the atmospheric extinction is the aerosol content of the atmosphere, which over the last century and a half has been noticeably increasing due to industrial pollution. Therefore I also list in Table III. 9.2 values of the atmospheric visual extinction in Mesopotamia during the 6th and 7th century BC derived from an analysis of ancient observations of Saturn from Babylon and Uruk\textsuperscript{22} and during the 13th century BC from an analysis of obser-

\begin{table}
\centering
\begin{tabular}{ccccccccc}
\hline
Visual & Apparent & Real & Real & Arcus & Julian & Local & Duration \\
extinction & stellar & stellar & solar & visionis & date & Time & of \\
\text{k(V)} & altitude & altitude & altitude & \text{<h> } & & & visibility \\
\hline
0.20 & 1.5 & 1.1 & -6.9 & 8.0 & 16-jul & 4:25 & 13 \\
0.27 & 2.3 & 2.0 & -7.3 & 9.3 & 17-jul & 4:24 & 14 \\
0.35 & 3.2 & 2.9 & -7.7 & 10.7 & 19-jul & 4:22 & 14 \\
\end{tabular}
\end{table}


\textsuperscript{19} F. Rufener, “The evolution of atmospheric extinction at La Silla”, \textit{Astronomy and Astrophysics} 165 (1986), 275–286.

\textsuperscript{20} K. K. Kwee & A. M. van Genderen, “Photo-electric Observations of 31 and 32 Cygni during November and December 1961”, \textit{Bulletin of the Astronomical Institutes of the Netherlands} 17 (1963), 53–55.


The heliacal rising of Sirius

Observations of about 20 bright stars from Babylon. These values are close to the present-day visual extinction for clear skies at sea level of about 0.28 magnitudes per air mass (0.02 due to Ozone absorption, 0.12 due to molecular scattering and 0.14 due to aerosols and dust). Contrary to Schaefer who adopted 0.35 magnitudes per air mass for the Memphis area I suggest that 0.27 is a more appropriate choice since the climatic conditions in the Nile valley near Memphis are probably quite similar to those in the Euphrates valley near Babylon. This value is consistent with the 1926 observations summarized by Pachner because *arcus visio-nis* values of 8.7°–9.2° correspond to a visual extinction of about 0.25 magnitudes per air mass (see Table III. 9.1). Ptolemy’s *arcus visionis* of 11° (corresponding to a visual extinction of about 0.35 magnitudes per air mass) is appropriate for the much more humid conditions in Alexandria at the shore of the Mediterranean.

For chronological purposes the actual date of heliacal rising of Sirius is the crucial quantity. In Table III. 9.3 I list dates of heliacal rising of Sirius computed for geographical latitudes 25° North (Edfu) and 30° North (Memphis) for different values of the atmospheric visual extinction at different epochs in antiquity. These dates are averages over four consecutive years. As argued above atmospheric conditions in arid upper Egypt (Elephantine and Memphis) are probably best characterized by a visual extinction $k(V) = 0.27$ magnitudes per air mass, while for the more humid climate of lower Egypt (Alexandria) $k(V) = 0.35$ magnitudes per air mass may be more appropriate.

Table III. 9.2. Atmospheric visual extinction at different locations and epochs

<table>
<thead>
<tr>
<th>Location</th>
<th>Epoch</th>
<th>Season</th>
<th>Altitude</th>
<th>$&lt;k(V)&gt;$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Babylon, Mesopotamia</td>
<td>~1300 BC</td>
<td>yearly average</td>
<td>sea level</td>
<td>0.27</td>
</tr>
<tr>
<td>Babylon, Mesopotamia</td>
<td>647–634 BC</td>
<td>jul–nov</td>
<td>sea level</td>
<td>0.25</td>
</tr>
<tr>
<td>Uruk, Mesopotamia</td>
<td>577–575 BC</td>
<td>oct–dec</td>
<td>sea level</td>
<td>0.34</td>
</tr>
<tr>
<td>Leiden, the Netherlands</td>
<td>1961</td>
<td>nov–dec</td>
<td>sea level</td>
<td>0.43</td>
</tr>
<tr>
<td>Grossschwabhausen, Germany</td>
<td>1968–1991</td>
<td>yearly average</td>
<td>350 m</td>
<td>0.36</td>
</tr>
<tr>
<td>Mount Locke, Texas, USA</td>
<td>1960–1980</td>
<td>yearly average</td>
<td>2000 m</td>
<td>0.17</td>
</tr>
<tr>
<td>La Silla, Chile</td>
<td>1975–1985</td>
<td>yearly average</td>
<td>2400 m</td>
<td>0.12</td>
</tr>
</tbody>
</table>

23 See n. 3.
25 See n. 11.
26 See n. 10.
The atmospheric extinction varies due to changing weather conditions. On some dates this will make Sirius unobservable and it may cause variations in the date of heliacal rising of Sirius of up to about ± 3 days, corresponding to extreme values of k(V) ranging from 0.15 to 0.40 magnitudes per air mass.

The data in Table III. 9.3 also show that in the course of 4000 years the date of the heliacal rising of Sirius moves forward with respect to the summer solstice by one day in about 120 years. This is due to precession but tempered by the fact that Sirius lies far (~40°) south of the ecliptic. For a star in the ecliptic this forward motion would be one day in about 75 years, as expected for a rate of precession of 1° in 72 years. The rather large proper motion of Sirius, which causes a displacement in the sky of about 1.5° in 4000 years, only causes a minor shift in the date of heliacal rising of about one day over that period. Notice that the inaccuracy of the Julian calendar causes the summer solstice to recede by about one month in 4000 years rather than two months as expected for an accurate solar (Gregorian) calendar.

Acknowledgements

I am grateful to Rolf Krauss and Peter Huber for several useful comments and suggestions for improvement.

---

27 See n. 22.
III. 10  EGYPTIAN SIRIUS/SOTHIC DATES,
AND THE QUESTION OF THE SOTHIS-BASED
LUNAR CALENDAR

Rolf Krauss

In addition to the observational conditions discussed by T. de Jong in the preceding chapter, there are three factors which must be considered when dealing with Egyptian Sirius (Sothic) dates: 1) the quadrennium; 2) geographical reference; 3) regular observation versus schematic determination.

Quadrennium

Under the same meteorological conditions and at the same site, the heliacal risings of Sirius occur as a rule thrice at intervals of 365 days, followed by the fourth rising after 366 days. On each of these consecutive risings the ecliptic longitude of the sun and thus also the distance between sun and Sirius would have decreased, so that in the fourth year the distance would have been too small for sighting the star after 365 days. Only on the 366th day after the last sighting would the star have been observable.

Because the Egyptian calendar year was only 365 days long, it fell one day behind the heliacal rising of Sothis every four years when the rising occurred after 366 days. Accordingly, a specific date in the Egyptian year correlates to the heliacal risings of 4 consecutive years. Because Egyptian sources do not specify in which year of a quadrennium a given recorded Sothic date fell, there are usually four years in the Julian calendar that might correlate with it. A specific year can be determined only when additional data are available, such as the lunar date associated with the Sothic date, in the Illahun archive.
Regardless of where the Egyptians observed the rising of Sothis, the date could not apply elsewhere, because Egypt’s ancient boundaries extended from 24° (First Cataract, Elephantine) to 31.15° (Diospolis inferior) north latitude. In the 28th century BC, when the Sothic-linked 365 day calendar will have been introduced, the date when the star rose differed by more than one day for each degree of latitude, so that the star rose 8 to 10 days later on the Mediterranean coast than at Egypt’s southern border. Sighting was effected not only by latitude, but also by the meteorological differences between Upper and Lower Egypt: UE is dry and arid, LE is more humid which results in a higher extinction.

The impracticability of using several different calendars in each zone evidently led the inventors of the Egyptian calendar to choose one particular site as the geographical reference for the calendrical heliacal risings of Sothis. A single source provides information on the geographical reference: in the 6th century AD Olympiodorus, in his commentary on Aristotle’s *Meteora*, remarked that the rising of Sothis was celebrated in Alexandria when the star rose for the Memphites.¹ Until about 1950, Egyptologists assumed that Memphis was the reference point for all Sothic dates throughout Egyptian history.² Presuming schematically determined rising dates, Eduard Meyer, for example, calculated III Shemu 9 of 9 Amenhotep I, the Sothic date in Papyrus Ebers, as corresponding to the quadrennium 1550/49 to 1547/46 BC; by adding 8 years of Amenhotep I and 26 years of Ahmose he arrived at ca. 1580 BC for the beginning of the NK.

Later Egyptologists abandoned the concept of schematic Sothis risings, but retained Memphis as the reference point for Sothic dates of all periods. Using an *arcus visionis* of 9° the rising of Sothis occurred at Memphis around 1500 BC on July 17/16; the Ebers Sothic date corresponds to these days in 1538–1535 BC.³ It follows that the beginning of the NK would have been ca. 1570 BC.

¹ Sethe, “Zeitrechnung”, 309.
³ III Shemu 9 corresponds to July 17 from 1541 to 1538 BC and to July 16 from 1537 to 1534 BC.
Around 1950 new sources relating to the Assyrian-Babylonian kinglists came to light which shortened Near Eastern and Egyptian chronology by about 20 years. Shifting the geographical reference point for the Ebers Sothic date from Memphis ($\phi = 29.9^\circ$) to Thebes ($\phi = 25.7^\circ$), compensated for the 20-year chronological difference, provided that the rising of Sothis mentioned in Papyrus Ebers had actually been observed.

In the 1970s it became clear that the relative and the absolute chronology of the NK had to be shortened further by at least 10 years, yielding ca. 1540 BC for the beginning of the NK.\textsuperscript{4} The only possibility to reconcile this chronology with the Ebers Sothic date was to propose a geographical reference point further south, namely on the island of Elephantine ($\phi = 24^\circ$). Within Egypt’s traditional borders, the rising of Sothis could be seen earliest at Elephantine, the southernmost point. Here lay the mythical source of the Nile. Late Period texts associate the rising of Sothis with the beginning of the inundation at Elephantine. Measurement of the height of the inundation at Elephantine (as at Memphis) was particularly important for the entire country.\textsuperscript{5}

Because of precession, the heliacal risings of all fixed stars shift within the tropical year. For Sirius, the large proper motion modifies the effect of precession. Around 2750 BC Sirius will have risen at latitude $24^\circ$ on June 16th Greg., but today it rises there on July 29th Greg. In pharaonic times the Sothic year was always longer than the Julian year by about one minute. When, over centuries, the difference added up to a quarter of a day, the rising of Sothis fell for only three, rather than for four, years on the same Egyptian calendar day and the shift to the next day occurred in the third year, not the fourth. If the annual observation of the rising of Sothis was a feature of the Egyptian calendar, then the occasional shift of the rising should have been accounted for in triennia. By contrast, it is possible that the calendar dates of the rising depended upon a series of observations made during the period before the introduction of the calendar with Sothic dates thereafter schematically shifted one day every four years. Only an evaluation of the Egyptian historical sources—not astronomical or calendrical theorizing—can determine which alternative is correct.

Hieroglyphic sources preserve two relevant statements. (1) The rising of Sothis in 7 Senwosret III was not actually observed, instead it

\textsuperscript{4} Bierbrier, \textit{Kingdom}, 109ff.
\textsuperscript{5} Krauss, \textit{Sothis}, 63–67.
was announced 22 days in advance and might have been ‘known’ earlier. (2) The Canopic Decree of Ptolemy III Euergetes of March 7 in 238 BC asserts that the rising of Sothis shifts forward one day every four years. The purpose of the decree was to introduce a sixth epagomenal day every four years, so that the rising of Sothis continued to fall on Payni 1 (II Shemu 1), as it had in the year before the decree (239 BC). No mention is made of a possible shift after three years.

According to Clagett there is a third hieroglyphic source. He understands an inscription of Ptolemy IV to contain an assertion about the regular shift of the rising of Sothis in intervals of four years.

Other statements with a bearing on the question are to be found in Latin and Greek sources. In “De die natali” (18, 10), the orator Censorinus commented on Great Years:

The Great Year of the Egyptians has nothing to do with the moon. In Greek we call it Dog’s Year, in Latin canicularis, because it begins on the 1st day of the month Thoth, when the Dog star rises. For the civil calendar of the Egyptians, the year numbers 365 days without any intercalation. So it is that a period of 4 years is about one day shorter than the natural quadrennium. And it follows that New Year’s Day coincides in both systems only after 1461 [Julian] years. Some call this Great Year a Helios year; others, God’s Year.

Censorinus also noted (c. 21, 10–11) that in the year when he was writing, namely AD 238, the “Egyptian New Year’s day fell on June 25th. But a hundred years earlier, during the second consulate of Emperor Antoninus Pius and Bruttius Praeses, the Egyptian New Year’s Day fell on the 20th of July, the day when the Dog star rose.” Thus on the 20th of July in AD 139 a new period of 1460 Egyptian years had started. Borchardt claimed that coins minted at Alexandria in year 2 of Antoninus Pius showing a haloed phoenix and the legend A̱ΩN commemorated the Sothic period. Even though A̱ΩN may be a Hellenistic deity that was identified in Alexandria with Osiris embodi-
ied in his turn as Phoenix, Borchardt might have been right nevertheless, since Tacitus, *Annals* VI. 28, refers to one opinion that the Phoenix lived for 1461 [Egyptian years = 1460 Julian years] and was thus associated with the Sothic period.

About AD 400 Chalcidius, in his commentary on Plato’s *Timaeus*, called Sothis the Egyptian equivalent of Sirius and stated, like Censorinus, that the length of a Sothic cycle was 1460 years.

According to Theon of Alexandria (ca. 335–405 AD), the day of Sothis’s rising would have shifted by 426 days from Thoth 1 in year 1 of the era απο Μενοφρεως until year 100 of the era of Diocletian (384 AD), had the fixed Alexandrian year not been introduced. Because of this calendar reform, there were only 324 shifts before the 100th year of the Diocletian era. Thus the era “apo Menophreos” would have begun, in our terms, in 1322 BC and would have ended in AD 138/139, as implied by Censorinus, i.e. for Theon the Sothic cycle lasted full 1460 years.

Clearly Graeco-Roman sources reckoned with a regular shift of the rising of Sothis in quadrennia; the later 19th century astronomer Oppolzer asserted that during the Graeco-Roman period it was unknown that the Sothic year varied in length. Accordingly, Egyptologists traditionally assumed that the calendric rising of Sothis was shifted regularly and schematically every four years, implying exactly 365.25 days as the length of a Sothic year. Oppolzer computed the length of the Sothic year as being longer than the Julian year during the pharaonic period. For him the question of whether the historical Sothis-bound calendar relied on annual observation, resulting in triennia, or on a

---

18 Other details of Theon’s computation remain unclear, see Meyer, *Chronologie*, 28–29.
19 Menophris is neither a garbled royal name nor a rendering of “Memphis” (Egyptian: Menfê), but rather the name of a solar god attested in the Hellenistic period, cf. Krauss, *Ende der Amarnazeit* (1978), 268–273. Like Censorinus, Theon implied the solar nature of the Sothic cycle when he spoke of it as the “era of [the solar god] Menophris”.
cyclic scheme of regular quadrennia remained undecided, although he showed a bias for yearly observation.\textsuperscript{21}

In 1904 Förster computed the length of the Sothic year at Meyer’s request. Förster arrived at a smaller difference between the Sothic and the Julian year than Oppolzer.\textsuperscript{22} He calculated the rising of Sothis at Memphis on July 19 (Jul.) throughout pharaonic history. Later Schoch\textsuperscript{23} and Neugebauer\textsuperscript{24} corrected Förster’s figures; they found a difference between the Sothic and Julian years that caused shifts of the rising day in triennia. The most recent calculation of the length of the Sothic year confirmed their result.\textsuperscript{25} Neugebauer concluded that the recorded rising dates of Sothis cannot have been schematically determined, but must have depended on observation. The assumption that the rising dates were determined schematically results in the following paradox: if the rising of Sothis be reckoned backwards schematically from the Censorinus and Canopus dates, then the starting date for the 1460-year cycles is astronomically incorrect by several days. If, however, an astronomically correct date is calculated for the beginning of the historical cycles, then the Canopus and Censorinus dates do not match.

The paradox can be resolved by supposing that the Sothis-bound 365 day calendar was schematic from its introduction, in the 28th century BC, with reference to a site in UE. The shift of the reference point to Memphis that Egyptologists recognized around 1950 may have taken place as late as Dyn. 30, i.e. in the 4th century BC. If a schematic calendar had been used since its introduction down to the 4th century BC, then the risings of Sothis that were observable at the geographic reference point occurred 4 days later than those determined schematically. Presuming the discrepancy were to be overcome in the 4th century BC, two workable possibilities offered themselves: a) either the schematic date of the rising was corrected by the addition of 4 days without altering the geographic reference, b) or the geographic reference point was moved from UE to a northern site.

Evidently Memphis was chosen as the new reference point. The calendar day of the rising of Sothis at Memphis was determined by obser-

\textsuperscript{21} Oppolzer (n. 20), 584.
\textsuperscript{22} Meyer, Chronologie, 14–15.
\textsuperscript{23} C. Schoch, Die Länge der Sothisperioden beträgt 1456 Jahre (Steglitz, 1928; Reprint: Kiel: Astronomische Nachrichten 8, 2; 1930).
\textsuperscript{24} P. V. Neugebauer, Astronomische Nachrichten No. 6261 (Kiel, 1937), 377–378.
vation and served as the initial day of a new schematically determined series, i.e. the calendar remained schematical. With the Gregorian reform, days had to be eliminated to achieve its goal, whereas there would have been no need to do so when reforming the Sothic calendar. In 400/399 BC the shift would have caused the rising day to leap 10 days from IV Peret 10 to 20. In other words, the cycle would not have started in 1322 BC, i.e. 1460 years before 138/139 AD, but 10 × 4 years = 40 years later. A calendar that was based on regular observation of Sothis would not have required a shift of its geographical point of reference; thus the shift that Egyptologists recognized around 1950 implies a schematic calendar.

Comments on Peret Sepdet Dates

| I Peret 4–19 | Festival calendar of Amenhotep I²⁶ |
| I Peret 21 | coffin of Ashayt (T3C) |
| II Peret 30 | coffin S3P |
| II Peret 21 | coffin S11C |
| IV Peret 16 | Festival calendar of Amenhotep I²⁶ |
| IV Peret 16 or *18 | Abydos, Osireion²⁷ |
| IV Peret | year 7 [Senwosret III] |
| IV Peret | year 1 [Amenemhet III] |
| IV Peret | [Amenemhet III] |
| <II Shemu 20 | year **11, Luxor—Farshut road>²⁸ |
| III Shemu 9 | year 9 of Amenhotep I |
| III Shemu 28 | Festival calendar of Elephantine, Thutmose III²⁹ |

²⁸ J. C. Darnell, Theban Desert Road Survey in the Egyptian Western Desert I. (Chicago: OIP 119, 2002).—At the SCIEM Workshop “Egypt & Time” (Vienna June 30 to July 2, 2005), K. Ryholt argued (a) that the year ought to be read 31, and (b) that the graffito does not mention Sothis at all.
²⁹ The inscription (Urk. IV 827,8) belongs to a list of festivals which is dated epigraphically to the end of reign of Thutmose III, cf. Krauss, Ä&L 3 (1994), 90–92.—The translation of prt spdt m³-tw as “true rising of Sothis”, in: E. Blumenthal, I. Müller & W. F. Reineke, eds., Urkunden der 18. Dynastie. Übersetzung zu den Heften 5–16 (Berlin, 1984), 271 is incorrect; read, rather, “Rising of Sothis, one offers”.
Table (cont.)

| Festival calendar of Buto, Thutmose III | I Akhet
| Festival calendar of Medinet Habu, Ramesses III |
| [Thoth 1, 1322 BC] | [Thoth 1, 139 BC] |
| Thoth 1, 1322 BC | Censorinus date, see above |
| Thoth 1, 139 BC | Canopus decree, see above |

Peret Sepdet in the Ra’neferef Archive?

The archive functioned at least until the last years of Izezi. It mentions the moveable \( \text{w} \text{gj} \) feast that is also attested in the Illahun archive\(^{32}\) where it was celebrated on LD 17, apparently in the second lunar month after the rising of Sothis.\(^{33}\) However, the moveable \( \text{w} \text{gj} \) feast may have been a seasonal event, perhaps related to the availability of new wine.\(^{34}\) If so, it might have been celebrated on a LD 17 when new wine was available, whether the month happened to be the third or second after the rising of Sothis. Regardless, Luft suggests that the \( \text{w} \text{gj} \) date III [Akhet] 28 in the Ra’neferef archive corresponded to LD 18 (sic) in the first lunar month after the rising of Sothis,\(^{35}\) resulting in a date around ca. 2450 BC which is far too early for the archive, according to any recent Egyptological chronology.\(^{36}\) If the \( \text{w} \text{gj} \) date III [Akhet] 28 referred to the second lunar month after the rising of Sothis, corresponding to the time when it was celebrated at Illahun, then a date around 2600 BC would result. If the date is emended to III [Peret] 28,\(^{37}\) then it would have occurred in the third lunar month after the rising of Sothis, provided Izezi’s reign lay in the second half of the

---

\(^{30}\) Bedier, Shafia, in: Aspekte spätägyptischer Kultur. Fs Erich Winter (Mainz: Aegyptiaca Treverensia 7, 1994), 35–50.\(^{31}\) The rising of Sothis is noted between festivals of the first month of Shemu, but neither month nor day is specified.

\(^{31}\) MHC 629: “I Akhet, when Sothis goes forth on her day”, and thus on any day in I Akhet from 1 to 30, cf. Parker, Calendars, 40.


\(^{35}\) U. Luft, “The Date of the \( \text{w} \text{gj} \) Feast: Comments on the Chronology of the Old Kingdom”, in: Spalinger, ed., Revolutions, 39–44.

\(^{36}\) Krauss (n. 34), 53–57; cf. above Verner, Chapter II. 4.

24th century BC. Thus it seems impossible to deduce a chronological result without circular reasoning.

*Heliacal Rising Dates of Sothis in the Star Clocks*

To date, there are 19 complete and/or fragmentary known coffin lids decorated with so-called diagonal star clocks or diagrams of certain rising stars, conventionally called decans. The diagrams indicate risings at 12 intervals (“hours”) during the night, and at 10-day intervals (“decades”) during the Egyptian year. A star that rises in the 12th hour of the night, i.e. at dawn, on the first day of a decade, rises heliacally. According to Neugebauer and Parker the diagonal star clocks are roughly datable by the position of Sirius/Sothis as 12th hour star. They reckoned a margin of ca. 50 years, considering that the extant star clocks are copies from older ones; their grouping of the extant star clocks has been superseded by the analysis of J. Kahl.

The star clocks preserve dates for the rising of Sothis between II Peret 21 and IV Peret 21, corresponding to an interval of 240 years from roughly 2060 to 1820 BC. The only coffin with a star clock that is datable to a specific reign is T3C, the coffin of Ashayt, from the reign of Nebhepetre Mentuhotep II. T3C is at least once removed from the Vorlage. In T3C, and in its Vorlage, the heliacal rising of Sothis is dated to II Peret 21. In relation to the Illahun Sothic date and supposing the same geographic point of reference, II Peret 21 corresponds to the early years of Inyotef II, whereas Ashayt lived and died more than 50 to 75 years later.

---

39 For the decades see Gardiner, *Grammar*, Excursus C.
40 Neugebauer & Parker, *EAT* I 29–32; 106.
42 In 2060 BC: II Peret 21 = July 9 (Jul.).
43 Locher (n. 38), 608, Fig. 1.
Bot instances of *Peret Sepdet* in IV Peret in the Illahun archive—but without specification of the day—are datable to Amenemhet III.44 The rising of Sothis on the specific day IV Peret 16 in 7 Senwosret III was announced in a letter dated to III Peret 25, i.e. 22 days before the event.45 A fragment of the temple diary, pBerlin 10012 A, contains a copy of the letter. The rising date IV Peret 16 is ambiguous. Another fragment of the temple diary states that the offerings for the Sothic festival in year 7 [of Senwosret III] were received, or entered in the temple diary, on IV Peret 17.46 As a rule, offerings were delivered to Illahun one day or even two days before a festival.47 On the basis of the delivery date alone, one would conclude that the rising of Sothis took place on IV Peret 18. Luft has pointed out grammatical and syntactical errors which were made, presumably, by the scribe when he copied the letter with the announcement.48 It is possible that the scribe also made a mistake when he copied the date, writing IV Peret 16 instead of IV Peret *18.49*

Supposing that the Illahun Sothic date refers geographically to Illahun, Brix computed the years 1876–1872 BC as corresponding to IV Peret 16 for the rising day in year 7 of Senwosret III.50 Later Edgerton computed 1870 BC ± 6 years, by allowing a range of the arcus visionis from 9.5° to 8.4° and the possibility that the observations might have been made somewhere between Illahun and Heliopolis.51

Parker tried to accommodate the Illahun lunar dates to Edgerton’s interval for the Sothic date and arrived at year 7 Senwosret III = 1872 BC.52 His sequencing of the Illahun lunar dates was wrong, and consequently 7 Senwosret III = 1872 BC was also wrong,53 for the same

---

44 Luft, *Fixierung*, 44–47; 123.
45 Luft, *Fixierung*, 54–58.
46 Luft, *Fixierung*, 57–58.
47 Krauss, *Sothis*, 79. For an apparent exception see Krauss (n. 33; *SCIEM*), 186 n. 76.
49 If the Sothis-bound lunar year of pBerlin 10056 is projected to later periods, only *Peret Sepdet* on IV Peret *18* yields the calendric situation in year 9 of Amenhotep I as represented in the Ebers calendar; cf. below, end of section.
52 Parker, *Calendars*, 63–69.
reason Barta’s computation of 7 Senwosret III = 1875 BC was wrong.\textsuperscript{54} On the basis of the correct sequencing of the Illahun lunar dates, the next possible, but not necessarily astronomically correct equation for 7 Senwosret III before 1872 BC would be 1880 BC, or after 1855 BC.

Luft postulated that the Illahun Sothic date refers to Memphis where Sothis rose in the 19th century BC on July 17 (Jul.).\textsuperscript{55} As Table III. 10.1 shows, IV Peret 16 would have corresponded to July 16/17 (Jul.) during the quadrennium 1869 to 1866 BC, if the Egyptian calendar day began at sunrise as Luft erroneously supposes. Given that the calendar day began at dawn, IV Peret 16 actually corresponded to July 16/17 during the quadrennium 1873 to 1870 BC.

Table III. 10.1 also shows that III Peret 9, a day that is recorded in the Illahun archive as a lunar day 1 in year 9 of Senwosret III, corresponded to a lunar day 1 in 1864 BC, provided the calendar day began at dawn. Luft concluded that 7 Senwosret III, the year of the Sothic date, corresponded to 1866 BC, combining the lunar event in 1864 and the stellar event in 1866 BC. It is clear, however, that the rising of Sothis and the rising of old crescent were observed (or the absence of old crescent confirmed) during the same hour before sunrise. It contradicts simple logic and common sense to date the stellar and the lunar events to different Julian calendar days. Thus Luft’s astronomical dating of the MK is patently wrong.\textsuperscript{56}

\begin{table}[h]
\centering
\begin{tabular}{llll}
\hline
year BC & III Peret 9 & IV Peret 16 & IV Peret 16 \\
 & (dawn) & (sunrise) & (dawn) \\
\hline
1873 & LD 24 & July 17/18 & July 16/17 \\
1872 & 6 & & \\
1871 & 16 & & \\
1870 & 27 & & \\
1869 & 8 & July 16/17 & July 15/16 \\
1868 & 18 & & \\
1867 & 28 & & \\
1866 & 9 & & \\
1865 & 20 & July 15/16 & July 14/15 \\
1864 & 1 & & \\
\hline
\end{tabular}
\end{table}

\textsuperscript{55} Luft, Fixierung, 224–229.
\textsuperscript{56} Furthermore, the proportion of 6 correct and 15 delayed lunar dates that Luft’s date implies, cannot be the result of observation; cf. above Table III. 8.3.
When both possible dates (IV Peret 16 and *18) for the rising of Sothis in 7 Senwosret III are taken into consideration, together with the uncertainties of pharaonic Sothic dates, then the Illahun Sothic date corresponds to any year between ca. 1882 and 1830 BC. As shown in Chapter III. 8 it follows from the astronomically correct computation of the Illahun lunar dates that 1 Senwosret III = 1837/36 BC and thus year 7 of Senwosret III = 1831/30 BC.

Sothic Date of the Ebers Calendar

The so-called Ebers calendar (see Fig. III. 10.1) is written on the recto of the medical papyrus Ebers. According to Möller the hand that wrote the calendar is palaeographically a few years younger than the hand of the medical text.

For ease of orientation, the columns and lines have been numbered. According to line 1 the calendar refers to regnal year 9 of King Amenhotep I. If the regnal year and the period covered by the calendar were exactly concurrent, then the accession day of Amenhotep I coincided also with III Shemu 9. Whether Col. I lists months or feasts is contested (see below). Col. II contains civil dates, each 30 days apart, disregarding the epagomenal days after a well-attested fashion. In Col. III the entry peret Sepdet (rising of Sothis) follows the calendar day III Shemu 9 and refers therefore to that day and only indirectly to wep-renpet of col. I, i.e. the text asserts directly that peret Sepdet occurred on III Shemu 9. The Ebers calendar has been studied and commented on by many authors, those since 1980 are Helck, Luft, Barta, Krauss, Leitz, Beckerath, Depuydt, Spalinger, and Belmonte.

57 The upper limit is ca. 1882 BC, if the rising date is IV Peret 16 and Diospolis inferior is the observation site, where an arcus visionis ≥ 9° is to be expected, because of the high humidity near the Mediterranean coast. The quadrennium 1833/30 BC is the lower limit, if Elephantine is the geographical point of reference and if the rising date IV Peret *18 was determined schematically with the arcus visionis ≥ 8.6°.


59 Cf. above, Chapter I. 5.

60 W. Helck, GM 67 (1983), 47–49.


64 Leitz, Studien, 24–34.


If around 1500 BC the rising of Sothis was observable at the southern border of Egypt on July 10 (or 11) and at Diospolis inferior on July 19 (Jul.), then the rising on III Shemu 9 in 9 Amenhotep I referred to any of the years between ca. 1549 BC (July 19/18; Diospolis inferior) and ca. 1517 (July 10/11; Elephantine). If the rising dates were schematically determined, then III Shemu 9 in 9 Amenhotep I referred to any of the years from ca. 1541 BC (July 17; Diospolis inferior) to 1509/1506 BC (July 9; Elephantine). Thus the Ebers Sothic date cannot be earlier than ca. 1549 BC and not later than 1506 BC. Recently Kitchen argued on the basis of historical reasoning that Amenhotep I reigned from 1515 to 1494 BC, implying that year 9 corresponded

---

to 1507/06 BC. If so, the Ebers Sothic date must be understood as schematically determined with geographical reference to Egypt’s southern border.

Provided that there was no calendar reform between the Illahun and Ebers Sothic dates, the relative distance between allows chronological conclusions. 333±3 years (Illahun Sothic date = IV peret 16) at most and 325±3 years (Illahun Sothic date = IV peret *18) at least elapsed between the two Sothic dates, dependent on the position of each within its quadrennium. If these maximum and minimum figures are added to Kitchen’s date for 9 Amenhotep I, then the Illahun Sothic date fell at the earliest in 1840/39 BC ±3 and at the latest in 1831/30 BC ±3. It is methodologically preferable to presume the same calendrical and geographical conditions for the Illahun Sothic date as for the Ebers Sothic date. If so, the Illahun Sothic date corresponds to 1830 BC and was schematically determined with the southern border as geographical reference. Alternatively, the Illahun Sothic date could correspond to 1840/39 BC. If so, it would have been determined by actual observation between the latitudes of Coptos and Asyut.

The Problem of the Sothis-based Lunar Calendar

From data in the Illahun archive and in the Ebers calendar Borchardt deduced the existence of a Sothis-based lunar calendar. Parker concurred in principle although he corrected some of Borchardt’s ideas. Spalinger, who recently criticized lunar calendrics in general, nevertheless accepts the Sothis-based lunar calendar although he points to the fact that Egyptological calendrics would be simpler without it. In

70 I.e. the geographical point of reference and the determination of the rising dates remained the same.
71 These figures may be subtracted from 7 Senwosret III = 1830 BC, as determined by the Illahun lunar dates (see Chapter III. 8). The subtraction yields 1508 to 1494 BC for the Ebers Sothic date. The interval overlaps from 1508 to 1506 BC with 1549 to 1509/06 BC, the period of the Ebers Sothic date (see above). It follows that the astronomically correct interval for the Ebers Sothic date lies between 1508 and 1506 BC, harmonizing well with Kitchen’s 1507/06 BC for year 9 of Amenhotep I.
72 Borchardt, Mittel, 5ff.
73 Parker, Calendars, 30ff.
general a Sothis-based lunar year represents a luni-stellar year, which is documented in other cultures.\textsuperscript{76}

The Illahun papyrus Berlin 10056 contains a complete account and two fragmentary ones, each spanning a lunar year.\textsuperscript{77} The complete account is headed: “Account of earth almonds and honey over the course (?) of a year. List over the course (?) of six months of the temple scribe Hornakhte. Regnal year 31. Offerings from this list.”\textsuperscript{78} After the heading, 6 intervals follow:

<table>
<thead>
<tr>
<th>Interval</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>II Shemu 26 nfrjjt-r [to] III Shemu 25</td>
<td></td>
</tr>
<tr>
<td>IV Shemu 25 nfrjjt-r regnal year 31, I Akhet 19</td>
<td></td>
</tr>
<tr>
<td>regnal year 31, II Akhet 20 nfrjjt-r III Akhet 19</td>
<td></td>
</tr>
<tr>
<td>IV Akhet 19 nfrjjt-r I Peret 18</td>
<td></td>
</tr>
<tr>
<td>II Peret 18 nfrjjt-r III Peret 17</td>
<td></td>
</tr>
<tr>
<td>IV Peret 17 nfrjjt-r I Shemu 16</td>
<td></td>
</tr>
</tbody>
</table>

Each interval is designated as month (\textit{bd}) of a phyle leader. It was evident to Borchardt that the six alternate months are lunar and represent either months 1, 3, 5, 7, 9 and 11 or months 2, 4, 6, 8, 10 and 12 of a lunar year of 354 or 355 days. He further realized that the rising of Sothis is the likely starting point for this lunar year.\textsuperscript{79} Parker agreed in principle, but he ascribed pBerlin 10056 to Amenemhet III, and not to Senwosret III as Borchardt had done.\textsuperscript{80} Reckoning 36 years of rule for Senwosret III, Parker placed \textit{peret Sepdet} of years 30/31 of Amenemhet III on I Shemu 1. He further argued that I Shemu 1 is included within the last month of the account: IV Peret 17 to I Shemu 16. If this were the twelfth month of the lunar year, then the year would have begun on I Shemu 27 or 26 with the beginning of the lunar year following after \textit{peret Sepdet} on I Shemu 1.

Parker was right to attribute pBerlin 10056 to Amenemhet III, but Senwosret III ruled only for 19 years, not 36. Therefore the correct date for \textit{peret Sepdet} in 30 Amenemhet III is at least IV peret 26 or 28.

\textsuperscript{76} Parker, \textit{Calendars}, 31.

\textsuperscript{77} For the fragmentary accounts, see Krauss, \textit{Sothis}, 83–84.

\textsuperscript{78} Luft, \textit{Fixierung}, 74, and Pl. 13 provides a transcription and a photo of the complete account.

\textsuperscript{79} Borchardt also noticed a possible relationship to summer solstice. It so happens that the summer solstice and the rising of Sothis at $\phi = 24^\circ$ coincided on July 9 (Jul.) in the 19th century BC. But since solstices are not attested in Egyptian calendric sources, by contrast to the rising of Sothis, it is pointless to relate the Illahun lunar year to summer solstice.

\textsuperscript{80} Parker, \textit{Calendars}, 37.
depending on whether Sothis rose on IV Peret 16 or IV Peret *18 in 7 Senwosret III. Peret Sepdet in IV Peret 26 or *28 fell in 31 Amenemhet III within IV Peret 17 to I Shemu 16, the last month of the account. Borchardt and Parker interpreted the dates before nfrjjt-r as first days, and the ones after as last days of an Egyptian lunar month, but Luft realized that “LD 2 nfrjjt-r LD1” is meant (see above Chapter III. 8). The Illahun lunar year may be interpreted as standard calendar, used and modified for a temple roster.

The Ebers Calendar As Another Example of the Sothis-based Lunar Calendar

Borchardt interpreted the Ebers calendar as an example of a Sothis-based lunar year of the type that he had recognized in the Illahun archive. According to him col. I (see Fig. III. 10.1) contains a series of lunar months.81 Parker modified Borchardt’s interpretation:82 the date III Shemu 9 is common both to peret Sepdet and to the beginning of the lunar month wep-renpet, i.e. on III Shemu 9 in 9 Amenhotep I, a LD 1 and peret Sepdet coincided.

Gardiner disagreed,83 but Hornung concurred with Parker,84 utilizing III Shemu 9 as LD 1 for chronological purposes.85 In the early 1980s Helck denied a correlation between the lunar months of col. I and the associated civil days in col. II, suggesting instead that the lunar month wep renpet could have begun on any day between III Shemu 9 and IV Shemu 8 in year 9 of Amenhotep I.86 Furthermore, he proposed that peret Sepdet could have occurred on any day within the lunar month wep renpet. Helck’s purpose was to eliminate an obstacle to his ultra short NK chronology characterised by a 15 year reign at most for Horemhab, and implying that year 9 of Amenhotep I was correspondingly later than 1506 BC, which excluded III Shemu 9 as a Sothic date.

Subsequently, Luft doubted that col. I refers to lunar months and explained it as a list of feasts celebrated on unspecified days within the

82 Parker, *Calendars*, 37–42.
86 Helck (n. 60); idem, *SAK* 15 (1988), 163.
civil months of col. II,\(^{87}\) the latter he identified as months of the regnal year, following a suggestion of Barta.\(^{88}\) Beckerath argued against Luft’s interpretation of col. I; he also rejected the utilization of the non-existent months of the regnal year.\(^{89}\)

Whereas it follows from a straightforward reading of the Ebers calendar that Sothis rose on III Shemu 9, the identification of III Shemu 9 as LD 1 presupposes the identification of the Ebers calendar as another example of a Sothis-based lunar year of the Illahun type. Parker discussed other sources which possibly attest a Sothis-based lunar calendar, but these are liable to justifiably different interpretations and should not be used to elucidate the Ebers calendar. However, two arguments may be adduced to strengthen Parker’s case.

Without any recourse to calendrical theory, Kitchen has concluded that Amenhotep I reigned between 1515 and 1494 BC, implying as noted above that year 9 = 1507/06 BC.\(^{90}\) Because III Shemu 9 coincided in 1506 BC with a LD 1, Kitchen confirms, if unintentionally, Parker’s lunar interpretation of the Ebers date.\(^{91}\)

The possibility of projecting the Illahun lunar year backwards and forwards can also be utilized in support of Parker. If *peret Sepdet* is shifted from IV peret 26 or *28 in 30 Amenemhet III to III Shemu 9, keeping in mind that 30 Amenemhet III can be the first or the last year of a quadrennium, then the shift corresponds to 72 or *70 quadrennia ± 3 years + 43 days each or 288 ± 3 years or *280 years ± 3 years. If the LD 1 that fell on I Shemu 26 in 30 Amenemhet III is projected over the same interval by using mean synodic months,\(^{92}\) it coincides with IV Shemu 9 as first lunar day *after* peret Sepdet, as Tables III. 10. 2a.b shows.

According to the projection there was a coincidence of IV Shemu 9 and a LD 1 after *peret Sepdet* on III Shemu 9, 282 years after 30 Amenemhet III. It is clear that in the same projected year *peret Sepdet* coincided with a LD 1 on III Shemu 9.\(^{93}\) This implies that the Ebers

---

\(^{87}\) Luft (n. 61), 69–71.

\(^{88}\) Barta (n. 62).

\(^{89}\) Beckerath (n. 65), 28–31.


\(^{91}\) III Shemu 9 corresponded to LD –1 in 1531, to LD 2 in 1517, to LD 1 in 1506, to LD –1 in 1495, and to LD 2 in 1492 BC; cf. also Krauss, *Sothis*, 109.

\(^{92}\) For example, the interval of 3426 mean lunar months corresponds to 101171.8 days. Thus the day that fell 3426 mean lunar months after I Shemu 26 in 1788 BC corresponded to IV Shemu 3.

\(^{93}\) There is no such result, if *peret Sepdet* fell on IV Peret 16 in 7 Senwosret III.
calendar represents a Sothis-based lunar year of the Illahun type, and it eliminates the argument that the Ebers calendar is without parallel and thus only “proves itself” (so Belmonte).

**Unusual Features of the Ebers Calendar**

One peculiar feature of the Ebers calendar is the position of the months wep renpet and techi at first and second position. These two months are otherwise known as the 12th or last month and first month respectively. According to Borchardt the Sothis-based lunar year, as exemplified in the Ebers calendar, began with the intercalary lunar month wep renpet. Parker accepted that the Sothis-based lunar year could begin

---

94 Following Barta, ZÄS 110 (1983), 19–25, Beckerath, Chronologie, 50, presumes that the Ebers calendar represents the civil-based lunar calendar.
with the intercalary month, but he argued against the identification of the intercalary month as *wep renpet*. Independent of the Ebers calendar, he had hypothesized the existence of an intercalary month “*dhwyyl*”; he emphasized that *wep renpet* is the name of the 12th month, and denied the possibility that the intercalary 13th month could bear the same name. But Parker’s intercalary month “*dhwyyl*” is fictitious, and it is quite possible that the name of an intercalary 13th month is the same as the preceding 12th month.\(^{95}\)

Provided that the accession day of Amenhotep I lay on III Shemu 9, it will have been its coincidence with *peret Sepdet* and the first day of the lunar month in which *peret Sepdet* occurred, that prompted a scribe to record the calendric situation in regnal year 9. The last month of a Sothis-based lunar year began on the accession day, and a new Sothis-based lunar year began a lunar month later. Disregarding the overlapping of two lunar years, the scribe listed a series of 12 months, corresponding to the standard format of a single year. To each lunar month he allotted the standard length of 30 days;\(^ {96}\) according to standard procedure he omitted the epagomenai. Thus the Ebers calendar can be explained as the Sothis-based lunar year of the Illahun type, adapted to a regnal year in order to make known and commemorate the very rare coincidence of a royal accession day with the beginning of an intercalary lunar month in which *peret Sepdet* occurred.

The coincidence of *peret Sepdet* and the first lunar day of a 13th lunar month tended to occur each 19 Egyptian years less 4 to 5 days. The coincidence occurred because the rising day of Sothis stayed the same over centuries in the Julian calendar while lunar dates tend to repeat after 19 Julian years = 19 Egyptian years less 4 to 5 days (Metonic cycle). The coincidence of an accession day and *peret Sepdet* was only possible during the NK and the TIP when regnal years began with the accession day; in fact, the occurrence in year 9 of Amenhotep I may have been the only one of its kind.

---


\(^{96}\) Cf. A. J. Spalinger, rev. of Leitz, *Studien*, in: OLZ 87 (1992), 25, pointing out that the Babylonians had also set up a schematic 360 day lunar year composed of twelve months each containing 30 days.
Of only three rulers of Egypt before the Roman conquest of 30 BC do we know the exact day of death in absolute terms, that is, can we define the distance in time to the present precisely. They are Psammetichus II, Alexander the Great, and Ptolemy VIII Euergetes II. Only Psammetichus II reigned in the period covered by this handbook. A stela dedicated to his daughter, the God’s Wife Ankhnesneferibre, states: "rnpt-zp 7 šbd 1 šḥt sw 23 pr nṯr pn... psmtk r pt “Year 7, Month 1 of the šḥt-season (first month of the year), Day 23, this god... Psammetichus went up to heaven.” \(^1\) Year 7 Month 1 Day 23 of Psammetichus II is most probably 9 Feb 589 BC. The event happened in the period of Egyptian history for which a widely accepted chronological model is available that allows dating to the exact day. The period begins with Taharqa’s reign about 690 BC and spans most of the seventh to fifth centuries BC. Nowhere else in that period—and not anywhere before it—can events be dated absolutely to the exact day.\(^2\) It is all of history’s earliest period of day-exact dating. From about 400 BC, day-exact dating is suspended for a few decades. It resumes with Nectanebo II’s reign in the 350s and 340s BC. Uncertainty then returns for a few years due to a lack of sources. With Alexander’s conquest in 332 BC, day-exact dating resumes once more, never to cease again. Day-exact dating is a topic with sharply defined contours deserving treatment in

\(^{1}\) G. Maspero, “Deux monuments de la princesse Ankhnasnofibri”, ASAE 5 (1904), 84–90.

\(^{2}\) For converting Egyptian dates into Julian dates, that is, into our modern calendar extended backward into the past, a table listing the Julian equivalent for Day 1 of every Egyptian month in the period at hand is found in P. W. Pestman (with S. P. Vleeming), Les papyrus démotiques de Tsenhor (Leuven: Studia demotica 4, 1994), 167–183. In this table, the years before Taharqa are hypothetical, those of the fourth century BC are approximate, and the beginning of Nectanebo II’s reign is dated two years earlier than will be proposed here in section 3 of Chapter II. 11. For tables listing only the Julian equivalent only of Day 1 of the whole year, see section 4 in Chapter II. 11; also Ginzel, Handbuch II, 576–585; E. J. Bickerman, Chronology of the Ancient World (Ithaca, 1980\(^2\)), 115–122.
foundations of day-exact chronology: 690 BC–332 BC

its own right. What follows is an outline of its foundations. A comprehensive account remains desirable. This Chapter’s focus is on general principles. For chronological details about the period’s dynasties see Chapter II. 11.


Three calendrical structures are relevant: the Egyptian civil calendar, Egyptian lunar time-reckoning, and the Babylonian lunisolar calendar. Throughout Egyptian history, the civil calendar was the dominant calendar of daily life. Details about its structure, its 12 months of 30 days plus five epagomenal days, and its three seasons of four months, Akhet, Peret, and Shemu, appear elsewhere in this handbook (see Chapter I. 5). In what follows, they will be called Months 1 through 12. Month-names have also been preserved. In the period at hand, the names appear almost exclusively in fifth century BC Aramaic papyri from Egypt. The Greek variants are now conventionally used in modern historiography. One form for each, along with the Egyptian origin, is as follows:

<table>
<thead>
<tr>
<th></th>
<th>Egyptian</th>
<th>Greek</th>
<th></th>
<th>Egyptian</th>
<th>Greek</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Thoth</td>
<td>ḫwty</td>
<td>7</td>
<td>Phamenoth</td>
<td>p n jmn ḫtp</td>
</tr>
<tr>
<td>2</td>
<td>Phaophi</td>
<td>p n jbt</td>
<td>8</td>
<td>Pharmouthi</td>
<td>p n ṭmnwtt</td>
</tr>
<tr>
<td>3</td>
<td>Hathyr</td>
<td>ḫwt ḫr</td>
<td>9</td>
<td>Pachons</td>
<td>p n ḫnmw</td>
</tr>
<tr>
<td>4</td>
<td>Choiak</td>
<td>k₃ ḫr k₃</td>
<td>10</td>
<td>Payni</td>
<td>p n jnt</td>
</tr>
<tr>
<td>5</td>
<td>Tybi</td>
<td>b ḫbt</td>
<td>11</td>
<td>Epeiph</td>
<td>ṣṭjp</td>
</tr>
<tr>
<td>6</td>
<td>Mecheir</td>
<td>ṣḥr</td>
<td>12</td>
<td>Mesore</td>
<td>mswt r’</td>
</tr>
</tbody>
</table>

The Egyptian 365-day year is almost a quarter day shorter than the solar year, or cycle of seasons, of about 365.2422 days. The Egyptian year therefore wanders or shifts in relation to the solar year at a rate of about one day in four years, and of exactly one day in four years in relation to the Julian calendar year of 365.25 days (that is, three years of 365 days followed by one of 366). The Egyptian new year returns to the same day in the Julian calendar in exactly 1460 (365 × 4) years. In 664 BC, new year fell on 5 February for the first of four successive years. By 332 BC, it had receded to 14 November. Two

---

3 For a survey of the sources for these month-names in hieroglyphic Egyptian, Coptic, Greek, and Aramaic, see Depuydt, Calendar, 109–136.
new years fall in 521 BC, which is a leap year of 366 days, like all years BC divisible by 4 after subtracting 1: the first on 1 Jan 521 BC and the second 365 days later on 31 Dec 521 BC. New year then shifts to a day earlier in the Julian calendar, to 30 December, already in 517 BC, not in 516 BC.

Two kinds of lunar time-reckoning are relevant. The native Egyptian kind lived in the shadow of Egypt’s civil calendar. It was used mainly for religious purposes. Native lunar dates play a crucial role in the chronology of Dynasties 26 and 30 (see sections 2 and 3 in Chapter II. 11. The Babylonian lunisolar calendar enters Egyptian history when Persia, which had adopted it, conquered Egypt in or shortly before 525 BC.

There is not much room for lunar calendars to differ. They all follow the cycle of lunar phases. Astronomical lunar months are on average about 29.53 days long. Obviously, calendrical lunar months last a full number of days. The average 29.53 is obtained by alternating months of 29 days and of 30 days, with slightly more 30-day months because the average is just above 29.5. Lunar calendars differ mainly in two respects: (1) when the month begins; (2) how months are organized into years. As for (1), Babylonian and Egyptian lunar months began close to new moon or conjunction, the point in time when the moon is right between the earth and the sun and therefore invisible from the earth. As for (2), 12 months (on average about 354 days) are shorter than a solar year of about 365.2422 days and 13 months (on average almost 384 days) are longer. The average of 365.2422 is obtained

---

4 Persian kings may have used accession dating in their native Persia (see L. Depuydt, “Evidence for Accession Dating under the Achaemenids”, *JAOS* 115 (1995), 193–204), with regnal years lasting from the accession to the successive anniversaries of the accession.

5 As to how close, see L. Depuydt, “The Date of Death of Jesus of Nazareth”, *JAOS* 122 (2002), 466–80, at 471–477. It is now often stated, following Parker (*Calendars*, 10), that the Egyptian lunar Day 1 was the day that follows the day in the morning of which the last crescent is last sighted. The last crescent is last seen above the eastern horizon, rising ahead of the sun, one to two days before conjunction. However, the evidence, which includes civil-lunar double dates, proves only that the Egyptians did not wait for first crescent visibility, which occurs one two days after conjunction. Lunar months began a little earlier. In fact, nowhere in the ancient world, Classical or Near Eastern, is there positive evidence that first crescent visibility marked the beginnings of lunar months. The role of first crescent visibility is one of the most overrated assumptions of ancient history. The Muslim calendar is an exception. But it may be alone. Babylonian astronomical texts, mentioned elsewhere (Depuydt, *JAOS* 122, 471) as a second exception, may actually not be one, as I hope to show in another place.
by alternating years of 12 months and years of 13 in a 19-year cycle containing 12 years of 12 months and 7 years of 13. That is because 235 (12 \times 12 + 7 \times 13) lunar months are roughly as long as 19 solar years. From the fourth century BC, and already mostly earlier, the years with 13 months are years 3, 6, 8, 11, 14, 17, and 19 of the cycle. In heeding both moon and sun, the Babylonian calendar is called lunisolar. Month 1, Nisanu, begins around a new moon close to the spring equinox, in later March or in April. The Babylonian month-names, in one variant each, are as follows. The derived Hebrew set is also listed.

<table>
<thead>
<tr>
<th>Babylonian</th>
<th>Hebrew</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nisanu</td>
<td>Nisan</td>
</tr>
<tr>
<td>Aiaru</td>
<td>Iyyar</td>
</tr>
<tr>
<td>Sisanu</td>
<td>Sivan</td>
</tr>
<tr>
<td>Duzu</td>
<td>Tammuz</td>
</tr>
<tr>
<td>Abu</td>
<td>Ab</td>
</tr>
<tr>
<td>Ululu</td>
<td>Elul</td>
</tr>
<tr>
<td>Tashritu</td>
<td>Tishri</td>
</tr>
<tr>
<td>Arahasamnu</td>
<td>Heshvan</td>
</tr>
<tr>
<td>Kislimu</td>
<td>Kislev</td>
</tr>
<tr>
<td>Tebetu</td>
<td>Tebeth</td>
</tr>
<tr>
<td>Shabatu</td>
<td>Shebat</td>
</tr>
<tr>
<td>Addaru</td>
<td>Adar</td>
</tr>
</tbody>
</table>

1.2. Year-counting

Calendars account for how days add up to months and months add up to years. That leaves counting the years. The year-count recommenced with each new reign in ancient Egypt. Two systems are relevant here. Predating was used in Dynasty 26, even if a formal proof is still desirable, and presumably also in Dynasties 28–30.6 Predating of postdating was used in the Persian Dynasty 27, and presumably also in the short Persian Dynasty 31, for which evidence is scarce.7 A fictional

---

7 No single principle is more important to the chronological structure of 664 BC–332 BC than predating of postdating. For details, see L. Depuydt, “Regnal Years and Civil Calendar in Achaemenid Egypt”, *JE* 81 (1995), 151–73. For the special case of Cambyses, first ruler of Dynasty 27, see id., “Egyptian Regnal Dating under Cambyses and the Date of the Persian Conquest”, in: *Studies in Honor of William Kelly Simpson*
example involving a king assuming power on 1 Sep AD 2001 may illustrate both systems. Let us assume that the Egyptian new year falls on 1 January.

In Egyptian predating, Year 1 lasts four months, from 1 Sep 2001 to 31 Dec 2001. A new regnal year begins on 1 Jan 2002. Regnal years and calendar years are henceforth coterminous. The old king’s last regnal year, lasting from 1 Jan 2001 to 31 Aug 2001, and the new king’s first together form a whole calendar year. This system is called predating because the beginning of regnal Year 2 on 1 Jan 2002 precedes the beginning of the full second year of reign on 1 Sep 2002.

In Babylon, new year began around a new moon close to the spring equinox in late March or in April, let us assume 21 March for argument’s sake. In Babylonian postdating, the eight months from the reign’s beginning on 1 Sep 2001 to 20 Mar 2002 are not counted and called “head (beginning) of the reign” or the like. It is a numberless accession year. This is postdating because the beginning of regnal Year 2 on the Babylonian new year of 21 Mar 2003 follows the beginning of the full second year of reign on 1 Sep 2002.

In Egyptian-Babylonian predating of postdating, postdated Babylonian regnal years of Persian kings are predated in Egypt. The reign’s first Babylonian new year in the spring was for all practical purposes taken as the reign’s beginning in Egypt. Persian-Egyptian regnal years are predated in relation to the postdated beginning of the reign, the Babylonian new year.

In predating, the beginning of regnal Year 2 precedes the beginning of the full second year of reign. In postdating, it follows. In predating of postdating, both are possible, following or preceding. All depends on when the reign begins. A twofold distinction applies. In case one, the Persian reign begins between the Babylonian and Egyptian new years. Following applies. Postdating has an effect. In case two, the Persian reign begins between the Egyptian and Babylonian new years. Preceding applies, as in pure predating. Postdating has no effect.

(Boston, 1996), 179–190; W. Barta, “Zur Datierungspraxis in Ägypten unter Kambyses und Dareios I”, ZÄS 119 (1992), 82–90; cf. also D. Devauchelle, “Un problème de chronologie sous Cambyse”, Transsyriâtêne 15 (1998), 9–17. F. X. Kugler had earlier indirectly noted the principle of predating to postdating (Sternkunde und Sterndienst in Babel (Münster, 1907–24), vol. 2.2.2, 190–1), but in reference to the years of Ptolemy’s Canon only, not to actual historical regnal years, and also without distinguishing between the two distinct cases to be described next. In the Canon, the lengths of all the reigns are converted into multiples of the Egyptian calendar year, that is, into multiples of 365 days.
Regnal Year 2 of a king assuming power on 15 Dec 2001, between the Babylonian and Egyptian new years, begins on 1 Jan 2002, that is, before the second full year of reign begins. Regnal Year 2 of a king assuming power a month later, on 15 January, between the Egyptian and Babylonian new years, begins on 1 Jan 2003, that is after the second full year of reign begins.

Xerxes I’s reign illustrates case one. It began in late Nov 486 BC. The Egyptian new year soon followed on 23 Dec 486 BC. Babylonian regnal Year 1 began about 4 Apr 485 BC. By about 4 Apr 485 BC, Egyptian regnal Year 1 must have begun as well, probably not earlier. Egyptian regnal Year 2 began on 22 Dec 485 BC, on the reign’s second Egyptian new year. The reign’s beginning fell between the Babylonian and Egyptian new years. Egyptian regnal Year 2 therefore began on the second Egyptian new year of the reign, and after the beginning of the second full year of reign in late Nov 485 BC.\(^8\)

Darius II’s reign illustrates case two. It began in all probability in 25 Dec 424 BC–13 Feb 423 BC, after the Egyptian new year of 7 Dec 424 BC. The Babylonian regnal Year 1 began on or close to 31 Mar 423 BC. By that day, Egyptian regnal Year 1 must have begun, probably not earlier. Egyptian regnal Year 2 then began on 7 Dec 423 BC, the reign’s first Egyptian new year. The reign’s beginning fell between the Egyptian and Babylonian new years. Regnal Year 2 therefore began on the first Egyptian new year of the reign, as in pure predating, and before the beginning of the second full year of reign, which fell after 24 Dec 423 BC in the Egyptian civil calendar.

A lack of evidence prevents establishing whether Artaxerxes II’s reign is case one or case two. The reign began between about 17 Sep 405 BC and about 10 Apr 404 BC. The Egyptian new year of 2 Dec 405 BC falls inside this period.

2. Four Key Sources

Four sources of wider scope are fundamental to day-exact dating. Additional sources of narrower scope are adduced in the Chapter on

\(^8\) A full year of reign, or the time from accession to the first anniversary of the accession, is here taken at 365 days. We are after all in Egypt.

the chronology of Dynasties 26 to 31 (see Chapter II. 11). Ptolemy’s Canon is the anchor source. It fixes Dynasty 27 in time, and hence indirectly also the other dynasties. The Canon is supported in this role—and will in the future be entirely replaced in it—by Babylonian astronomical texts. These texts cement the Canon’s veracity. A second anchor, dependent on the Canon, is a set of Serapeum stelae. These stelae mostly fix the reigns of Dynasty 26 in relation to the previously fixed Dynasty 27.

2.1. Ptolemy’s Royal Canon The Canon remains the foundation of ancient Near Eastern chronology in the first millennium BC.\(^\text{10}\) An adaptation of the relevant portion’s Greek original is as follows.

\[ \text{Ptolemy’s Canon of Kings, Segment Relevant to Saite and Persian Egypt} \]

<table>
<thead>
<tr>
<th>King’s Name</th>
<th>Years Reigned</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nabonassar</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>Nabu-nadin-zeri</td>
<td>2</td>
<td>16</td>
</tr>
<tr>
<td>Mukin-zeri and Pul</td>
<td>5</td>
<td>21</td>
</tr>
<tr>
<td>...</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cyrus</td>
<td>9</td>
<td>218</td>
</tr>
<tr>
<td>Cambyses</td>
<td>8</td>
<td>226</td>
</tr>
<tr>
<td>Darius I</td>
<td>36</td>
<td>262</td>
</tr>
<tr>
<td>Xerxes I</td>
<td>21</td>
<td>283</td>
</tr>
<tr>
<td>Artaxerxes I</td>
<td>41</td>
<td>324</td>
</tr>
<tr>
<td>Darius II</td>
<td>19</td>
<td>343</td>
</tr>
<tr>
<td>Artaxerxes II</td>
<td>46</td>
<td>389</td>
</tr>
<tr>
<td>Artaxerxes III</td>
<td>21</td>
<td>410</td>
</tr>
<tr>
<td>Arses</td>
<td>2</td>
<td>412</td>
</tr>
<tr>
<td>Darius III</td>
<td>4</td>
<td>416</td>
</tr>
<tr>
<td>Alexander the Great</td>
<td>8</td>
<td>424</td>
</tr>
</tbody>
</table>

The Canon’s diminutive size belies its importance. Its three columns provide: (1) the ruler’s name; (2) the length of reign in a number of full 365-day Egyptian civil years; (3) the cumulative total of years from Nabonassar, the Canon’s first king. The cumulative count is also known as the Era of Nabonassar. Year 1 of Cambyses, ruler no. 22, is Year 219 from Nabonassar. 218 years precede. The first day of the first year of the Canon is 26 Feb 747 BC. The Egyptian years wander in relation to the Julian calendar (see 1.1 above). The Canon may now be expanded as follows.

**Ptolemy’s Canon of Kings, Segment Relevant to Saite and Persian Egypt**

<table>
<thead>
<tr>
<th>King’s Name</th>
<th>Length of Reign in Full Egyptian Civil Years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nabonassar</td>
<td>26 Feb 747–22 Feb 733</td>
</tr>
<tr>
<td>Nabu-nadin-zeri</td>
<td>23 Feb 733–21 Feb 731</td>
</tr>
<tr>
<td>Mukin-zeri and Pul</td>
<td>22 Feb 731–20 Feb 726</td>
</tr>
<tr>
<td>Cyrus</td>
<td>5 Jan 538–2 Jan 529</td>
</tr>
<tr>
<td>Cambyses</td>
<td>3 Jan 529–31 Dec 522</td>
</tr>
<tr>
<td>Darius I</td>
<td>1 Jan 521–22 Dec 486</td>
</tr>
<tr>
<td>Xerxes I</td>
<td>23 Dec 486–16 Dec 465</td>
</tr>
<tr>
<td>Artaxerxes I</td>
<td>17 Dec 465–6 Dec 424</td>
</tr>
<tr>
<td>Darius II</td>
<td>7 Dec 424–1 Dec 405</td>
</tr>
<tr>
<td>Artaxerxes II</td>
<td>2 Dec 405–20 Nov 359</td>
</tr>
<tr>
<td>Artaxerxes III</td>
<td>21 Nov 359–15 Nov 338</td>
</tr>
<tr>
<td>Arses</td>
<td>16 Nov 338–14 Nov 336</td>
</tr>
<tr>
<td>Darius III</td>
<td>15 Nov 336–13 Nov 332</td>
</tr>
<tr>
<td>Alexander the Great</td>
<td>14 Nov 332–11 Nov 324</td>
</tr>
</tbody>
</table>

The two dates in each line are Day 1 and Day 365 of an Egyptian year. Babylonian regnal Year 1 began on the first Babylonian new year of the reign in late March or in April, namely in the springs of 747, 733, 731, 538, 529, 521, 485, 464, 423, 404, 358, 337, 335, 331, and 323 BC. The reign of course begins earlier, up to as much as a year earlier. The Canon’s reigns begin on the Egyptian new year that precedes the reign’s first Babylonian new year. As a result, the reign’s historical beginning can both precede and follow the Canon’s beginning (cf. the related distinction between the two cases in 1.2). Xerxes I’s
reign began before the Canon’s beginning of 23 Dec 486 BC. Darius II’s reign began after the Canon’s beginning of 7 Dec 424 BC.

2.2. *Serapeum Stelae*  Many of the stelae found in the tombs of the Apis bulls in the Serapeum in Memphis list the exact dates of birth and death of people and bulls along with their life-span to the day. If the person or bull was born under one king and died under another, the first king’s length of reign can be inferred. Such inferences provide the chronological skeleton of Dynasty 26.\(^{11}\) One example will need to suffice. According to stela Louvre 193, an Apis was born in Year 53 Month 6 Day 19 of Psammetichus I, died in Year 16 Month 2 Day 6 of Necho II, and lived 16 years 7 months 17 days, that is, 16 years and 227 \((7 \times 30 + 17)\) days. The two fractions of a year that the bull lived in Year 53 of Psammetichus I and in Year 16 of Necho II add up to 232 days, excluding apparently Month 6 Day 19, the date of birth, from the count. That is five days less than the 227 days given in the text. Evidently, the five epagomenal days are erroneously not counted.\(^{12}\) That leaves 16 full 365-day years to be identified. Necho II’s Years 2–15 are 14 of them. That leaves two. According to predating (see 1.1), one must be the 365-day year encompassing Psammetichus I’s last regnal year and Necho II’s first. One last full year now still needs to be accounted for. It cannot be but Psammetichus I’s Year 54, a full 365-day year, lasting from new year to new year. Year 55, a regnal year shorter than 365 days, was then presumably his last.

2.3. *The Cuneiform Record*  From 525 BC or shortly before, Persia ruled both Egypt and Mesopotamia. Rulers of Egypt were now dated continuously in cuneiform tablets by the Babylonian calendar. Cuneiform evidence thus becomes directly relevant for Egyptian chronology. R. A. Parker and W. H. Dubberstein have collected what the cuneiform record transmits about three aspects of the Babylonian calendar: (1) which lunar months had 29 days and which 30 days; (2) which years had 12 months and which 13 months; (3) on which day daylight of each lunar Day 1 fell.\(^{13}\) The following line from their tables describes Darius II’s Babylonian regnal Year 1.

---


\(^{12}\) So already Gardiner, “Years”, 17.

\(^{13}\) Parker & Dubberstein, *Chronology*. Evidence that has emerged since would make
foundations of day-exact chronology: 690 BC–332 BC

This line is to be interpreted as follows. Month 1 (Nisanu) of Year “1” began about 11 Apr 423 BC (“423 4/11”), Month 2 (Aiaru) about 11 May 423 BC (“5/11”), and so on. Month 12 (Addaru) began about 1 Mar 422 BC (“422 . . . 3/1”). Most of the Julian dates for lunar Day 1 in Parker’s and Dubberstein’s tables are obtained by computation. These computations are based on the assumption that the first crescent could have been seen in the evening preceding daylight of lunar Day 1, that is, in the evenings on 10 April, 10 May, and 28 February. The first crescent is first seen in the evening one or two days after conjunction. The conjunctions in question occurred about 3:56AM on 9 Apr 423 BC, about 6:52PM on 8 May 423 BC, and about 1:22PM on 27 Feb 422 BC.14 It is important to note that a Julian day date of an ancient lunar Day 1 may be off by one to two days from the actual historical beginning. It is certain that lunar Day 1 was always close to conjunction, but it can no longer be known for most lunar months exactly how close, hence the description “about 11 Apr 423 BC,” and not just “11 Apr 423 BC” for lunar dates throughout this Chapter and Chapter II. 11.

Once the course of the Babylonian calendar is reconstructed, the earliest and latest attested dates for each reign provide approximate dates for the reigns’ beginnings (see sections 1 and 4 in Chapter II. 11).

2.4. Aramaic Double Dates Aramaic papyri from Egypt dating to the fifth century BC have yielded a remarkable set of Egyptian-Babylonian double dates. Double dates date single documents by both the Egyptian civil calendar and the Babylonian lunisolar calendar. The fact that the two independently obtained Julian equivalents of the Egyptian and Babylonian dates as a rule match serves as an absolute guarantee of the correctness of our understanding, at least from the fifth century BC onward, of both calendars, of our understanding of the dating of Egyptian history, and of our understanding of the Egyptian year’s wandering motion. The persistent match also adds confidence to the established understanding of earlier Egyptian chronology. That by itself is


14 Goldstine, Moons.
a paramount contribution of these double dates to Egyptian chronology, in addition to sundry detail regarding the dating of individual kings.

For a list of the completely preserved double dates see Table III. 11.1. Columns (1) and (2) list what is in the text. The texts give the month-names in Aramaic garb. The familiar Hebrew and Greek forms are used here. The equation $(1) = (2)$ found in the texts is reduced to lunar Day 1 in column (3). On the one hand, the Julian date of the Egyptian equivalent of lunar Day 1 is known because the course of the Egyptian wandering year is fully transparent ((4)). On the other hand, so is the time of conjunction or new moon through computation using formulas of lunar motion (see (5)). A comparison of (4) and (5) reveals that, strikingly, lunar months begin around conjunction.

3. The Limits of History’s Earliest Day-exact Chronology

Day-exact chronology sets in with Taharqa’s Year 1, the 365-day year 12 Feb 690 BC–11 Feb 689 BC, or perhaps 12 Feb 691 BC–11 Feb 690 BC (see section 2 in Chapter II. 11). But day-exact is inactive and merely potential without actual dated events of history. The earliest day-exact date is I Peret 10 (Month 5 Day 10) of Taharqa’s Year 3, the date of papyrus Louvre E3228d, which concerns the sale of a slave. That would be 20 Jun 688 BC. Considering the uncertainty regarding Taharqa’s Year 1, a more secure earliest day-exact date is the first dated event of Psammetichus I’s reign, namely Month 1 (I Akhet) Day

---

15 Depuydt, “Consistency”, 53–4. On special problems regarding double dates nos. 3 and 10 and on statistical considerations supporting the foundational value of the Aramaic evidence, see now sections 4.3 and 4.4 in: L. Depuydt, “Calendars and Years in Ancient Egypt” (forthcoming in the Acts of a session on “Calendars and Years” held at the 2005 Notre Dame Workshop on the History of Astronomy).

16 The manuscript sigla are those of B. Porten’s and A. Yardeni’s comprehensive Textbook of Aramaic Documents from Ancient Egypt, 4 vols. (Jerusalem, 1986–99).

17 The times are Goldstine’s (Moons) for Babylon, minus 53 minutes for Memphis, or minus 47 minutes for Aswan.

18 Apparently, they began on average a little too early for the first crescent to have been visible in the evening preceding daylight of Day 1 (see note 5).

19 See Depuydt, “Consistency”, 52. At 52a, line 19, for ‘11 June 688 BCE’ read ‘20 June 688 BCE’. At 52a, note 42, line 3, for ‘Month 10 Day 23’ read ‘Month 11 Day 23’.
28 of his Year 9, or 2 Mar 656 BC. On this day, the Nitocris Adoption stela states, princess Nitocris departed from Sais.\textsuperscript{20}

Day-exact chronology is suspended for several decades when Persian rule over Egypt ends around 400 BC. The latest exact dates appear in Aramaic papyri. The latest complete one is Month 1 Day 12 (12 Thoth) of Year 4 of Artaxerxes II, that is, 13 Dec 402 BC.\textsuperscript{21} If the Artaxerxes associated with a date of Month 2 Day 18 (18 Phaophi) of Year 4 is indeed the second king of that name, as he appears to be,\textsuperscript{22} then 18 Jan 401 BC would be the latest date.

\textsuperscript{21} Papyrus “B3.12” in: Porten & Yardeni, \textit{Textbook} (n. 16), vol. 2.
Table III. 11.1. Completely Preserved Double Dates in Aramaic Papyri from Egypt

<table>
<thead>
<tr>
<th></th>
<th>Text</th>
<th>Egyptian Date</th>
<th>Babylonian Lunar Date</th>
<th>Equation (1) = (2) Converted for Babylonian Day 1</th>
<th>Daylight of Egyptian Date Closest to (4)</th>
<th>New Moon Closest to (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 1</td>
<td>C3.8</td>
<td>9 Choiak</td>
<td>24 Adar</td>
<td>16 Hathyr</td>
<td>4 Mar 471</td>
<td>1 Mar 2:41PM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Year 15 of Xerxes I</td>
<td>Year 14</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Year 5 of Xerxes I</td>
<td>Year 5 of Xerxes I</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. 3</td>
<td>B3.1</td>
<td>4 Thoth</td>
<td>7 Kislev</td>
<td>3 epagomenal</td>
<td>12 Dec 457</td>
<td>16 Dec 8:06AM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Year 9 of Artaxerxes I</td>
<td>Year 14 of Artaxerxes I</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. 4</td>
<td>B3.2</td>
<td>25 Phamenoth</td>
<td>20 Sivan</td>
<td>6 Phamenoth</td>
<td>17 Jun 451</td>
<td>16 Jun 1:59PM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Year 14 of Artaxerxes I</td>
<td>Year 14 of Artaxerxes I</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. 5</td>
<td>B2.7</td>
<td>10 Mesore</td>
<td>2 Kislev</td>
<td>9 Mesore</td>
<td>16 Nov 446</td>
<td>16 Nov 5:17AM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Year 19 of Artaxerxes I</td>
<td>Year 19 of Artaxerxes I</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. 6</td>
<td>B2.8</td>
<td>19 Pachons</td>
<td>14 Ab</td>
<td>6 Pachons</td>
<td>13 Aug 440</td>
<td>12 Aug 7:16PM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Year 25 of Artaxerxes I</td>
<td>Year 25 of Artaxerxes I</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. 7</td>
<td>B3.4</td>
<td>9 Payni</td>
<td>7 Elul</td>
<td>3 Payni</td>
<td>8 Sep 437</td>
<td>7 Sep 12:02PM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Year 28 of Artaxerxes I</td>
<td>Year 28 of Artaxerxes I</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. 8</td>
<td>B3.5</td>
<td>25 Epeiph</td>
<td>25 Tishri</td>
<td>1 Epeiph</td>
<td>6 Oct 434</td>
<td>4 Oct 8:43AM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Year 31 of Artaxerxes I</td>
<td>Year 31 of Artaxerxes I</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. 9</td>
<td>B3.6</td>
<td>7 Phamenoth</td>
<td>20 Sivan</td>
<td>18 Mecheir</td>
<td>24 May 427</td>
<td>22 May 4:58AM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Year 38 of Artaxerxes I</td>
<td>Year 38 of Artaxerxes I</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. 10</td>
<td>B3.9</td>
<td>22 Payni</td>
<td>6 Tishri</td>
<td>17 Payni</td>
<td>17 Sep 416</td>
<td>15 Sep 5:32AM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Year 8 of Darius II</td>
<td>Year 8 of Darius II</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. 11</td>
<td>B2.10</td>
<td>12 Thoth</td>
<td>3 Kislev</td>
<td>10 Thoth</td>
<td>14 Dec 416</td>
<td>12 Dec 11:52PM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Year 9 of Darius II</td>
<td>Year 9 of Darius II</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. 12</td>
<td>B2.11</td>
<td>9 Hathor</td>
<td>24 Shebat</td>
<td>16 Phaophi</td>
<td>18 Jan 410</td>
<td>17 Jan 2:54AM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Year 14 of Darius II</td>
<td>Year 14 of Darius II</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. 13</td>
<td>B3.10</td>
<td>29 Mesore</td>
<td>24 Marcheshvan</td>
<td>6 Mesore</td>
<td>2 Nov 404</td>
<td>1 Nov 10:41AM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Year 1 of Artaxerxes II</td>
<td>Year 1 of Artaxerxes II</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No. 14</td>
<td>B3.11</td>
<td>8 Choiak</td>
<td>20 Adar</td>
<td>19 Hathyr</td>
<td>18 Feb 402</td>
<td>16 Feb 8:14PM</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Year 3 of Artaxerxes II</td>
<td>Year 3 of Artaxerxes II</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
PART IV

CONCLUSIONS AND CHRONOLOGICAL TABLES
IV. 1 CONCLUSIONS

Rolf Krauss and David Alan Warburton

From Dyn. 27 Back to Early Dyn. 22

The chronology of Dyn. 27, also known as the First Persian Period, is fixed by Ptolemy’s Canon. Analysis of a series of Serapeum and biographical stelae provides the chronological framework for Dyn. 26, with the exception of the reign of Amasis who ruled for 43 or 44 years. Parker solved this problem in favour of 44 years by utilizing a lunar date from year 12 of Amasis, setting year 1 of Psammetichus I in 664 BC. A Serapeum stela linking Psammetichus I to Taharqa and other dated sources yield 690 BC as the latter’s year 1 (Chapter II. 11). Dated documents of Taharqa’s predecessor Shebitku are few, but according to the Tang-i Var inscription, regnal year 1 of Shebitku corresponded to 706 BC at the latest (Chapter II. 12). His predecessor Shabaka ruled at least into a year 15; at the beginning of his reign, he defeated Bocchoris of Memphis. Using dead reckoning 723/22 BC is the latest possible date for year 6 of Bocchoris. There is a gap between Bocchoris’s predecessor Tefnakhte and the last king of Dyn. 22, Shoshenq V. 26 years at most, the lifespan of the Apis buried in year 6 of Bocchoris, bridges the gap. This Apis was the successor of the bull that died in year 37 of Shoshenq V.

For dead reckoning back to the middle years of Dyn. 22 we follow Aston’s reconstruction of the period’s history which differs in certain points from Kitchen’s valuable analysis of the history of the Third Intermediate Period. According to Aston, there were parallel Memphite and Theban lines from Takelot II and Shoshenq III onwards; the Theban line fought at times with an Upper Egyptian rival (Chapter II.10). Precise dates for Dyn. 22 can be deduced by following the reasoning of Parker, Vernus, and Kruchten in interpreting the Tepi Shemu dates of the Late Period as lunar dates which most likely yield 1 Takelot II = 845, 1 Shoshenq III = 841 BC, and 1 Petubase I = 834 BC (Chapter III. 8). The history and chronology of the Theban dynastic line after Petubaste I and Iuput I remain open, and the same applies to the Lower Egyptian Dyn. 23.
The chronology of early Dyn. 22 depends on dead reckoning. The sum of the highest attested regnal dates for Osorkon II, Takelot I, Osorkon I, and Shoshenq I, added to 841 BC as year 1 of Shoshenq III, yields 938 BC at the latest for year 1 of Shoshenq I (Chapter II. 10). The large Dakhla stela provides a lunar date in the form of a \(w\)er\(\tilde{s}\) feast in year 5 of Shoshenq [I], yielding 943 BC as his year 1 (Chapter III. 8). The traditional date of 945 BC for Shoshenq I’s accession rests on a combination of Biblical and Egyptological information. There is, however, no basis for the projected Biblical dates, as no contemporary archaeological or epigraphical evidence provides any support for the generation counts in the Old Testament. It is true that the results of dead reckoning from the Egyptian sources seem to coincide roughly with the projected Biblical date for the raid on Jerusalem, but the Biblical source cannot provide support for the conjecture.

*Dyn. 21*

Dead reckoning of the highest attested dates for Psusennes II, Siamun, and ‘Akheperre’ yields at least 13(?) + 17 + 2 = 42 years for the second half of Dyn. 21. Another six or perhaps even a few more years can be added, if year 19 mentioned on the large Dakhla stela is attributed to Psusennes II.

Young recognized that a “generation” elapsed between the induction of a priest in year 2 of King ‘Akheperre’ and the induction of the priest’s son in year 17 of Siamun. The distance implies a short reign for ‘Akheperre’ and suggests his identification with “Oschor” < Osorkon, the predecessor of “Psinaches” according to Manetho, who ruled for 6 years. We conflate Young’s thesis with Vernus’s and Kruchten’s interpretation of the inductions as occurring on lunar *Tepi Shemu* feasts. Thus 2 ‘Akheperre’ = 990 BC and 17 Siamun = 970 BC, implying a reign of exactly 6 years for ‘Akheperre’. Manetho’s figure for Oschor proves to be correct, but there is no guarantee that his figures for other kings of Dyn. 21 are also correct. Further confirmation for 2 ‘Akheperre’ = 990 BC is provided by the date of an oracle in year 3 of [‘Akheperre’] on the last day of the *Tepi Shemu* feast, i.e. on a lunar day 5. A gap of 8 unattested years remains between 17 Siamun = 970 BC and 962 BC as the latest possibility for year 1 of Psusennes II (Chapter III. 8).

Jansen-Winkeln questions whether the contemporaneous regnal years of the first half of Dyn. 21 refer to the Tanitic kings or to the Theban
High Priests; at present the problem remains unresolved (Chapter II. 9). The alternatives result in different dates for the first year of Dyn. 21. If the recorded regnal years refer to the Tanitic kings, at least 9 + 48 + 24 = 81 full years must be reckoned for Amenemope, Psusennes I, and Smendes. Jansen-Winkeln’s model reckons with at least 48 + 24 + 5 = 77 full years for High Priests Menkheperre, Pinudjem, and Herihor.

If the reconstruction of the inscription on the well-known linen wrapping strip is correct with [year x under] king Amenemope = year 49 [of High Priest Menkheperre], there was an overlap of unknown length between Amenemope and Menkheperre. The degree of uncertainty can only be somewhat minimized since it is highly probable that year 49 Menkheperre = year 5 ± 4 of Amenemope, i.e., year 49 of Menkheperre could be any year of Amenemope, from year 1 to year 9.

There are no contemporaneous dates for Amenemnisut; thus only the duration X (less than all of Amenemope’s 10 years) of the presumed coregency of Psusennes I and Amenemope has to be considered, resulting in 1073 BC—X years at the latest for the beginning of Dyn. 21. Should 992/991 BC = 1 ‘Akheperre Osorkon, then Dyn. 21 began in 1074 BC ± 4 years.

Although this chronology for Dyn. 21 rests on a methodologically unsatisfactory admixture of dead reckoning and presumed lunar dates, we arrive at a reasonably precise point of departure for the end of Dyn. 20.

From Dyn. 20 Back to Dyn. 19 (Chapter II. 8)

There is a gap between the beginning of Dyn. 21 and the reign of Ramesses XI, the last king of Dyn. 20. Egyptologists generally concede that his reign could have ended 1 or 2 years later than year 10 of the wehem mesut era = regnal year 28. The reigns of Ramesses IX through XI add up to 49 y + 8 m, if their highest attested dates and accession dates are considered. The exact lengths of the reigns of Ramesses VIII and VII are unclear, but 1 year and 7 years, respectively, are certain. The sum of the highest undisputed dates of Ramesses III through VI is 8 + 4 + 7 + 31 = 50 years. Thus year 1 of Ramesses III corresponds to 1181 BC—X years or 1182 BC ± 4 years at the latest.

Between Ramesses III and Ramesses II there are two chronological problems, viz. the transition from Twosre to Sethnakhte and the position
of Amenmesses. Both questions are resolvable on the basis of Ramesside lunar dates (Chapter III. 8). Several lunar feast-of-the-valley dates supplement the Piramesses lunar date of year 56 of Ramesses II. Their mutual distances imply that Sethnakhte’s reign of 3 years (incomplete) followed year 8 of Twosre; furthermore, the entire reign of Amenmesses was subsumed within Sety II’s. Thus the distance between the accessions of Ramesses III and Sety II amounts to \(16 \text{ y} + 3 \text{ m}\). Since \(9 \text{ y} + \text{ca. 5 m}\) are attested for Merneptah and \(66 \text{ y} + \text{ca. 2 months}\) for Ramesses II, 1 Ramesses II corresponds to 1273 BC—X years or 1274 BC ± 4 years at the latest. On the basis of the Piramesses lunar date, Parker preferred 1290 BC as year 1 of Ramesses II, while admitting 1304 and 1279 BC as other possibilities. By contrast, Bierbrier decidedly favours 1279 BC, relying on his research into the genealogy of the late New Kingdom; Kitchen supports Bierbrier’s argument. The best match for the astronomically possible equivalents for the Piramesses lunar date and the festival-of-the-valley lunar dates is 1279 BC. The degree of agreement is significantly less for 1304 BC, which is historically impossible; the remaining lower possibilities—1268 and 1265 BC—are excluded for astronomical reasons.

*From Early Dyn. 19 Back to the Amarna Kings*

Jansen-Winkeln gives cogent reasons why the biography of the High Priest Bakenkhonsu does not support a 15 year reign for Sety I (Chapter II. 8). His highest attested date is year 11; for his predecessor Ramesses I a year 2 is documented. For Haremhab, the series of regnal dates ends with year 13, but years 26 (oIFAO 1254) and 27 (oIFAO 1254, Medinet Habu graffito), are probably documented. This provides support for the interpretation of the regnal year 59 (or 58) mentioned in the Mes-inscription as 32 years of the Amarna rulers plus 27 years of Haremhab’s own, as done traditionally. With 27 years, dead reckoning results in 1319 BC as year 1 of Haremhab. The comparative dearth of archaeological documentation would appear to suggest a shorter reign. However, such criteria must be weighed carefully. Helck experimented with 15 years for Haremhab; Beckerath among others does not follow him. The twin anchors of the known royal synchronisms for Dyns. 18 and 19 (see below), combined with the astronomical dates, would present substantial chronological anomalies if Haremhab’s reign were shorter than 27 years. Only a long reign for Haremhab is com-
compatible with these figures and with 1279 BC as year 1 of Ramesses II. Furthermore, without a long reign, the distance between 1508/03 BC as the latest possibility for the Ebers Sothic date and 1 Ramesses II = 1279 BC could not be covered.

The chronology of the period when Amarna was the residence seems clear (Chapter II. 8). Sixteen successive wine vintages, each representing a calendar year, occurred during the occupation of the site; 13 vintages correspond to years 5 through 17 of Akhenaten, whereas 3 vintages occurred under his successors. The first 2 of them are evidently to be attributed to King ‘Ankhkheprure‘ Smenkhkare‘. Since Nebkheprure‘ Tut‘ankhamun is attested at Amarna, the last vintage would seem to be datable to his regnal year 1. However, the last vintage is possibly attributable to Queen ‘Ankhetkheprure‘, successor of ‘Ankhkheprure‘ Smenkhkare‘. From year 1 of Akhenaten until the royal court left Amarna, 20 full years elapsed. Tut‘ankhaten/Tut‘ankhamun ruled at least 8 or 9 years (depending on the attribution of the last vintage on record at Amarna), and Aya 4 years which amounts to 33 or 32 years. Thus dead reckoning yields 1352/51 BC at the latest for 1 Akhenaten.

Near Eastern and Egyptian Synchronisms (Chapter II. 13)

To some extent, the synchronisms of Near Eastern and Egyptian rulers provide a basis for postulating absolute dates for this period. The preserved correspondence demonstrates that the reign of Ramesses II was contemporary with the reigns of the Hittite kings Muwattali and Hattushili; and likewise the reign of Akhenaten was contemporary with Shuppiluliuma I of Hatti, Tushratta of Mitanni, Ashshur-Uballit I of Assyria, and Burnaburiash II of Babylon. Whereas the reigns of the Hittite and Mitanni kings cannot be dated directly, the Assyrians and Babylonians can be dated with near precision, and linked to Hatti and Mitanni and thus also to the Egyptian historical relations with these countries. The proposal of Gasche et al. (Dating) is the only astronomically and archaeologically supported chronology available today. Although some debate persists about the first half of the second millennium, there is general agreement on rough dates for the reigns of Adad-nerari I (1300–1270 BC), Shalmaneser I (1269–1241 BC), Tukulti-Ninurta I (1240–1205 BC), and Ashshur-Uballit I (1356–1322 BC) of Assyria as well as for Kadashman-Enlil (1369–1355 BC), Burnaburiash II (1354–1328 BC) and Kadashman-Turgu (1276–1259 BC) of Babylon.
Correspondence preserved in the archives at Hattusha links Hattushili II of Hatti not only to Ramesses II, but likewise to the reign of Kadashman-Turgu and the period of Egyptian—Hittite conflict before the treaty of peace (year 21 Ramesses II) and after the accession of Hattushili, years after the battle of Kadesh (year 5). The same correspondence also allows a synchronism of Muwattali with Adad-nerari I immediately after the battle of Kadesh.

Amarna letter EA 7 was addressed to Akhenaten and written by Burnaburiash II. EA 6 was written by the same Burnaburiash II but addressed to an Egyptian king with a different name, and the text specifies that the father of Burnaburish maintained friendly relations with the recipient. EA 5 confirms that Kadashman-Enlil was in contact with Amenhotep III. Furthermore, EA 9, written by Burnaburiash II to Akhenaten, refers to the Assyrian messengers in Egypt mentioned by Ashshur-Uballit I in EA 16. The Amarna correspondence thus confirms that although Burnaburiash and Akhenaten were contemporaries, Burnaburiash came to the throne before the death of Amenhotep III; the synchronism of Ashshur-Uballit I and Burnaburiash II known from Mesopotamian sources can thus also be dated to the reign of Akhenaten, with an overlap for both rulers into the reigns of Akhenaten’s immediate successors.

The Hattusha and Amarna correspondence document synchronisms between the first decades of Ramesses II’s reign and the reigns of Kadashman-Turgu and Adad-nerari I, and that the accession of Akhenaten coincided with the reign of Burnaburiash. Therefore it is clear that a shift of any reign necessitates a commensurate change in the others. Since the anchors for the astronomical absolute dates and the historically relative dates for Mesopotamia and Egypt are fundamentally different, these synchronisms can be viewed as virtually certain.

*From Amenhotep III Back to Thutmose III* (Chapter II, 8)

The highest attested full years are 37 for Amenhotep III, 7 for Thutmose IV, 22 (or 25) for Amenhotep II, 53 for Thutmose III. Parker’s arguments for a coregency of Thutmose III and Amenhotep II of more than 2 years are invalid. If there was any coregency at all, it amounted to 4 months at most. Adding half a year to each of the full years yields 1472 (or 1475) BC at the latest for year 1 of Thutmose III.
There are two lunar dates of Thutmose III, one referring to the foundation date of a temple at Karnak in year 24 and the other to the battle of Megiddo in year 23. Both dates have a complicated history of interpretation; whether the recorded dates ought to be emended or not is moot. Utilizing both possibilities results in $1479\text{ BC} = 1$ Thutmose III as the only astronomically viable alternative.

**Astronomical Determination of the Period between Thutmose III and Senwosret III Based on the Dates in the Illahun Archive and the Ebers Calendar**

Dead reckoning and generation-counts do not provide a sufficient basis for a chronology of the Second Intermediate Period. However, the Ebers calendar and the Illahun archive furnish astronomical data enabling the limits of the period to be defined. It is a fact that the combined reigns of Thutmose II and I amounted to a minimum of 4 years. A comparison of the archaeological documentation for Thutmose I and II with Hatshepsut’s yields 4 years for Thutmose II and 11 years for Thutmose I. But we shall not use these figures, because exact reign-lengths cannot be based upon archaeologically recoverable remains. The traditional argument that Manetho’s Chebron is ‘Akheperenre’ Thutmose II and that Chebron’s 13 regnal years are to be emended to *3 years, is speculative. The two predecessors of Thutmose I—Amenhotep I and ‘Ahmose—ruled, respectively, into a year 21 and at least into year 22. Thus on the basis of dead reckoning, year 1 ‘Ahmose = 1526\text{ BC} at the latest.

The Ebers calendar refers to regnal year 9 of Amenhotep I. The discussion about the proper interpretation of the astronomical data in the Ebers calendar had achieved an initial consensus following Parker’s study of 1950 and Hornung’s of 1964. Accordingly, the rising of Sothis and a first day of lunar month wep renpet coincided on III Shemu 9 in regnal year 9 of Amenhotep I. Although there were methodological shortcomings associated with a challenge to this consensus mounted in the 1980’s, it must be stressed that the discussion did produce the insight that the period covered by the Ebers calendar is concurrent with regnal year 9 of Amenhotep I, i.e. the accession day of the king very probably coincided with III Shemu 9. When taken at face value, the text of the Ebers calendar reports that the rising of Sothis occurred on III Shemu 9 in year 9 of Amenhotep I. Given that equivalents for pharaonic Sothic dates are subject to various conditions, the Ebers
Sothic date could correspond to any year between 1546 BC and 1503 BC (Chapter III. 10).

The Illahun archive contains a Sothic date and 21 lunar dates from the reigns of Senwosret III and Amenemhet III. The Sothic date is problematic since IV Peret 16 in year 7 of Senwosret III in the temple diary could be a mistake for IV Peret *18. When both possible dates, along with the uncertainties of pharaonic Sothic dates are considered, the Illahun Sothic date corresponds to any year between ca. 1882 and 1827 BC. By contrast, there is only one astronomically correct solution for the Illahun lunar dates, because lunar dates do not repeat regularly in 25 year cycles (Chapter III. 8). The result can be expressed as 1 Senwosret III = 1837/36 BC, corresponding to 1831/30 BC = year 7 of Senwosret III, the year of the recorded Sothic date.

Provided there was no calendar reform between year 7 of Senwosret III and year 9 of Amenhotep I, a maximum of 333 ± 3 years (Illahun Sothic date = IV peret 16) and a minimum of 325 ± 3 years (Illahun Sothic date = IV Peret *18) elapsed between the Illahun and Ebers Sothic dates. Subtraction of these figures from 7 Senwosret III = 1830 BC yields 1508 to 1494 BC, overlapping 1549 to 1503, the interval of the Ebers Sothic date. The overlap implies that the astronomically correct interval for the Ebers Sothic date is the period from 1508 to 1503 BC.

It follows from the Illahun lunar dates that 1 Amenemhet III = 1818/17 BC. The Nile level inscription referring to year 44 + x of Amenemhet III and year 1 of Amenemhet IV may indicate a coregency. The highest attested dates of Amenemhet IV and Nefrusobk, which compare favourably with the figures in the TC, yield ca. 1760 BC as last year of Dyn. 12. On this basis, year 3 of the immediate predecessor of Khendjer can be fixed, provided the Monthu feast recorded in pBoulaq 18 was celebrated on lunar day 2, like the Monthu feast that Luft recognized in the Illahun archive. If so, year 3 of Khendjer’s predecessor, whether he was Sobekhotep II or not, was 1734 BC.

**The Second Intermediate Period (Chapter II. 7)**

The changes in the sequence of Second Intermediate Period kings and dynasties proposed by Ryholt are not necessarily compelling, and in any case, they have no chronological significance since dead reckoning
depends upon a fixed sequence of kings—and this does not exist. Rather, we must concentrate on dynasties. Ryholt’s proposal of an overlap for Dyns. 12 and 13 is speculative; neither Ryholt nor Beckerath suggests that Dyn. 13 overlaps 15. By contrast, the concurrence of Dyn. 15 with 17 and 18 is certain.

There are very few contemporaneous dates for Dyn. 13: Ryholt (Situation, 193–194) lists less than two decades for Sobekotep I, Sonbef, Khendjer, and Sobekhotep IV, with another three decades documented for unknown rulers who should be assigned to this period. The remaining reigns must be assigned arbitrary dates based on averages, and references to Manetho or the TC which cannot be used to base an argument. Ryholt documents roughly half a century for Dyn. 13; he then extrapolates 154 years for all of Dyn. 13; Beckerath (Untersuchungen, 220) allotts only 133 years; Franke is closer to Beckerath, and Kitchen closer to Ryholt.

The overlap with Dyn. 18 can be estimated at less than two decades, with the conquest of Avaris not later than ca. year 18 of the reign of ‘Ahmose, followed by the siege of Sharuhen before year 1 of Amenhotep I = 1514 BC. Based on attested dates, only year 33 of pRhind can be attributed to Dyn. 15. The stelae of Kamose provide some additional decades. Regardless of the paucity of contemporary sources, Dyn. 15 will have lasted more than a century, and Dyn. 13 at least 133 years. Thus the interval between the end of Dyn. 12 and the fall of Avaris would be \( z = (x + 100) + (133 + y) \). This would place the end of Dyn. 12 before 1751 BC. The length of the Second Intermediate Period cannot be reduced further than the minimal figures provided here.

*The Beginning of Dyn. XII*

In Chapter II. 7, Schneider accepts, as have others, Jansen-Winkeln’s arguments in favour of coregencies. Moreover, double-dating implies that coregencies have chronological consequences. But arguments in favour of coregencies are not compelling and if they existed in practice, there is no reason to presume they played a chronological role. The Illahun papyrus Berlin 10055 states that year 19 of [Senwosret III] was followed by year 1 of [Amenemhet III], while the Korosko-inscription implies that year 29 of Amenemhet I was valid as a date. If there were coregencies, possibly the 30-reign of Amenemhet I was followed by a 45–year reign of Senwosret I, whereas year 19 of Senwosret
III was followed by the 46-year reign of Amenemhet III. This has chronological implications since the Illahun lunar dates suggest that 1818/17 BC was the year of the accession of Amenemhat III, and this is the latest date compatible with our dead-reckoning for Dyns. 13 and 15, thus constituting the link between the length of the Second Intermediate Period and the Sothic dates for Senwosret III (year 7 = 1830 BC) and Amenhotep I (year 9 = 1508–1503 BC). We thus project back the dates for the earlier part of Dyn. 12, based on dead-reckoning, to arrive at year 1 of Amenemhet I as either ca. 1939/40 (with possible 16 years of coregencies) or ca. 1955/56 (without coregencies).

From the Early Middle Kingdom Back to Early Dyn. 11

The highest attested dates for Dyn. 11 add up to 106 years. Arguably the highest attested dates are not last regnal years; furthermore, no contemporaneous dates exist for three kings. The TC gives a total of 143 years for Dyn. 11 which seems to be of correct magnitude, but might be incorrect in detail. If the uncertainties of MK coregencies are considered, dead reckoning implies a date for the beginning of Dyn. 11 well before 2046 (with MK coregencies) or 2062 BC (no MK coregencies).

These limits must be reconciled with the Khozam lunar date of a regnal year [1] from the last years of Herakleopolitan hegemony in the Coptite nome, corresponding to the early years of Dyn. 11. Astronomically possible years for the Khozam lunar date are 2053, 2078, and 2103 BC. 2053 BC would appear to be too low, making it likely that Dyn. 11 began shortly before 2078 or 2103 BC.

From Early Dyn. 11 Back to Late Dyn. 5

For the First Intermediate Period we rely on the judicious estimate of Hayes and Fischer of not more than 40 years for the pre-Theban period, and we follow Baud in allowing Dyn. 8 to span a “generation” or about 30 years (Chapter II. 5).

Only 10 m-hi tp years and 12 tp years are documented for Dyn. 6. At least 72 tp years actually elapsed, i.e. 83.3% of the tp years are missing from the archaeological record. Presuming that the percentage of missing m-hi tp years is the same as for tp years, it is likely that at
most 60% of the regnal years of Dyn. 6 were $zp$ years and at least ca. 40% ($m$-)$ht$ $zp$ years. Thus Dyn. 6 lasted between 120 and 144 years. Conversely, one can argue that the autobiography of Weni mandates that he served in a minor capacity during the reign of Teti, entering royal service under Pepy I, and continuing to serve energetically well into the reign of Merenre’. Since the highest known date for Pepy II would be $m$-$ht$ $zp$ 31, one can assume at least 63 years for that reign, and less than a century for those preceding.

By adding the minimum figures for the Second Intermediate Period and Dyns. 6 and 8 to ca. 2078/2103 BC for the very early years of Dyn. 11, we arrive at ca. 2268/2292 BC and 2293/2317 BC for year 1 of Dyn. 6 at the latest.

Posener-Kriéger found two lunar dates in the Neferirkare’s archive; both could be regnal years of Izezi, or only one date his and the other Wenis’s. We follow Posener-Kriéger who preferred the latter alternative, ascribing one lunar date to regnal year 7 of Wenis and the other to a regnal year of Izezi that lay 11 or 25 years earlier. It is generally agreed that the TC’s 30 years, and Manetho’s 33 years for Onnos (Wenis) are far too high. The highest attested date of Wenis is $zp$ 8, corresponding, at most, to regnal year 16. Provided the count was biennial, then 7 Wenis is at least (or exactly) 10 years earlier than the beginning of Dyn. 6, corresponding to ca. 2278/2302 BC or 2303/2327 BC, with 200/224 or 225/249 years thus lying between 7 Wenis and 2078, or 2089, or 2103 BC as year of the Khozam lunar date. Within this minimum range the appropriate lunar distance between year 7 of Wenis and the Khozam date amounts to at least 211 years + 119 days; other astronomically feasible possibilities are 236 y + 119 d or 261 y + 119 d. The corresponding possibilities for year 1 of Wenis can be expressed as 2321 BC ± 25 years. Taking into account that 2321 BC—25 years presupposes minimum figures for Dyn. 6, the preferable figure for year 1 of Wenis is 2321 BC or 2321 BC + 25 years.

Izezi ruled at least 33 years, provided 68% of his $m$-$ht$ $zp$ years are missing, as in the case of his $zp$ years. If the count was regular, the reign lasted for at least 42, or 44 years, depending on the reading of the highest $zp$ year; the year of his accession would be 2365/64 BC or 2365/64 BC + 25 years. Manetho’s 44 years for Tancheres (< Djedkare’s) would be correct, if only coincidentally, whereas the TC’s 28 years are unacceptable regardless.
Early and Mid-Dyn. 5

There are equal numbers of contemporaneous \( zp \) and \( m-ht \ zp \) years for Userkaf and Sahure\(^4\), implying a regular biennial count. For these kings the Royal Annals confirm a biennial count, whether the reconstruction of the stone’s verso is exact or only approximate. The Annals should be chronographically reliable at least for early Dyn. 5, since the original presentation of the data (i.e., even if the Palermo stone itself is a copy) must have followed shortly after the actual compilation of the data, towards the end of the dynasty. The reconstructed Annals imply 8 year compartments for Userkaf, corresponding to at least 7 full regnal years. Sahure\(^4\), who reigned into \( m-ht \ zp \) 6, evidently occupied the throne for 6 \( zp \) years, 6 \( m-ht \ zp \) years, and a year \( zm\#t \ wj \), altogether ca. 13 years.

For Neferirkare\(^4\) \( rmpt \ zp \) 5 is the only securely attested contemporaneous date, whereas the Annals record the year \( zm\#t \ wj \) and the year after the 5th count. The count was evidently biennial, although the first count might have occurred only in the second full calendar year of the reign. Neferirkare\(^4\) did not complete his funerary complex which suggests a shorter reign than that of Sahure\(^4\); we follow Verner in assigning him not more than 11 years. On the basis of discoveries at Abusir, Verner attributed 2 years at most to Ra’neferref, and identified Shepseskar\(^4\) as his probable successor who ruled for only a fraction of a year. The few secure dates for Neuserre\(^4\), taken together with his building achievements, allow an estimate of at least 15 years, but possibly we err by a decade in attributing about 30 years to him. There are no contemporaneous dates for Menkauhor; on the basis of his archaeological record, it seems that his reign was not brief. The TC and Manetho possibly share the same tradition, the TC rounding to full 8 years, Manetho to a full 9. In conformity with common practice and fully aware of the risk, we attribute 8 full years to Menkauhor. If an uncertainty of ± 5 years is allowed for Neuserre\(^4\), we arrive at ca. 2440 BC ± 5 years or 2465 BC ± 5 years for year 1 of Userkaf.

End of Dyn. 4 and Row 1, Verso of the Annals Stone

For Shepseskaf, \( rmpt \ m-ht \ zp \ jpt \) 1 is attested; the Annals record his \( rmpt \ zm\#t \ wj \). According to Beckerath’s recent reconstruction, row 1 on the verso contained 5 or 6 year compartments. These ca. 6 regnal years
Conclusions

at most can be allowed for Shepseskaf alone or for him and Thamphthis combined, if the latter existed. The TC with $4 + 2$ years for the two rulers before $[\text{Wsr}]-k3-[\text{r}]$ does not contradict this arrangement.

There are no securely attested contemporaneous dates for Mycerinus. The amount of work that would have been required to complete his funerary complex as planned, amounted to only a tenth of that required for those of Khufu or Khephren. The fact that the project was largely unfinished, indicates a short reign. Nevertheless, Beckerath’s reconstruction of the Annals favours the TC’s *28 years for Mycerinus, over alternative *18; his proposal shows 10 year compartments in row 1 on the verso, and he postulates 19 more above in a row “0”. However, if the compartments in row 1 were of uniform width, then about 6 compartments result for Mycerinus. A short reign of ca. 6 years is compatible with the archaeological record. Coincidentally Herodotus appears to report a reign of 6 years for Mycerinus.

The remainder of Dyn. 4.—The masons’ marks from the Giza necropolis documenting $\text{rnpt zp}$ 4 through 13 can be attributed to Khephren and Cheops. These record only $\text{zp}$ years, presumably a shortened notation that dispensed with references to $m$-$\text{ht}$ $\text{zp}$ years. In view of Khephren’s considerable building activity, it is to be expected that he ruled more than 20 years, corresponding to the TC’s $20 + \times$ years.

The TC and Manetho seem to concur in placing Bikheris after Khephren. Regardless, the king who excavated the Great Pit at Zawyet el-Aryan was more likely the successor of Ra’djedef than Khephren’s. Analysis of the pyramid’s architecture reveals similarities to Ra’djedef’s monument as planned; the discovery of a palette with Ra’djedef’s name at the site likewise supports the contention. The reign must have been short; Manetho’s 22 years can be tentatively explained as inflated from an original *2 years; the figure in the TC is lost. For Ra’djedef, $\text{rnpt zp}$ 1 is attested; the TC’s 8 years are compatible with his building achievement.

The masons’ marks indicate a reign of more than 20 years for Cheops, again commensurate with his enormous building activity. An expedition graffito attests $\text{rnpt m}$-ht $\text{zp}$ 13, corresponding to regnal year 27, provided the count was biennial, and contradicting the 23 years in the TC. Manetho’s 63 or 66 years for Suphis (Cheops) could be secondarily influenced by Herodotus’s 50 years for Cheops and 56 for Khephren, but could have originated in *23 or *26 (or *33 or *36) years.

The highest attested date for Snofru is $\text{zp}$ 24, corresponding to ca. year 48, presuming again a biennial count. However, graffiti from the
Maidum pyramid site indicate that the count was irregular, and this is confirmed by the Annals that record the 7th and 8th count without an intervening year. The construction of three pyramids, one at Maidum and two at Dahshur, could have been achieved within three decades.

Biographical data allow a limited check on these results. The life of Netjeripunisut extended from the reign of Ra‘djedef through Sahure; Sekhemre lived under Khephren through Sahure, and Ptahshepses under Mycerinus to Neuserre. Thus the overall length of our relative chronology seems correct. But since each of these men may have lived for 50, 60 or even 70 years, further refinement cannot be expected. Thus we arrive at ca. 2548 BC ± 5 years or 2573 BC ± 5 years for the beginning of Dyn. 4.

 Dyns. 1–3

The contemporaneous dates available today do not suffice to establish a coherent chronology for Dyns. 1–3. Furthermore, the history of the second half of Dyn. 2 is unclear, insofar as kings might have ruled simultaneously and not successively. Thus we are dependent on the fragments of the Annals stone (Chapter I. 1). The uncertainty inherent in utilizing them is twofold: the dates are not contemporaneous with the stone and any reconstruction of the fragments will contain mistakes. By correcting the errors of recent attempts, we arrive at a total of 355 years for Dyns. 1–3. This implies that the first year compartment of the Annals corresponded to ca. 2900 BC or 2925 BC, be this a year of ‘Aha or Na‘rmer.

The range of the C-14 dates for Abydos tomb U-j imply that it was probably roughly contemporary with the tomb of ‘Aha (Görsdorf et al., “Results”, 173), which it must have preceded. The archaeological material likewise confirms that Naqada IIc–d cannot have been significantly earlier than Naqada IIIa (Braun & van den Brink, “Comments”), as indicated by the C-14 dates from Abydos U-224, U-287, which means that Naqada IIId almost overlaps with Naqada IIIa2. The archaeological material suggests that Naqada IIIa swiftly followed on Naqada IIId and from the C-14 samples, it follows that Naqada IIIa2 was quickly succeeded by Dyn. 1. As Braun and van den Brink note, the time elapsed from final Naqada IIId to early Dyn. 1 cannot have been significantly more than a century.
For absolute dating, the C-14 method can only offer a limited degree of precision. The C-14 dates for Uruk and Abydos demonstrate that the median dates for the relevant levels of the Late Uruk Temple C at Uruk (± 3450 cal. BC) were invariably more than two centuries older than those for Naqada IIIa2 and Dyn. 1 (ca. 3200 BC: Boehmer et al. “Datierungen”). The relative position of Late Uruk centuries before the end of the Predynastic sequence must be valid, but precise dates for the end of the Predynastic cannot be taken at face value. As published, these are impossible with the C-14 dates for Abydos Dyn. 1 tomb B-19 earlier than the Jemdet Nasr period (which should begin ca. 3100 BC: Porada et al., “Mesopotamia”), since the iconography of the palettes and sealings from the later Predynastic and earliest Dynastic Periods cannot antedate the Jemder Nasr period; in fact, Boehmer (1991: 60) argues that Naqada IIIa2 = Late Jemder Nasr, and thus the Abydos Naqada IIIa2 tomb U-j should be dated to around or after 3000 BC. Either the Mesopotamian chronology must be revised, or the end of Naqada IIIa and the beginning of Dyn. 1 must be assigned a date ca. 3000 or 2950 BC.

Dreyer’s reconstruction of a seal from impressions recovered from the tomb of Qa-
[...]
Postscript by Stan Hendrickx

When this chapter was in press, Christiana Köhler published an article of great importance for the relative chronology of the Naqada III period, based on her excavations at Helwan.1 Helwan is by far the largest Naqada III cemetery and offers great possibilities for chronological studies. This is especially relevant for the Naqada IIID period, which at

---

present has only been rather vaguely defined. Köhler proposes an additional phase for the Naqada III period, Naqada IIIC3, and a triple subdivision of Naqada IIID, i.e., IIID1–IIID3, after Helwan tomb groups distinguished according to the presence and absence of diagnostic finds such as cylindrical vessels, “wine jars” and “beer jars” with their respective typological sequence.2 Naqada IIIC3 would encompass the reigns of Qa’a and Semerk-het, the last two kings of 1st dynasty, and be characterised by very late and rudimentary variants of the cylindrical jars. Eventually, Naqada IIIC3 might continue into the 2nd dynasty. Cylindrical jars no longer occur during the Naqada IIID period, while there are also changes in tomb architecture. During Naqada IIID1, the “wine jars” become more elongated in shape and early “beer jars” occur at the same time. Naqada IIID2 is not well defined and could be contemporaneous with IIID1, from which it mainly differs through the architecture of the tombs. During Naqada IIID3, a new type of “beer jars”, with direct rim, occurs together with the old type with shoulder and lip rim. Another important characteristic are the earliest examples of bowls with internal rim, that will become one of the main characteristics of the early OK. Naqada IIID3 as defined by Köhler dates to the end of the 2nd dynasty and is to be compared with the late 2nd dynasty assemblage from Elephantine.3 As is stressed by Köhler herself, the distinction between the groups and their sequence is only preliminary and will have to be confirmed or adapted following further excavations.

Résumé

The chronology presented here is predicated on historical methodology. It agrees with Beckerath and Kitchen on 1279 and 1479 BC as the accession years of Ramesses II and Thutmose III. A noteworthy discrepancy is our acceptance of 19 years for Psusennes II which reduces the gap in absolute chronology between Dyns. 21 and 20.

For the Middle Kingdom, the difference between our figures and those of Beckerath and Kitchen in particular amounts to three and a

2 Köhler (n. 2), 299–306.
half decades; the discrepancy results from our consistent exploitation of two different kinds of astronomical data, lunar and Sothic. There are further cases of widely differing regnal year figures in the Old Kingdom; compare, for example, our allocation of 2 years for Ra‘eneferef and Shepseskare combined, to Beckerath’s 18 and Kitchen’s 14 years. Another example is our attribution of 6 years to Mycerinus, as compared to 28 years in Beckerath’s chronology and Kitchen’s 18. In view of the uncertainties in any reconstruction of the Annals, the discrepancies for Dyns. 1 to 3 should not be stressed. However, both the typological analysis and the comparative material from Mesopotamia do not leave much leeway for significant changes.

A problem that appears to be resolvable concerns the absolute dates for the Middle Kingdom or, formulated differently, the duration of the Second Intermediate Period. When Borchardt presented the newly discovered Illahun Sothic date in 1899, he wrote (ZÄS 37, 1899, 102):


Borchardt answered his own rhetorical question in the affirmative, but decades later, when Gardiner commented in Excursus C of his Grammar on the Sothic dates of Thutmose III, Amenhotep I (year 9) and Senwosret III (year 7), he wrote that “the first two dates fit admirably with other considerations, but the third has been thought by some to allow too small an interval between the Twelfth and the Eighteenth Dynasty.”

Today several Egyptologists contend that Borchardt’s interval is too short. By contrast, we share Borchardt’s opinion and adduce further arguments in its favour. Although our absolute dates for Senwosret III and Amenhotep I are lower than Borchardt’s, the relative distance between 7 Senwosret III and 9 Amenhotep I remains more or less the same. Whereas Borchardt had only the Sothic dates to compute the distance between Senwosret III and Amenhotep I, we also utilize the Illahun lunar dates. The only astronomically workable distance between year 7 of Senwosret III and 9 of Amenhotep I is 324 years—regardless of whether those who think this interval too short like it or not.
IV. 2 CHRONOLOGICAL TABLE FOR THE DYNASTIC PERIOD

The selection of names and their transcription follows the lead of Baines & Malek, *Atlas*, 36–37 for the most part except in those cases where authors insisted on their own alternatives. Throne names are rendered in *italics*. For the Early Dynastic Period chronology is based on the Annals stone (Chapter I. 1); for the period between ca. 2350 and 750 BC on lunar dates (Chapter III. 8), and therefore differs slightly in some cases from the information found in the chapters on relative chronology.

<table>
<thead>
<tr>
<th>Early Dynastic Period</th>
<th>ca. 2500–2545</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dyn. 1</strong> Nar-mer</td>
<td>ca. 2900–2730</td>
</tr>
<tr>
<td>‘Aha</td>
<td>ca. 2900–2870</td>
</tr>
<tr>
<td>Djer</td>
<td>2870–2823</td>
</tr>
<tr>
<td>“Serpent”</td>
<td>2822–2815</td>
</tr>
<tr>
<td>Den</td>
<td>2814–2772</td>
</tr>
<tr>
<td>‘Adj-ib/Anedjib</td>
<td>2771–2764</td>
</tr>
<tr>
<td>Semer-khet</td>
<td>2763–2756</td>
</tr>
<tr>
<td>Qa-‘a</td>
<td>2755–2732</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Dyn. 2</strong> Hetep-sekhemwy</th>
<th>ca. 2730–2590</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ra‘-neb</td>
<td>2730–2700</td>
</tr>
<tr>
<td>Ny-netjer</td>
<td>2700–2660</td>
</tr>
<tr>
<td>Per-ibsen</td>
<td>2660–2650</td>
</tr>
<tr>
<td>Sekhem-ib</td>
<td>2650–2610</td>
</tr>
<tr>
<td>Sened</td>
<td>2610–2593</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Dyn. 3</strong> Djoser (Netjery-khet)</th>
<th>ca. 2592–2544</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sekhem-khet</td>
<td>2592–2566</td>
</tr>
<tr>
<td>Kha‘ba</td>
<td>2565–2559</td>
</tr>
<tr>
<td>Nebka</td>
<td>2559–2550</td>
</tr>
<tr>
<td>Huni</td>
<td>2550–2544</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Old Kingdom</strong> Snofru</th>
<th>ca. 2543–2120</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2543–2436</td>
</tr>
<tr>
<td></td>
<td>2543–2510</td>
</tr>
</tbody>
</table>

(continued on next page)
<table>
<thead>
<tr>
<th>Dynasty</th>
<th>Rulers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dyn. 5</td>
<td>Khufu (Cheops)</td>
</tr>
<tr>
<td></td>
<td>Ra’djedef/Djedefre&lt;sup&gt;e&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Bikheris</td>
</tr>
<tr>
<td></td>
<td>Khephren (Ra’khaf)</td>
</tr>
<tr>
<td></td>
<td>Menkaure&lt;sup&gt;e&lt;/sup&gt; (Mycerinus)</td>
</tr>
<tr>
<td></td>
<td>Shepseskaf</td>
</tr>
<tr>
<td>Dyn. 6</td>
<td>Userkaf</td>
</tr>
<tr>
<td></td>
<td>Sahure&lt;sup&gt;e&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Neferirkare&lt;sup&gt;e&lt;/sup&gt; Kakai</td>
</tr>
<tr>
<td></td>
<td>Ra’neferet/Neferefre&lt;sup&gt;e&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Shepseskare&lt;sup&gt;e&lt;/sup&gt; Izi</td>
</tr>
<tr>
<td></td>
<td>Neuserre&lt;sup&gt;e&lt;/sup&gt; Ini</td>
</tr>
<tr>
<td></td>
<td>Menkauhor</td>
</tr>
<tr>
<td></td>
<td>Djedkare&lt;sup&gt;e&lt;/sup&gt; Izezi</td>
</tr>
<tr>
<td></td>
<td>Wenis</td>
</tr>
<tr>
<td>Dyn. 8</td>
<td>Teti</td>
</tr>
<tr>
<td></td>
<td>Userkare&lt;sup&gt;e&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Pepy I Myryre&lt;sup&gt;e&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Nemtyemzaef Merenre&lt;sup&gt;e&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Pepy II Neferkare&lt;sup&gt;e&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Nemtyemzaef II</td>
</tr>
<tr>
<td>First Intermediate Period</td>
<td></td>
</tr>
<tr>
<td>(Herakleopolitan) Dyns. 9 and 10</td>
<td></td>
</tr>
<tr>
<td>Middle Kingdom</td>
<td></td>
</tr>
<tr>
<td>(Theban) Dyn. 11</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mentuhotep I (Tepi’a)</td>
</tr>
<tr>
<td></td>
<td>Inyotef I (Sehertawy)</td>
</tr>
<tr>
<td></td>
<td>Inyotef II (Wah’ankh)</td>
</tr>
<tr>
<td></td>
<td>Inyotef III (Nakhtnebtetepnufer)</td>
</tr>
<tr>
<td></td>
<td>Mentuhotep II Nebhpetre&lt;sup&gt;e&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Mentuhotep III S’ankhkare&lt;sup&gt;e&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Mentuhotep IV Nebtawyre&lt;sup&gt;e&lt;/sup&gt;</td>
</tr>
<tr>
<td>Dyn. 12</td>
<td>Amenemhet I Sehetepibre&lt;sup&gt;e&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Senwosret I Kheperkar&lt;sup&gt;e&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Amenemhet II Nebukau&lt;sup&gt;e&lt;/sup&gt;re</td>
</tr>
<tr>
<td></td>
<td>Amenemhet III Neoherakare&lt;sup&gt;e&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

(continued on next page)
Table (cont.)

<table>
<thead>
<tr>
<th>King/Pharaoh</th>
<th>Reign Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senwosret II</td>
<td>1845–1837</td>
</tr>
<tr>
<td>Senwosret III</td>
<td>1837–1819</td>
</tr>
<tr>
<td>Amenemhet III</td>
<td>1818–1773</td>
</tr>
<tr>
<td>Amenemhet IV</td>
<td>1772–1764</td>
</tr>
<tr>
<td>Nefrusobk</td>
<td>1763–1760</td>
</tr>
</tbody>
</table>

**Second Intermediate Period** 1759–ca. 1539

<table>
<thead>
<tr>
<th>Dynasty</th>
<th>Reign Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dyn. 13</td>
<td>1759–ca. 1630</td>
</tr>
<tr>
<td>Wegaf Khutawy</td>
<td>1759–1757</td>
</tr>
<tr>
<td>Amenemhet VII</td>
<td>ca. 1753–1748</td>
</tr>
<tr>
<td>Sobekhotep II</td>
<td>1737–1733</td>
</tr>
<tr>
<td>Khendjer Userkare</td>
<td>ca. 1732–1728</td>
</tr>
<tr>
<td>Sobekhotep III</td>
<td>1725–1722</td>
</tr>
<tr>
<td>Nefcrhotep I</td>
<td>1721–1710</td>
</tr>
<tr>
<td>Sobekhotep IV</td>
<td>ca. 1709–1701</td>
</tr>
<tr>
<td>Sobekhotep V</td>
<td>ca. 1700–1695</td>
</tr>
<tr>
<td>Ibiau Wahibre</td>
<td>ca. 1695–1685</td>
</tr>
<tr>
<td>Aya Merneferre</td>
<td>ca. 1684–1661</td>
</tr>
<tr>
<td>Ini Merhetepre</td>
<td>ca. 1660–1659</td>
</tr>
<tr>
<td>Swadjtu, Ined, Hori, Dedumose</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dynasty</th>
<th>Reign Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dyn. 14</td>
<td>?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dynasty</th>
<th>Reign Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dyn. 15 (Hyksos)</td>
<td>ca. ?–ca. 1530</td>
</tr>
<tr>
<td>Khian Swoserenre</td>
<td></td>
</tr>
<tr>
<td>Apophis ‘Awoserre</td>
<td>ca. 1575–1540</td>
</tr>
<tr>
<td>Khamudi</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dynasty</th>
<th>Reign Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dyns. 16 and 17</td>
<td>ca. ?–1540</td>
</tr>
<tr>
<td>Sobekhotep VIII, Nebiriau, Rahotep, Sobekemzaf I &amp; II, Bebiankh</td>
<td></td>
</tr>
<tr>
<td>Inyotef Nebukheperre</td>
<td>?–?</td>
</tr>
<tr>
<td>Ta’o Senakhtenre</td>
<td>?–?</td>
</tr>
<tr>
<td>Ta’o Seqenenre</td>
<td>?–?</td>
</tr>
<tr>
<td>Kamose Wadjkheperre</td>
<td>ca. ?–1540</td>
</tr>
</tbody>
</table>

**New Kingdom** ca. 1539–1077

<table>
<thead>
<tr>
<th>Dynasty</th>
<th>Reign Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dyn. 18</td>
<td>ca. 1539–1292</td>
</tr>
<tr>
<td>‘Ahmose Nebpehtire</td>
<td>ca. 1539–1515</td>
</tr>
<tr>
<td>Amenhotep I Djeserkare</td>
<td>1514–1494</td>
</tr>
<tr>
<td>Thutmose I Akheperkare</td>
<td>1493–1483</td>
</tr>
<tr>
<td>Thutmose II Akheperenre</td>
<td>1482–1480</td>
</tr>
<tr>
<td>Thutmose III Menkhheperre</td>
<td>1479–1425</td>
</tr>
<tr>
<td>Hatshepsut Maatkare</td>
<td>1479–1458</td>
</tr>
<tr>
<td>Amenhotep II Akheperure</td>
<td>1425–1400</td>
</tr>
<tr>
<td>Thutmose IV Menkheprure</td>
<td>1400–1390</td>
</tr>
<tr>
<td>Amenhotep III Nebmaatre</td>
<td>1390–1353</td>
</tr>
<tr>
<td>Amenhotep IV/Akhenaten Neferkheprure</td>
<td>1353–1336</td>
</tr>
</tbody>
</table>

(continued on next page)
<table>
<thead>
<tr>
<th>Name</th>
<th>Reigns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smenkhkare/Nefertiti</td>
<td>1336–1334</td>
</tr>
<tr>
<td>Nefernefruaten ‘Ankhkheprure’</td>
<td>1334–?</td>
</tr>
<tr>
<td>Tutankhaten/amun Nebkheprure</td>
<td>?–1324</td>
</tr>
<tr>
<td>Isetjer Aya Kheperkheprure</td>
<td>1323–1320</td>
</tr>
<tr>
<td>Haremhab ‘Djeserkheprure’</td>
<td>1319–1292</td>
</tr>
</tbody>
</table>

**Dyn. 19** 1292–1191

- Ramesses I Nebpehtire
- Sety I Memnouatre
- Ramesses II Usermaatret setepenret
- Merneptah Baenre
- Sety II Userkheprure
- Amenmesses Mentire
- Siptah Akhenre
- Towsre Sitre meriamun

**Dyn. 20** 1190–1077

- Sethnakhte Userkhaatre
- Ramesses III Usermaatret meriamun
- Ramasses IV Heqamouatre setepenamun
- Ramasses V Usermaatret Sekheperenret
- Ramasses VI Nebmaatret meryamun
- Ramasses VII Usermaatret setepenret meryamun
- Ramasses VIII Usermaatret akhenamun
- Ramasses IX Neferkare setepenret
- Ramasses X Khepermaatret setepenret
- Ramasses XI Memmaatret setepenptah

**Third Intermediate Period** ca. 1076–723

**Dyn. 21** ca. 1076–944

- Smendes Hedkhepererre setepenret
- Psusennes I Akhepererre setepenamun
- Amenemnisut Neferkare
- Amenemope Usermaatret setepenamun
- Osorkon Akhepererre setepenret
- Siamun Netjerkhepererre setepenamun
- Psusennes II Titkheprure

**Dyn. 22** 943–ca. 746

- Shoshenq I Hedkhepererre setepenret
- Osorkon I Sekhemkhepererre setepenret
- Takelot I Usermaatret setepenamun
- Shoshenq II Heqakhepererre setepenret
- Osorkon II Usermaatret setepenamun
- Shoshenq III Usermaatret setepenret/amun
- Shoshenq IIIa Hedkhepererre

(continued on next page)
Table (cont.)

<table>
<thead>
<tr>
<th>Pharaoh</th>
<th>Reign (Years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pami Userma'atre setepenrê/amun</td>
<td>789–784</td>
</tr>
<tr>
<td>Shoshenq V 'Akheperre'</td>
<td>783–ca. 746</td>
</tr>
</tbody>
</table>

**Dyn. 23 (UE) and Rival Kings**

<table>
<thead>
<tr>
<th>Pharaoh</th>
<th>Reign (Years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Takelot II</td>
<td>845–821</td>
</tr>
<tr>
<td>Iuput I</td>
<td>820–809–</td>
</tr>
<tr>
<td>Osorkon III, Takelot III</td>
<td>ca. 780 ± 20</td>
</tr>
<tr>
<td>Petubaste I</td>
<td>834–812–</td>
</tr>
<tr>
<td>Shoshenq IV, Rudamun, Iny</td>
<td></td>
</tr>
</tbody>
</table>

**Dyn. 23 (LE)**

<table>
<thead>
<tr>
<th>Pharaoh</th>
<th>Reign (Years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petubaste II (?)</td>
<td>ca. 730</td>
</tr>
<tr>
<td>Osorkon IV</td>
<td></td>
</tr>
</tbody>
</table>

**Dyn. 24**

<table>
<thead>
<tr>
<th>Pharaoh</th>
<th>Reign (Years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tefnakhte Shepsesrê</td>
<td>ca. 736–729</td>
</tr>
<tr>
<td>Bocchoris Wahkarê'</td>
<td>728–723</td>
</tr>
</tbody>
</table>

**Late Period**

<table>
<thead>
<tr>
<th>Pharaoh</th>
<th>Reign (Years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ca. 722–655</td>
<td></td>
</tr>
</tbody>
</table>

**Dyn. 25**

<table>
<thead>
<tr>
<th>Pharaoh</th>
<th>Reign (Years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Piye/Pi’ankhy</td>
<td>ca. 753–723</td>
</tr>
<tr>
<td>Shabaka Neferkarê'</td>
<td>ca. 722–707</td>
</tr>
<tr>
<td>Shebitku Djedkaure'</td>
<td>ca. 706–690</td>
</tr>
<tr>
<td>Taharqa Khure’nefertem</td>
<td>690–664</td>
</tr>
<tr>
<td>Tantamani Bakarê</td>
<td>664–ca. 655</td>
</tr>
</tbody>
</table>

**Dyn. 26**

<table>
<thead>
<tr>
<th>Pharaoh</th>
<th>Reign (Years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Psammetichus I Wahibre'</td>
<td>664–610</td>
</tr>
<tr>
<td>Necho II Wehemibrê'</td>
<td>610–595</td>
</tr>
<tr>
<td>Psammetichus II Neferibrê</td>
<td>595–589</td>
</tr>
<tr>
<td>Apries Ha’aibre'</td>
<td>589–570</td>
</tr>
<tr>
<td>Amasis Khmembirê'</td>
<td>570–526</td>
</tr>
<tr>
<td>Psammetichus III ‘Ankhkaenre'</td>
<td>526–525</td>
</tr>
</tbody>
</table>

**Dyn. 27 (Persian)**

<table>
<thead>
<tr>
<th>Pharaoh</th>
<th>Reign (Years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cambyses</td>
<td>525–522</td>
</tr>
<tr>
<td>Darius I</td>
<td>521–486</td>
</tr>
<tr>
<td>Xerxes</td>
<td>486–466</td>
</tr>
<tr>
<td>Artaxerxes I</td>
<td>465–424</td>
</tr>
<tr>
<td>Darius II</td>
<td>424–404</td>
</tr>
</tbody>
</table>

**Dyn. 28**

<table>
<thead>
<tr>
<th>Pharaoh</th>
<th>Reign (Years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amyrtaios</td>
<td>404–399</td>
</tr>
</tbody>
</table>

**Dyn. 29**

<table>
<thead>
<tr>
<th>Pharaoh</th>
<th>Reign (Years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nepherites Baenê’re meryneferu</td>
<td>399–393</td>
</tr>
<tr>
<td>Psammuthis Userê’t setepenptah</td>
<td>393</td>
</tr>
<tr>
<td>Hakoris Khnemu’ma’atre'</td>
<td>393–380</td>
</tr>
<tr>
<td>Nepherites II</td>
<td>380</td>
</tr>
</tbody>
</table>

(continued on next page)
<table>
<thead>
<tr>
<th>Dyn. 30</th>
<th>380–343</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nectanebo I <em>Kheperkarê</em></td>
<td>380–362</td>
</tr>
<tr>
<td>Teos <em>Irma'atenrê</em></td>
<td>365–360</td>
</tr>
<tr>
<td>Nectanebo II <em>Senedjemibrê setepenanhur</em></td>
<td>360–343</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2nd Persian Period</th>
<th>343–332</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artaxerxes III Ochus</td>
<td>343–338</td>
</tr>
<tr>
<td>Arses</td>
<td>338–336</td>
</tr>
<tr>
<td>Darius III Codoman</td>
<td>335–332</td>
</tr>
</tbody>
</table>

| Alexander the Great | 332–323 |
### IV. 3 KUSHITE RULERS OF PRE-25TH DYNASTY, 25TH DYNASTY, NAPATAN AND MEROITIC TIMES INCLUDING THEIR BURIALS AND PRESUMED DATES FOR REIGNS

<table>
<thead>
<tr>
<th>Generation</th>
<th>Name of Ruler</th>
<th>Burial</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gen. A</td>
<td>Ruler A</td>
<td>Ku. Tum. 1</td>
<td>c. 885–835 BC</td>
</tr>
<tr>
<td>Gen. B</td>
<td>Ruler B</td>
<td>Ku. Tum. 2</td>
<td>c. 865–825 BC</td>
</tr>
<tr>
<td>Gen. C</td>
<td>Ruler C</td>
<td>Ku. Tum. 6</td>
<td>c. 845–815 BC</td>
</tr>
<tr>
<td>Gen. D</td>
<td>Ruler D</td>
<td>Ku. 14</td>
<td>c. 825–805 BC</td>
</tr>
<tr>
<td>Gen. E</td>
<td>Ruler E</td>
<td>Ku. 11</td>
<td>c. 805–795 BC</td>
</tr>
<tr>
<td>Gen. F</td>
<td>Alara</td>
<td>(Ku. 9)</td>
<td>c. 785–765 BC</td>
</tr>
</tbody>
</table>

**Kings of Dyn. 25**

| Gen. 1 | Kashta       | (Ku. 8) | c. 765–753 BC |
| Gen. 3 | Shabaka [Shabaqo] | Ku. 15  | c. 722–707 BC |
| Gen. 4 | Shebi'tku     | Ku. 18  | c. 707–690 BC |
| Gen. 5 | Taharqa [Taharqo] | Nu. 1  | 690–664 BC |
| Gen. 6 | Tanwetamani   | Ku. 16  | 664–655/53 BC (in Egypt) |

**Napatan Kings**

| Gen. 7 | Atlanersa | (Nu. 20) | 2nd half of 7th cent. BC |
| Gen. 8 | Senkamanisken | Nu. 3 | 2nd half of 7th cent. BC |
| Gen. 9 | Anlamani | Nu. 6 | late 7th cent. BC |
| Gen. 10 | Aspelta | Nu. 8 | early 6th cent. BC (campaign Psammetik’s II against Nubia in 593 BC) |

| Gen. 11 | Aramatelqo | Nu. 9 | 2nd quarter of 6th cent. BC |
| Gen. 12 | Malonaqen | Nu. 5 | 1st half of 6th cent. BC |
| Gen. 13 | Analmakhaye [Analm*aaye] | Nu. 18 | middle of 6th cent. BC |
| Gen. 14 | Amani-natanki-lebte | Nu. 10 | 2nd half of 6th cent. BC |
| Gen. 15 | Karkamani | Nu. 7 | 2nd half of 6th cent. BC |
| Gen. 16 | Amaniastabarqo | Nu. 2 | late 6th cent. BC |

(continued on next page)

---

1. Questionable rulers in parentheses; alternative or conventional readings of names in brackets; completely hypothetical rulers excluded, e.g., Pisekara, who has been thought to have been king solely because he fathered a presumed king.
2. Ascribed burials in parentheses, controversial burials excluded.
5. Napatan and Meroitic dates—except for the few fixed points—according to generally accepted hypothetical reign lengths.
Table (cont.)

<table>
<thead>
<tr>
<th>Generation</th>
<th>Name of Ruler</th>
<th>Burial</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gen. 17</td>
<td>Sikhespiqo [Sišaspiqo]</td>
<td>Nu. 4</td>
<td>early 5th cent. BC</td>
</tr>
<tr>
<td>Gen. 18</td>
<td>Nasakhma</td>
<td>Nu. 19</td>
<td>1st half of 5th cent. BC</td>
</tr>
<tr>
<td>Gen. 19</td>
<td>Malowi-Amani</td>
<td>Nu. 11</td>
<td>middle of 5th cent. BC</td>
</tr>
<tr>
<td>Gen. 20</td>
<td>Talakhamani</td>
<td>Nu. 16</td>
<td>2nd half of 5th cent. BC</td>
</tr>
<tr>
<td>Gen. 21</td>
<td>Arike-Amanote</td>
<td>Nu. 12</td>
<td>2nd half of 5th cent. BC</td>
</tr>
<tr>
<td>Gen. 22</td>
<td>Başkakeren</td>
<td>Nu. 17</td>
<td>late 5th cent. BC</td>
</tr>
<tr>
<td>Gen. 23</td>
<td>Harsjotef</td>
<td>Nu. 13</td>
<td>early 4th cent. BC</td>
</tr>
<tr>
<td>Gen. 24</td>
<td>King, name unknown</td>
<td>Ku. 1</td>
<td>middle of 4th cent. BC</td>
</tr>
<tr>
<td>Gen. 25</td>
<td>Akhratan</td>
<td>Nu. 14</td>
<td>2nd half of 4th cent. BC</td>
</tr>
<tr>
<td>Gen. 26</td>
<td>Amanibakhi</td>
<td>?</td>
<td>2nd half of 4th cent. BC</td>
</tr>
<tr>
<td>Gen. 27</td>
<td>?</td>
<td>Nu. 15</td>
<td>last 3rd of 4th cent. BC</td>
</tr>
<tr>
<td>Gen. 28–32</td>
<td>Neo-Ramesside Rulers</td>
<td></td>
<td>late 4th cent. to 2nd third of 3rd cent. BC</td>
</tr>
<tr>
<td></td>
<td>Aktisanes [Gtsn]</td>
<td>(Bar. 11)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ary(aman)</td>
<td>(Bar. 14)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Kash . . . amani</td>
<td>(Bar. 15)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Arike-Pi(ankhi)-qo</td>
<td>?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sabrakamani</td>
<td>?</td>
<td></td>
</tr>
</tbody>
</table>

**Meroitic Kings and ruling Queens**

<table>
<thead>
<tr>
<th>Generation</th>
<th>Name of Ruler</th>
<th>Burial</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gen. 33</td>
<td>*Arkamanis [Ergamenes I., Arqamani-qo, Arakakamani]</td>
<td>Beg. S. 6</td>
<td>2nd quarter of 3rd cent. BC</td>
</tr>
<tr>
<td>Gen. 34</td>
<td>*Amanisaraw [Amanislo]</td>
<td>Beg. S. 5</td>
<td></td>
</tr>
<tr>
<td>Gen. 35</td>
<td>*Amani-tekha</td>
<td>Beg. N. 4</td>
<td></td>
</tr>
<tr>
<td>Gen. 36</td>
<td>*Arneckhamani</td>
<td>(Beg. N. 53)</td>
<td>last 3rd of 3rd cent. BC</td>
</tr>
<tr>
<td>Gen. 37</td>
<td>*Arqamani</td>
<td>Beg. N. 7</td>
<td>end of 3rd cent. BC</td>
</tr>
<tr>
<td>Gen. 38</td>
<td>*Tabirqo [Adikhalaman i?]</td>
<td>Beg. N. 9</td>
<td>1st third of 2nd cent. BC</td>
</tr>
<tr>
<td>Gen. 39</td>
<td>King, name unknown</td>
<td>Beg. N. 10</td>
<td></td>
</tr>
<tr>
<td>Gen. 40</td>
<td>King, name unknown</td>
<td>Beg. N. 8</td>
<td></td>
</tr>
<tr>
<td>Gen. 41</td>
<td>Königin Sanakadakhete</td>
<td>Beg. N. 11</td>
<td>2nd half of 2nd cent. BC</td>
</tr>
<tr>
<td>Gen. 42</td>
<td>King, name unknown</td>
<td>Beg. N. 12</td>
<td></td>
</tr>
<tr>
<td>Gen. 43</td>
<td>*Naqyrimsan</td>
<td>(Beg. N. 13)</td>
<td></td>
</tr>
<tr>
<td>Gen. 44</td>
<td>Taneyidamani</td>
<td>(Beg. N. 20)</td>
<td>early 1st cent. BC</td>
</tr>
<tr>
<td>Gen. 45</td>
<td>King, name unknown</td>
<td>Bar. 2</td>
<td></td>
</tr>
<tr>
<td>Gen. 46</td>
<td>Queen, name unknown</td>
<td>Bar. 4</td>
<td></td>
</tr>
<tr>
<td>Gen. 47</td>
<td>Queen Nawidemaka</td>
<td>Bar. 6</td>
<td></td>
</tr>
</tbody>
</table>

(continued on next page)

---

7 After Hintze, *F5 Dunham*, 93.
8 Asterisks designate Meroitic kings whose names are known only in Egyptian hieroglyphic transcriptions.
10 According to the improved reading Amanisaraw (see note 9), the name could possibly be understood as Meroitic Amani-Sedewa or Amani-Salawa.
### Table (cont.)

<table>
<thead>
<tr>
<th>Generation</th>
<th>Name of Ruler</th>
<th>Burial</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gen. 48</td>
<td>Amanikhabale</td>
<td>(Beg. N. 2)</td>
<td></td>
</tr>
<tr>
<td>Gen. 49</td>
<td>Teriteqase</td>
<td>(Beg. N. 14)</td>
<td>last 3rd of 1st cent. BC</td>
</tr>
<tr>
<td>Gen. 50</td>
<td>Queen Amanirenase</td>
<td>(Beg. N. 21)</td>
<td>late 1st cent. BC</td>
</tr>
<tr>
<td>Gen. 51</td>
<td>Queen Amanisakheto</td>
<td>Beg. N. 6</td>
<td></td>
</tr>
<tr>
<td>Gen. 52</td>
<td>Natakamani</td>
<td>Beg. N. 22</td>
<td>2nd half of 1st cent. AD</td>
</tr>
<tr>
<td>Gen. 53</td>
<td>(Sorakarora)</td>
<td>?</td>
<td></td>
</tr>
<tr>
<td>Gen. ?</td>
<td>(Amanitaraqide)</td>
<td>(Beg. N. 16)</td>
<td></td>
</tr>
<tr>
<td>Gen. ?</td>
<td>Amanikhareqerema</td>
<td>?</td>
<td>end of 1st cent. AD&lt;sup&gt;11&lt;/sup&gt;</td>
</tr>
<tr>
<td>Gen. ?</td>
<td>Amanitenamomide</td>
<td>Beg. N. 17</td>
<td>2nd half/end of 1st cent. AD</td>
</tr>
<tr>
<td>Gen. ?</td>
<td>Queen *Amanikhatashan</td>
<td>Beg. N. 18</td>
<td>to middle of 2nd cent. AD</td>
</tr>
<tr>
<td>Gen. ?</td>
<td>Tarekeniwala</td>
<td>Beg. N. 19</td>
<td></td>
</tr>
<tr>
<td>Gen. ?</td>
<td>Ariteneyesebokhe</td>
<td>Beg. N. 34&lt;sup&gt;12&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Gen. ?</td>
<td>Takideamani</td>
<td>Beg. N. 29</td>
<td></td>
</tr>
<tr>
<td>Gen. ?</td>
<td>(Arayesebokhe)</td>
<td>Beg. N. 36</td>
<td></td>
</tr>
<tr>
<td>Gen. ?</td>
<td>Teqorideamani</td>
<td>Beg. N. 28</td>
<td>accession 248/249 AD</td>
</tr>
<tr>
<td>Gen. ?</td>
<td>(Tamelordeamani)</td>
<td>?</td>
<td></td>
</tr>
<tr>
<td>Gen. ?</td>
<td>Yesebokkheamani</td>
<td>?</td>
<td>end of 3rd cent. AD</td>
</tr>
<tr>
<td>Gen. ?</td>
<td>Queen, name unknown</td>
<td>Beg. N. 26</td>
<td></td>
</tr>
<tr>
<td>Gen. ?</td>
<td>Queen, name unknown</td>
<td>Beg. N. 25</td>
<td>End of kingdom, about 330–370 AD</td>
</tr>
</tbody>
</table>

**Known rulers not sequenced**

- Gen. ? Karaki<sup>13</sup> : ?
- Gen. ? *Sp-nh-n-Jmn sp.n R<sup>14</sup> : ?
- Gen. ? Aqrakamani<sup>15</sup> : ?

**Burials in Beg. N. not ascribed or sequenced in table**

<table>
<thead>
<tr>
<th>Generation</th>
<th>Burial</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gen. ?</td>
<td>Beg. N. 41</td>
<td></td>
</tr>
<tr>
<td>Gen. ?</td>
<td>Beg. N. 30</td>
<td></td>
</tr>
<tr>
<td>Gen. ?</td>
<td>Beg. N. 38</td>
<td></td>
</tr>
<tr>
<td>Gen. ?</td>
<td>Beg. N. 51</td>
<td></td>
</tr>
<tr>
<td>Gen. ?</td>
<td>Beg. N. 24</td>
<td></td>
</tr>
<tr>
<td>Gen. ?</td>
<td>Beg. N. 27</td>
<td></td>
</tr>
</tbody>
</table>

---

<sup>11</sup> According to Wenig, *Meroitica* 15, 681, he should be dated close to Taneyidamani, since *nswt-hj* occurs in the king’s title. However, cf. Naqa, Inscr. 18. 21, where $\heh$ is used as title (Torók, *FHN* III, 937–38).

<sup>12</sup> This formally disputed location of burial is now ascertained (Hinkel, *Suppl. BIFAO* 81 (Bulletin du Centenaire), 1981, 379–88).


<sup>14</sup> Early Ptolemaic; see FHN II, 571 f. (118. 119); for the epithet *sp.n R* see Jansen-Winkeln, BSEG 23, 1999, 51–61, esp. 54.

ABBREVIATIONS AND BIBLIOGRAPHY
LIST OF ABBREVIATIONS

Cf. also the abbreviations in *Lexikon der Ägyptologie* VII (1992), XIII–XXXVIII

AD  Anno Domini
BC  Before Christ
BP  Before present
Dak.  Dakke
FIP  First Intermediate Period
Fs  Festschrift
HP  High Priest
HPA  High Priest of Amun
LD  Lunar Day
LE  Lower Egypt
LM  Lunar month
LN  Lower Nubia
LP  Late Period
MK  Middle Kingdom
NK  New Kingdom
OK  Old Kingdom
Ph.  Philae
SIP  Second Intermediate Period
TC  Turin Canon
TIP  Third Intermediate Period
TL  Thermoluminescence
TT  Theban Tomb
UE  Upper Egypt
WB  Wörterbuch

*Periodicals and Series*

AAR  African Archaeological Review
AA  Ägyptologische Abhandlungen
AAT  Ägypten und Altes Testament
ÄgFo  Ägyptologische Forschungen
AfO  Archiv für Orientforschung
AH  Aegyptiaca Helvetica
AHw  Akkadisches Handwörterbuch
Ä&L  Ägypten und Levante
AnBib  Analecta Biblica
ANM  Archéologie du Nil Moyen
ANRW  Aufstieg und Niedergang des Römischen Reiches, W. Haase, ed.
AJA  American Journal of Archaeology
AjSL  American Journal of Semitic Languages and Literatures
AoF  Altorientalische Forschungen
APAW  Abhandlungen der Preussischen Akademie der Wissenschaften
APF  Archiv für Papyrologie und verwandte Gebiete
ASAE  Annales du Service des Antiquités de l’Egypte
### Abbreviations and Bibliography

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>AV</td>
<td>Archäologische Veröffentlichungen des DAI</td>
</tr>
<tr>
<td>BABA</td>
<td>Beiträge zur ägyptischen Bauforschung und Altertumskunde</td>
</tr>
<tr>
<td>BAR</td>
<td>Breasted, Ancient Records</td>
</tr>
<tr>
<td>BCE</td>
<td>Bulletin de liaison du groupe international d'étude de la céramique égyptienne</td>
</tr>
<tr>
<td>BdE</td>
<td>Bibliothèque d'Études</td>
</tr>
<tr>
<td>BIFAO</td>
<td>Bulletin de l'Institut français d'archéologie orientale</td>
</tr>
<tr>
<td>BiAe</td>
<td>Bibliotheca Aegyptiaca</td>
</tr>
<tr>
<td>BiOr</td>
<td>Bibliotheca orientalis</td>
</tr>
<tr>
<td>BS</td>
<td>Bollingen Series</td>
</tr>
<tr>
<td>BMFA</td>
<td>Bulletin of the Museum of Fine Art</td>
</tr>
<tr>
<td>BSFFT</td>
<td>Bulletin de la Société Française des Fouilles de Tanis</td>
</tr>
<tr>
<td>BzS</td>
<td>Beiträge zur Sudanforschung</td>
</tr>
<tr>
<td>CAA</td>
<td>Corpus Antiquitatum Aegyptiacarum</td>
</tr>
<tr>
<td>CAH</td>
<td>The Cambridge Ancient History</td>
</tr>
<tr>
<td>CdE</td>
<td>Chronique d’Égypte</td>
</tr>
<tr>
<td>CG</td>
<td>Catalogue Général des Antiquités Égyptiennes du Musée du Caire</td>
</tr>
<tr>
<td>CRAIBL</td>
<td>Comptes rendus de l’Académie des Inscriptions et Belles-lettres</td>
</tr>
<tr>
<td>CRPEL</td>
<td>Cahiers de Recherches de l’Institut de Papyrologie et d’Égyptologie de Lille</td>
</tr>
<tr>
<td>CSSM</td>
<td>Malinine, Catalogue des stèles du Séraeum</td>
</tr>
<tr>
<td>DE</td>
<td>Discussions in Egyptology</td>
</tr>
<tr>
<td>EAT</td>
<td>Neugebauer &amp; Parker, Egyptian Astronomical Texts</td>
</tr>
<tr>
<td>FHN</td>
<td>Eide, Fontes Historiae Nubiorum</td>
</tr>
<tr>
<td>Gifts</td>
<td>Friedman, Gifts</td>
</tr>
<tr>
<td>GLR</td>
<td>Gauthier, Livre des rois</td>
</tr>
<tr>
<td>GM</td>
<td>Göttinger Miscellen</td>
</tr>
<tr>
<td>GOF</td>
<td>Göttinger Orientforschungen</td>
</tr>
<tr>
<td>GRL</td>
<td>Geophysical Research Letters</td>
</tr>
<tr>
<td>HAS</td>
<td>Harvard African Studies</td>
</tr>
<tr>
<td>HPBM</td>
<td>Hieratic Papyri in the British Museum</td>
</tr>
<tr>
<td>HESPOK</td>
<td>Smith, History</td>
</tr>
<tr>
<td>HO</td>
<td>Cerný, Hieratic Ostraca</td>
</tr>
<tr>
<td>JACF</td>
<td>Journal of the Ancient Chronology Forum</td>
</tr>
<tr>
<td>JAnAr</td>
<td>Journal of Anthropological Archaeology</td>
</tr>
<tr>
<td>JARCE</td>
<td>Journal of the American Research Center in Egypt</td>
</tr>
<tr>
<td>JAS</td>
<td>Journal of Archaeological Science</td>
</tr>
<tr>
<td>JCS</td>
<td>Journal of Cuneiform Studies</td>
</tr>
<tr>
<td>JEA</td>
<td>Journal of Egyptian Archaeology</td>
</tr>
<tr>
<td>JEOL</td>
<td>Jaarbericht van het Vooraziatisch-Egyptisch Genootschap Ex Oriente Lux</td>
</tr>
<tr>
<td>JHA</td>
<td>Journal for the History of Astronomy</td>
</tr>
<tr>
<td>JNES</td>
<td>Journal of Near Eastern Studies</td>
</tr>
<tr>
<td>JRAI</td>
<td>Journal of the Royal Anthropological Institute</td>
</tr>
<tr>
<td>JSSEA</td>
<td>Journal of the Society for the Study of Egyptian Antiquities</td>
</tr>
<tr>
<td>Kawa</td>
<td>Macadam, Kawa</td>
</tr>
<tr>
<td>KRI</td>
<td>Kitchen, Ramesside Inscriptions</td>
</tr>
<tr>
<td>LD</td>
<td>Lepsius, Denkmäler</td>
</tr>
<tr>
<td>LD Text</td>
<td>Lepsius, Denkmäler Text</td>
</tr>
<tr>
<td>LEM</td>
<td>Caminos, Late Egyptian Miscellanies</td>
</tr>
<tr>
<td>LRL</td>
<td>Wente, Late Ramesside Letters</td>
</tr>
<tr>
<td>MDAIK</td>
<td>Mitteilungen des Deutschen Archäologischen Instituts Abteilung Kairo</td>
</tr>
<tr>
<td>MAe</td>
<td>Monumenta Aegyptiaca</td>
</tr>
<tr>
<td>MHC</td>
<td>Medinet Habu Calendar</td>
</tr>
<tr>
<td>MIO</td>
<td>Mitteilungen des Instituts für Orientforschung</td>
</tr>
</tbody>
</table>
MNL  Meroitic Newsletter
MonAeg  Monumenta aegyptiaca
NABU  Nouvelles assyriologiques brèves et utiles
NAWG  Nachrichten der Akademie der Wissenschaften in Göttingen
OLA  Orientalia Lovaniensia Analecta
OLP  Orientalia Lovaniensia Periodica
OLZ  Orientalistische Literatur-Zeitung
OMRO  Oudheidkundige mededelingen uit het Rijksmuseum van Oudheden te Leiden
OrAnt  Oriens Antiquus
PA  Probleme der Ägyptologie
PM  Porter & Moss, Topographical Bibliography
PPS  Proceedings of the Prehistoric Society
PSBA  Proceedings of the Society of Biblical Archaeology
QuF  Quellen und Forschungen zur Zeitbestimmung der ägyptischen Geschichte
RAD  Gardiner, Ramesside Administrative Documents
RCK  Dunham, Royal Cemeteries of Kush
RE  Pauly-Wissowa, Real-Encyclopädie der classischen Altertumswissenschaften
RIA  Reallexikon der Assyriologie
RT  Petrie, Royal Tombs
ReE  Revue d’Égyptologie
RecTrav  Recueil des travaux relatifs à la philologie et à l’archéologie égyptienne et assyriennes
Reliefs  The Bubastite Portal
REM  Repertoire d’Epigraphie Méroïtique, J. Leclant, ed.
RITA  Kitchen, RITA
RSO  Rivista degli studi orientali
SAe  Studia Aegyptiaca
SAK  Studien zur altägyptischen Kultur
SARS  The Sudan Archaeological Research Society
SCCNH  Studies on the Civilization and Culture of Nuzi and the Hurrians
SCIEM  The Synchronisation of Civilizations in the Eastern Mediterranean in the Second Millennium B.C.
SIM  Serapeum Inventaire Mariette Louvre
SNR  Sudan Notes and Records
Studies Kakosy  Luft, ed., Studies Kakosy
TAVO  Tübinger Atlas des Vorderen Orients
TUAT  Texte aus der Umwelt des Alten Testaments
UGAA  Untersuchungen zur Geschichte und Altertumskunde Ägyptens
Urk.  Urkunden des ägyptischen Altertums
VA  Varia Aegyptiaca
WdO  Welt des Orients
WZKM  Wiener Zeitschrift für die Kunde des Morgenlandes
ZA  Zeitschrift für Assyriologie
ZAS  Zeitschrift für Ägyptische Sprache und Altertumskunde
ZDPV  Zeitschrift des Deutschen Palästina-Vereins
ZPE  Zeitschrift für Papyrologie und Epigraphik
Abbreviated Titles of Books and Articles


Åström, Paul *High, Middle or Low?: Acts of an International Colloquium on Absolute Chronology held at the University of Gothenburg, 20th–22nd August 1987*, vol. 1 (Gothenburg, 1987)


Baud, Michel, “Ménès, la mémoire monarchique et la chronologie du IIIe millénaire”, *Archéo-Nil* 9 (1999), 103–141


Beckerath, Jürgen von, Untersuchungen zur politischen Geschichte der Zweiten Zwischenzeit in Ägypten (Glückstadt: ÄgFo 23, 1964)

——, Chronologie des Neuen Reiches (Hildesheim: HAB 39, 1994)

——, Chronologie des pharaonischen Ägypten. Die Zeitbestimmung der ägyptischen Geschichte von der Vorzeit bis 332 v.Chr. (Mainz: MÄS 46, 1997)

——, Handbuch der ägyptischen Königsnamen (Mainz: MÄS 49, 1999)


——, *The Tomb-builders of the Pharaohs* (London, 1982)


Borchardt, Ludwig, *Die Annalen und die zeitliche Festlegung des Alten Reiches der ägyptischen Geschichte* (Berlin: QuF 1, 1917)

——, Die Mittel zur zeitlichen Festlegung von Punkten der ägyptischen Geschichte und ihre Anwendung (Kairo: QuF 2, 1935)

——, Das Grabdenkmal des Königs Ne-user-Re (Leipzig: WVDGO 7, 1907)


The Bubastite Portal by the Epigraphic Survey. Reliefs and Inscriptions at Karnak III (Chicago: OIP LXIV, 1954)


Daressy, Georges, *Ostraca. Catalogue général des antiquités égyptiennes du Musée du Caire Nos. 25001–25385* (Cairo, 1901)
——, *Civil Calendar and Lunar Calendar in Ancient Egypt* (Leuven: OLA 77, 1997)
Firth, Cecil M. & Quibell, James E., *Excavations at Saqqara: The Step Pyramid I* (Cairo, 1935)
Fischer, Henry G., *Dendera in the Third Millennium* (Locust Valley, 1968)
——, *Das Heiligtum des Hekaib auf Elephantine. Geschichte eines Provinzialheiligtums im Mittleren Reich* (Heidelberg: SAGA 9, 1994)
Gardiner, Alan H., “Regnal Years and Civil Calendar in Pharaonic Egypt”, *JEA* 31 (1945), 11–28
——, *The Royal Canon of Turin* (Oxford, 1959)
——, *Egypt of the Pharaohs* (Oxford, 1961)
——, *Untersuchungen zur Thinitenzeit* (Wiesbaden: ÄA 45, 1987)
Hofmann, Inge, *Beiträge zur meroitischen Chronologie* (St. Augustin, 1978)


Jéquier, Gustave, *Fouilles à Saqqarah. Deux pyramides du Moyen Empire* (Cairo, 1933)


—, *Steingefässe mit Inschriften der Frühzeit und des Alten Reiches* (Brussels: MonAeg 1, 1968)


Lacau, Pierre & Lauer, Jean-Philippe, *La pyramide à degrés IV. Inscriptions gravées sur les vases* (Cairo, 1959)

—, *La pyramide à degrés V. Inscriptions à l’encre sur les vases* (Cairo, 1965)


Marciniak, Marek, *Deir el-Bahari I: Les inscriptions hiératiques* (Warsaw, 1974)

Maystre, Charles, *Les grands prêtres de Ptah de Memphîs* (Freiburg, 1992)

Meyer, Eduard, Ägyptische Chronologie (Berlin, 1904)
——, “Nachträge zur ägyptischen Chronologie”, in: APAW 1907 (Berlin, 1908), 1–46
Montet, Pierre, Les constructions et le tombeau de Psousennès à Tanis. Le nécropole royale de Tanis II (Paris, 1951)
Murmane, William J., Texts from the Amarna Period in Egypt (Atlanta, 1995)
——, A Suite Oracle Papyrus from Thebes in the Brooklyn Museum (Providence, 1962)
——, & Dubberstein, Waldo H., Babylonian Chronology 626 BC–AD 75 (Providence: BUS 19, 1956)
Petrie, William M. Flinders, The Royal Tombs of the First Dynasty I (London: MEEF 18, 1900)
——, The Royal Tombs of the Earliest Dynasties II (London: MEEF 21, 1901)
——, Diospolis Parva. The Cemeteries of Abadiyeh and Hau. 1898–1899 (London, 1901)
——, Abydos I (London, 1902)
——, Tarkhan and Memphis V (London, 1913)
——, Les archives du temple funéraire de Néferirkarê-Kakai (Cairo: BdE 65, 1976)
——, Graffiti in the revetment blocks of the Pyramid, in: Ali el-Khouli, Maidum (ACE Reports 3, 1991)
Quibell, James E., Hierakonpolis I (London, 1900)
Redford, Donald B., Pharaonic King-Lists, Annals and Day-Books (Mississauga: SSEAP 4, 1986)
Schäfer, Heinrich, Ein Bruchstück altägyptischer Annalen (Berlin: APAW philos.-hist. Kl., 1902)
Schenkel, Wolfgang, Frühmittelägyptische Studien (Bonn: BOS NS 13, 1962)
——, Memphis, Harkhekpolis, Theben (Wiesbaden: AA 12, 1965)
Schneider, Thomas, Lexikon der Pharaonen (Munich, 1996)
Schott, Siegfried, Älgägyptische Festdaten, Akademie der Wissenschaften und der Literatur Mainz. Abhandlungen der Geistes- und Sozialwissenschaftlichen Klasse, No. 10 (1950), 1–70
Simpson, William K., Studies in ancient Egypt, the Aegean, and the Sudan: essays in honor of Dows Dunham on the occasion of his 90th birthday, June, 1980 (Boston, 1981)
——, A History of Egyptian Sculpture and Painting in the Old Kingdom (London, 1946)
Spalinger, Anthony J., Three Studies on Egyptian Feasts and their Chronological Implications (Baltimore, 1992)
——, ed., Revolutions in Time (San Antonio: VAS 7, 1994)
——, The Private Feast lists of Ancient Egypt (Wiesbaden: AA 57, 1996)
Spencer, Alan J., Early Dynastic Objects (London, 1980)
Stephenson, F. R., Historical Eclipses and Earth’s Rotation (Cambridge, 1997)
Swelim, Nabil, Some Problems on the History of the Third Dynasty (Alexandria: AHS 7, 1983)
Török, Laszlo, The Kingdom of Kush: Handbook of the Napatan-Meroitic civilization (Leiden, 1997)
Valbelle, Dominique, Les Ouvriers de la tombe: Deir el-Médineh à l’époque ramesside (Cairo: BdE 96, 1985)
Verner, Miroslav, Forgotten Pharaohs, Lost Pyramids. Abusir (Prague, 1994)
——, “Archaeological Remarks on the 4th and 5th Dynasty Chronology”, Archiv Orientální 69 (2001), 363–418
Waddell, William G., Manetho (Cambridge, Mass.: The Loeb Classical Library 350, 1940)
Wente, Edward F., Late Ramesside Letters (SAOC 33: Chicago 1967)
Wiedemann, Alfred, Ägyptische Geschichte (Gotha, 1884)
Wildung, Dietrich, Die Rolle ägyptischer Könige im Baurusseh in ihrer Nachwelt (Berlin: MÄS 17, 1969)
——, Early Dynastic Egypt (London, 1999)
Ziegler, Christiane, Catalogue des stèles, peintures et reliefs égyptiens de l’Ancien Empire et de la Première Période Intermediaire (Paris, 1990)
INDEX OF PERSONAL NAMES

<table>
<thead>
<tr>
<th>Name</th>
<th>Page Numbers</th>
<th>Cross-References</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achoris</td>
<td>270, 280</td>
<td></td>
</tr>
<tr>
<td>Adad-nerari I</td>
<td>321–322, 477–478</td>
<td></td>
</tr>
<tr>
<td>Adikhalamani</td>
<td>297</td>
<td></td>
</tr>
<tr>
<td>'Adji-b</td>
<td>23, 24, 90, 96–98, 100–101, 107–112</td>
<td></td>
</tr>
<tr>
<td>'Aha</td>
<td>4, 23, 39, 45, 89–91, 97, 101, 486</td>
<td></td>
</tr>
<tr>
<td>'Ahmose</td>
<td>34, 41, 191, 195–196, 198–199, 423, 440, 479, 481</td>
<td></td>
</tr>
<tr>
<td>'Ahmose Penekheb</td>
<td>41</td>
<td></td>
</tr>
<tr>
<td>Akhenaten</td>
<td>2, 10, 206, 313–315, 317, 335, 375, 419, 477–478</td>
<td></td>
</tr>
<tr>
<td>'Akeheperre'</td>
<td>see Osochor</td>
<td></td>
</tr>
<tr>
<td>Akhet'a, official</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>Akitsanes</td>
<td>295</td>
<td></td>
</tr>
<tr>
<td>Alara</td>
<td>284, 289</td>
<td></td>
</tr>
<tr>
<td>Alexander the Great</td>
<td>4, 35, 265, 266–269, 458, 464–465</td>
<td></td>
</tr>
<tr>
<td>Amanibakhri</td>
<td>293</td>
<td></td>
</tr>
<tr>
<td>Amanikhareqcrema</td>
<td>301–302</td>
<td></td>
</tr>
<tr>
<td>Amanikhathashan</td>
<td>302</td>
<td></td>
</tr>
<tr>
<td>Amanirenase</td>
<td>298–299</td>
<td></td>
</tr>
<tr>
<td>Amanisakheto</td>
<td>299–300</td>
<td></td>
</tr>
<tr>
<td>Amanisilo</td>
<td>295–297</td>
<td></td>
</tr>
<tr>
<td>Amanitaraqide</td>
<td>301</td>
<td></td>
</tr>
<tr>
<td>Amamitamone</td>
<td>302</td>
<td></td>
</tr>
<tr>
<td>Amanisakheto</td>
<td>299–300</td>
<td></td>
</tr>
<tr>
<td>Amantamomide</td>
<td>302</td>
<td></td>
</tr>
<tr>
<td>Athesis</td>
<td>473</td>
<td></td>
</tr>
<tr>
<td>Amenemhet, astronomer</td>
<td>199</td>
<td></td>
</tr>
<tr>
<td>Amenemhet I</td>
<td>170–171, 428, 481–482</td>
<td></td>
</tr>
<tr>
<td>Amenemhet II</td>
<td>172</td>
<td></td>
</tr>
<tr>
<td>Amenemhet IV</td>
<td>173–174, 177, 480</td>
<td></td>
</tr>
<tr>
<td>Amenemhet (V)</td>
<td>177</td>
<td></td>
</tr>
<tr>
<td>Amenemhet (VII)</td>
<td>175, 178–179</td>
<td></td>
</tr>
<tr>
<td>Amenemhetmenbef</td>
<td>177</td>
<td></td>
</tr>
<tr>
<td>Amenemmisut</td>
<td>see Nephercheres</td>
<td></td>
</tr>
<tr>
<td>Amenemope</td>
<td>218, 224–232, 412–414, 475</td>
<td></td>
</tr>
<tr>
<td>Amenemophsis, son of Hapu</td>
<td>205</td>
<td></td>
</tr>
<tr>
<td>Amenhotep I</td>
<td>11, 199, 440, 479–482, 490</td>
<td></td>
</tr>
<tr>
<td>Amenhotep II</td>
<td>10–11, 200, 203–204, 374–375, 419–420, 478</td>
<td></td>
</tr>
<tr>
<td>Amenhotep IV</td>
<td>see Akhenaten</td>
<td></td>
</tr>
<tr>
<td>Ameni Qemau</td>
<td>177</td>
<td></td>
</tr>
<tr>
<td>Amenirdis I</td>
<td>253–254, 257–258, 284</td>
<td></td>
</tr>
<tr>
<td>Amenmesses</td>
<td>42, 197, 210, 212–213, 416–417, 476</td>
<td></td>
</tr>
<tr>
<td>Amenophis, see Amenhotep</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ammisaduqia</td>
<td>304</td>
<td></td>
</tr>
<tr>
<td>Amyrtaios</td>
<td>270</td>
<td></td>
</tr>
<tr>
<td>'Ankhkhhephrure'</td>
<td>207–208, 477</td>
<td></td>
</tr>
<tr>
<td>'Ankhketkhhephrure'</td>
<td>36, 207–208</td>
<td></td>
</tr>
<tr>
<td>'Ankhew, vizier</td>
<td>422–423</td>
<td></td>
</tr>
<tr>
<td>'Ankhtif, nomarch</td>
<td>1, 165–166</td>
<td></td>
</tr>
<tr>
<td>Anlamani</td>
<td>292–293</td>
<td></td>
</tr>
<tr>
<td>Apries</td>
<td>15, 268, 282</td>
<td></td>
</tr>
<tr>
<td>Aqrakamani</td>
<td>299</td>
<td></td>
</tr>
<tr>
<td>Arayesebokhe</td>
<td>301</td>
<td></td>
</tr>
<tr>
<td>Arike-Amanote</td>
<td>293</td>
<td></td>
</tr>
<tr>
<td>Arike-P(ankhi)-qo</td>
<td>295–296</td>
<td></td>
</tr>
<tr>
<td>Ariteneyesebokhe</td>
<td>302</td>
<td></td>
</tr>
<tr>
<td>Arkamaniqo, see Ergamenes</td>
<td>295, 297</td>
<td></td>
</tr>
<tr>
<td>Arnuwanda II</td>
<td>319</td>
<td></td>
</tr>
<tr>
<td>Arqamani</td>
<td>297</td>
<td></td>
</tr>
<tr>
<td>Arses</td>
<td>271, 464–465</td>
<td></td>
</tr>
<tr>
<td>Artaxerxes I</td>
<td>266, 283, 464–465</td>
<td></td>
</tr>
<tr>
<td>Artaxerxes II</td>
<td>266, 283, 463–465, 469</td>
<td></td>
</tr>
<tr>
<td>Artaxerxes III Ochos</td>
<td>268, 271, 464–465</td>
<td></td>
</tr>
<tr>
<td>Ary(aman)</td>
<td>295</td>
<td></td>
</tr>
<tr>
<td>Ashshur-bel-nisheshu</td>
<td>313</td>
<td></td>
</tr>
<tr>
<td>Ashshur-nerari II</td>
<td>310</td>
<td></td>
</tr>
<tr>
<td>Ashshur-uballit</td>
<td>313, 477–478</td>
<td></td>
</tr>
<tr>
<td>Aspatala</td>
<td>288–289, 292–293</td>
<td></td>
</tr>
<tr>
<td>Atlanersa</td>
<td>292</td>
<td></td>
</tr>
<tr>
<td>Aya Kheperkhephrure'</td>
<td>208–209, 317, 376</td>
<td></td>
</tr>
<tr>
<td>Aya Merneferre'</td>
<td>180–181, 196</td>
<td></td>
</tr>
<tr>
<td>Awibre'</td>
<td>31, 178, 367</td>
<td></td>
</tr>
<tr>
<td>Bakenchonsu, HP</td>
<td>476</td>
<td></td>
</tr>
<tr>
<td>Bay, chancellor</td>
<td>213</td>
<td></td>
</tr>
<tr>
<td>Bebiankh</td>
<td>186</td>
<td></td>
</tr>
<tr>
<td>Bicheris</td>
<td>25, 134, 485</td>
<td></td>
</tr>
<tr>
<td>Bocchoris</td>
<td>261–263, 408, 411, 473</td>
<td></td>
</tr>
<tr>
<td>Burnaburiash II</td>
<td>314–315, 477–478</td>
<td></td>
</tr>
<tr>
<td>Cambyses</td>
<td>266–267, 271, 282, 294, 464–465</td>
<td></td>
</tr>
<tr>
<td>Personal Name</td>
<td>Pages</td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td>----------------</td>
<td></td>
</tr>
<tr>
<td>Chebron</td>
<td>200, 479</td>
<td></td>
</tr>
<tr>
<td>Cheops</td>
<td>25, 131–132, 339–341, 379, 485</td>
<td></td>
</tr>
<tr>
<td>Darius I</td>
<td>266, 282–283, 294, 464–465</td>
<td></td>
</tr>
<tr>
<td>Darius II</td>
<td>266, 269, 283, 463–466</td>
<td></td>
</tr>
<tr>
<td>Darius III</td>
<td>271, 464–465</td>
<td></td>
</tr>
<tr>
<td>Dedumose</td>
<td>187</td>
<td></td>
</tr>
<tr>
<td>Den</td>
<td>23–24, 39, 90, 96–98, 100–101, 107, 109–111</td>
<td></td>
</tr>
<tr>
<td>Djedkare</td>
<td>3, 126, 139–143, 429–431, 483</td>
<td></td>
</tr>
<tr>
<td>Djedkonsuuefankh, HP</td>
<td>224–225, 228</td>
<td></td>
</tr>
<tr>
<td>Djer</td>
<td>23, 25, 39, 45, 90, 97, 101, 108</td>
<td></td>
</tr>
<tr>
<td>Djoser</td>
<td>21–22, 24, 45, 47, 117–120, 122, 346, 350</td>
<td></td>
</tr>
<tr>
<td>Djoserü/Djoserteti</td>
<td>118</td>
<td></td>
</tr>
<tr>
<td>Ergamenes I</td>
<td>285, 296</td>
<td></td>
</tr>
<tr>
<td>Esarhaddon</td>
<td>289</td>
<td></td>
</tr>
<tr>
<td>Gilukhepa, princess</td>
<td>204</td>
<td></td>
</tr>
<tr>
<td>Hammurabi</td>
<td>8, 179, 312</td>
<td></td>
</tr>
<tr>
<td>Har-nedjheritëf</td>
<td>177</td>
<td></td>
</tr>
<tr>
<td>Harsiëse A</td>
<td>241, 247–248</td>
<td></td>
</tr>
<tr>
<td>Harsiëse B</td>
<td>240, 248–251</td>
<td></td>
</tr>
<tr>
<td>Harsijotef</td>
<td>294</td>
<td></td>
</tr>
<tr>
<td>Hatshepsut</td>
<td>5, 10–11, 15, 33, 200–201, 479</td>
<td></td>
</tr>
<tr>
<td>Hattushili II</td>
<td>320–324, 478</td>
<td></td>
</tr>
<tr>
<td>Herihor, HP</td>
<td>218, 221, 225–226, 228–229, 475</td>
<td></td>
</tr>
<tr>
<td>Hetep-sekhemwy</td>
<td>21, 24, 96, 99, 102, 106, 108, 112–113</td>
<td></td>
</tr>
<tr>
<td>Haremhab</td>
<td>13, 41, 46, 209, 476–477</td>
<td></td>
</tr>
<tr>
<td>Hosea</td>
<td>259</td>
<td></td>
</tr>
<tr>
<td>Huni</td>
<td>117, 119–123</td>
<td></td>
</tr>
<tr>
<td>Hyksos</td>
<td>29, 192–195, 198–199</td>
<td></td>
</tr>
<tr>
<td>Imiramesha</td>
<td>423</td>
<td></td>
</tr>
<tr>
<td>Iy</td>
<td>255–256</td>
<td></td>
</tr>
<tr>
<td>Inyotef, count</td>
<td>160–161</td>
<td></td>
</tr>
<tr>
<td>Inyotef I</td>
<td>160–161</td>
<td></td>
</tr>
<tr>
<td>Inyotef II</td>
<td>160–161, 428, 447</td>
<td></td>
</tr>
<tr>
<td>Inyotef III</td>
<td>160–161</td>
<td></td>
</tr>
<tr>
<td>Inyotef V</td>
<td>423</td>
<td></td>
</tr>
<tr>
<td>Inyotef Nebukheperre</td>
<td>183, 187–189, 191</td>
<td></td>
</tr>
<tr>
<td>Iry-Hor</td>
<td>88–89, 95</td>
<td></td>
</tr>
<tr>
<td>Iuput II</td>
<td>246–248</td>
<td></td>
</tr>
<tr>
<td>Iuwelot</td>
<td>239</td>
<td></td>
</tr>
<tr>
<td>Izezi, see Djedkare</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jantin’ammu (14)</td>
<td>179</td>
<td></td>
</tr>
<tr>
<td>Kadashtman-Enlil I</td>
<td>314, 477</td>
<td></td>
</tr>
<tr>
<td>Kadashtman-Turgu I</td>
<td>324, 477–478</td>
<td></td>
</tr>
<tr>
<td>Kamose</td>
<td>186–187, 189–192, 481</td>
<td></td>
</tr>
<tr>
<td>Kara-indash</td>
<td>314</td>
<td></td>
</tr>
<tr>
<td>Kash... amani</td>
<td>296</td>
<td></td>
</tr>
<tr>
<td>Kash... meri-Amun</td>
<td>295</td>
<td></td>
</tr>
<tr>
<td>Kashta</td>
<td>254, 284</td>
<td></td>
</tr>
<tr>
<td>Kenherkhhepeshef, scribe</td>
<td>42</td>
<td></td>
</tr>
<tr>
<td>Khababash</td>
<td>294</td>
<td></td>
</tr>
<tr>
<td>Kha’ba</td>
<td>117, 120–121</td>
<td></td>
</tr>
<tr>
<td>Khamudi</td>
<td>192–195, 198–199</td>
<td></td>
</tr>
<tr>
<td>Kha-sekhem(wy)</td>
<td>21, 23–24, 45, 90, 104–107, 114–115, 118, 122</td>
<td></td>
</tr>
<tr>
<td>Khendjer</td>
<td>181, 422–424, 480–83</td>
<td></td>
</tr>
<tr>
<td>Kheruef, official</td>
<td>205</td>
<td></td>
</tr>
<tr>
<td>Khety</td>
<td>164, 166</td>
<td></td>
</tr>
<tr>
<td>Khufu, see Cheops</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kurigalzu I</td>
<td>314</td>
<td></td>
</tr>
<tr>
<td>Malonaqen</td>
<td>292</td>
<td></td>
</tr>
<tr>
<td>Malowi-Amani</td>
<td>284, 294</td>
<td></td>
</tr>
<tr>
<td>Masaharta, HP</td>
<td>224–225, 228, 231</td>
<td></td>
</tr>
<tr>
<td>Menes</td>
<td>3–5, 25, 29, 35</td>
<td></td>
</tr>
<tr>
<td>Menkauhor</td>
<td>127, 139, 484</td>
<td></td>
</tr>
<tr>
<td>Menkaure, see Mycerinus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Menkheperre, HP</td>
<td>218, 221, 224–225, 228–232, 475</td>
<td></td>
</tr>
<tr>
<td>Mentorhotep I</td>
<td>30, 160</td>
<td></td>
</tr>
<tr>
<td>Mentorhotep II</td>
<td>159–160, 162, 165, 447</td>
<td></td>
</tr>
<tr>
<td>Mentorhotep III</td>
<td>159–160</td>
<td></td>
</tr>
<tr>
<td>Mentorhotep IV</td>
<td>30, 159–161</td>
<td></td>
</tr>
<tr>
<td>Mentorhotpe, see Mentorhotep</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Merenre</td>
<td>21, 125, 151–157, 370, 483</td>
<td></td>
</tr>
<tr>
<td>Meret-neit</td>
<td>39</td>
<td></td>
</tr>
<tr>
<td>Merhotepre, Ini</td>
<td>180, 423–424</td>
<td></td>
</tr>
<tr>
<td>Mermephta</td>
<td>15, 42, 198, 214, 476</td>
<td></td>
</tr>
<tr>
<td>Merykare</td>
<td>1, 165</td>
<td></td>
</tr>
<tr>
<td>Merytaten</td>
<td>2, 207</td>
<td></td>
</tr>
<tr>
<td>Merytneth, see Meret-neit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metjen, official</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>Murshili I</td>
<td>305, 311–312, 316</td>
<td></td>
</tr>
<tr>
<td>Murshili II</td>
<td>318, 319–320, 377</td>
<td></td>
</tr>
<tr>
<td>Murshili III</td>
<td>320–323</td>
<td></td>
</tr>
<tr>
<td>Muwatalli II</td>
<td>320–322</td>
<td></td>
</tr>
<tr>
<td>Name</td>
<td>Page Numbers</td>
<td>References</td>
</tr>
<tr>
<td>---------------------------</td>
<td>--------------</td>
<td>------------</td>
</tr>
<tr>
<td>Nabonassar</td>
<td>49, 464–465</td>
<td></td>
</tr>
<tr>
<td>Nar-mer</td>
<td>23, 39, 90, 49–97, 101, 487</td>
<td></td>
</tr>
<tr>
<td>Nastasen</td>
<td>293–295</td>
<td></td>
</tr>
<tr>
<td>Natakamani</td>
<td>300, 302</td>
<td></td>
</tr>
<tr>
<td>Nawidemaka</td>
<td>298</td>
<td></td>
</tr>
<tr>
<td>Nebiriau</td>
<td>186, 423</td>
<td></td>
</tr>
<tr>
<td>Nebka</td>
<td>21, 23, 117–123</td>
<td></td>
</tr>
<tr>
<td>Nebsenre</td>
<td>31</td>
<td></td>
</tr>
<tr>
<td>Nebhkeperre, see Inyotef N.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nech II</td>
<td>15, 268, 282, 466</td>
<td></td>
</tr>
<tr>
<td>Nectanebo I (Nectanebas)</td>
<td>15, 269</td>
<td></td>
</tr>
<tr>
<td>Nectanebo II (Nectanebos)</td>
<td>265, 268–270, 284, 458</td>
<td></td>
</tr>
<tr>
<td>Neferefre</td>
<td>40, 138–142, 484, 490</td>
<td></td>
</tr>
<tr>
<td>Nefernethop I</td>
<td>14, 179</td>
<td></td>
</tr>
<tr>
<td>Neferekare</td>
<td>29, 127, 138, 140–143, 145, 484</td>
<td></td>
</tr>
<tr>
<td>Neferkare</td>
<td>165</td>
<td></td>
</tr>
<tr>
<td>Nehesi</td>
<td>157</td>
<td></td>
</tr>
<tr>
<td>Neithqertii Siptah</td>
<td>156</td>
<td></td>
</tr>
<tr>
<td>Nemyemzaf I</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>Nethercheres</td>
<td>35–36, 218–219, 224, 227, 475</td>
<td></td>
</tr>
<tr>
<td>Netherites I</td>
<td>270, 280</td>
<td></td>
</tr>
<tr>
<td>Netherites II</td>
<td>270, 280</td>
<td></td>
</tr>
<tr>
<td>Nerkare</td>
<td>31</td>
<td></td>
</tr>
<tr>
<td>Netjery-khet</td>
<td>21, 106, 114–115, 117–118</td>
<td></td>
</tr>
<tr>
<td>Nefery-punisut, official 486</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neuserre</td>
<td>40, 139, 484, 486</td>
<td></td>
</tr>
<tr>
<td>Nibkhururiyaa</td>
<td>318–319, 377</td>
<td></td>
</tr>
<tr>
<td>Nimlot C</td>
<td>240, 242</td>
<td></td>
</tr>
<tr>
<td>Nimlot D</td>
<td>247, 255, 257–258</td>
<td></td>
</tr>
<tr>
<td>Ninurta-apil-Ekur</td>
<td>310, 323</td>
<td></td>
</tr>
<tr>
<td>Nitocris</td>
<td>28, 33, 156</td>
<td></td>
</tr>
<tr>
<td>Nitocris, God’s Wife</td>
<td>292</td>
<td></td>
</tr>
<tr>
<td>Nej’ofrusobk</td>
<td>173, 480</td>
<td></td>
</tr>
<tr>
<td>Nub-nefer</td>
<td>103–104</td>
<td></td>
</tr>
<tr>
<td>Nykau-Izezi, official</td>
<td>146, 154–155</td>
<td></td>
</tr>
<tr>
<td>Ny-maat-Hep</td>
<td>106, 115</td>
<td></td>
</tr>
<tr>
<td>Ny-netjer</td>
<td>21, 24, 45, 102–104, 106–107, 112–114</td>
<td></td>
</tr>
<tr>
<td>Osorkon B</td>
<td>234, 242–243, 248–249, 252</td>
<td></td>
</tr>
<tr>
<td>Osorkon I</td>
<td>43, 220, 224, 234, 236, 236–241, 264, 474</td>
<td></td>
</tr>
<tr>
<td>Osorkon II</td>
<td>234, 236–244, 248, 263–264, 474</td>
<td></td>
</tr>
<tr>
<td>Osorkon IV</td>
<td>246, 260</td>
<td></td>
</tr>
<tr>
<td>Pami</td>
<td>21, 244–245, 263–264, 408</td>
<td></td>
</tr>
<tr>
<td>Pasenhor, priest</td>
<td>39, 220, 235–236, 242</td>
<td></td>
</tr>
<tr>
<td>Payankh, HP</td>
<td>224–226, 228–229</td>
<td></td>
</tr>
<tr>
<td>Peftjau’awybast</td>
<td>247–248, 256–257</td>
<td></td>
</tr>
<tr>
<td>Pentjimi</td>
<td>177–178</td>
<td></td>
</tr>
<tr>
<td>Pepy I</td>
<td>21, 146, 148, 153–156, 483</td>
<td></td>
</tr>
<tr>
<td>Pepy II</td>
<td>11, 40, 145, 152–157, 483</td>
<td></td>
</tr>
<tr>
<td>Per-ibsen</td>
<td>21, 24, 90, 102, 105–107</td>
<td></td>
</tr>
<tr>
<td>Petubaste I</td>
<td>246–251, 408–411, 473</td>
<td></td>
</tr>
<tr>
<td>Piankhi, see Piye</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pinudjem I, HP</td>
<td>218, 221, 224–226, 230–231, 475</td>
<td></td>
</tr>
<tr>
<td>Pinudjem II, HP</td>
<td>221–222, 224–225, 228–230</td>
<td></td>
</tr>
<tr>
<td>Piye</td>
<td>245–247, 253–257, 261–263, 291, 408</td>
<td></td>
</tr>
<tr>
<td>Psammetichus I</td>
<td>268, 282, 284, 290, 292, 294, 377–378, 408–409, 466, 468, 473</td>
<td></td>
</tr>
<tr>
<td>Psammetichus II</td>
<td>11, 265, 268, 282, 293, 458</td>
<td></td>
</tr>
<tr>
<td>Psammetichus III</td>
<td>268, 282</td>
<td></td>
</tr>
<tr>
<td>Psammuthis</td>
<td>270, 280</td>
<td></td>
</tr>
<tr>
<td>Psinaches</td>
<td>218, 220–221, 224, 227–228, 231, 474</td>
<td></td>
</tr>
<tr>
<td>Psusennes I</td>
<td>36, 218–219, 224, 227–229, 237, 412, 475</td>
<td></td>
</tr>
<tr>
<td>Psusennes II</td>
<td>218, 220–225, 227–228, 412, 474, 489</td>
<td></td>
</tr>
<tr>
<td>Ptahshepses, vizier</td>
<td>40, 486</td>
<td></td>
</tr>
<tr>
<td>Ptolemy II</td>
<td>34, 296</td>
<td></td>
</tr>
<tr>
<td>Ptolemy III</td>
<td>48, 297, 442</td>
<td></td>
</tr>
<tr>
<td>Ptolemy IV</td>
<td>297</td>
<td></td>
</tr>
<tr>
<td>Ptolemy VIII</td>
<td>298, 458</td>
<td></td>
</tr>
<tr>
<td>Qa’-a</td>
<td>23, 90, 96–102, 109–112, 489</td>
<td></td>
</tr>
<tr>
<td>Qahdetj</td>
<td>117, 121–122</td>
<td></td>
</tr>
<tr>
<td>Ra’djedef, see Djedefre'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ra’hotep</td>
<td>183–184, 187–189</td>
<td></td>
</tr>
<tr>
<td>Ra’khaf, see Khephren</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ra’neb</td>
<td>21, 24, 102–104, 106, 112–113</td>
<td></td>
</tr>
<tr>
<td>Ra’nefer, see Neferefre'</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ramesses I</td>
<td>210, 476</td>
<td></td>
</tr>
<tr>
<td>Ramesses II</td>
<td>2, 4, 10–11, 13, 15, 26, 33, 36, 42, 211–212, 320, 324, 414–418, 476–478, 489</td>
<td></td>
</tr>
<tr>
<td>Ramesses IV</td>
<td>43, 215, 417</td>
<td></td>
</tr>
<tr>
<td>Personal Name</td>
<td>References</td>
<td></td>
</tr>
<tr>
<td>---------------</td>
<td>------------</td>
<td></td>
</tr>
<tr>
<td>Ramesses V</td>
<td>42, 215, 417</td>
<td></td>
</tr>
<tr>
<td>Ramesses VI</td>
<td>43, 215–216, 416–417, 475</td>
<td></td>
</tr>
<tr>
<td>Ramesses VII</td>
<td>(Itiamun) 216, 416–417, 475</td>
<td></td>
</tr>
<tr>
<td>Ramesses VIII</td>
<td>216, 417, 475</td>
<td></td>
</tr>
<tr>
<td>Ramesses IX</td>
<td>43, 216–217, 417, 475</td>
<td></td>
</tr>
<tr>
<td>Ramesses X</td>
<td>210, 214, 216–217, 417</td>
<td></td>
</tr>
<tr>
<td>Ramesses XI</td>
<td>43, 217, 226, 414, 417, 475</td>
<td></td>
</tr>
<tr>
<td>Rehabeam</td>
<td>232, 264, 350</td>
<td></td>
</tr>
<tr>
<td>Rudamun</td>
<td>247–248, 254–257</td>
<td></td>
</tr>
<tr>
<td>Sabakamani</td>
<td>295–296</td>
<td></td>
</tr>
<tr>
<td>Sahure</td>
<td>127, 137–138, 346, 484, 486</td>
<td></td>
</tr>
<tr>
<td>Sanakadakhete</td>
<td>285, 298</td>
<td></td>
</tr>
<tr>
<td>Sargon II</td>
<td>13, 259–260, 290</td>
<td></td>
</tr>
<tr>
<td>Scorpion</td>
<td>91, 96</td>
<td></td>
</tr>
<tr>
<td>Sehetepibre</td>
<td>29, 177–178</td>
<td></td>
</tr>
<tr>
<td>Sekhem-ib</td>
<td>105–106</td>
<td></td>
</tr>
<tr>
<td>Sekhem-khet</td>
<td>21, 24, 117–119, 346</td>
<td></td>
</tr>
<tr>
<td>Semer-khet</td>
<td>23, 45, 90, 97–98, 100–101, 110–112, 489</td>
<td></td>
</tr>
<tr>
<td>Senakhtenre</td>
<td>186, 189–191</td>
<td></td>
</tr>
<tr>
<td>Seneb</td>
<td>104</td>
<td></td>
</tr>
<tr>
<td>Senkamaniskn</td>
<td>292–293</td>
<td></td>
</tr>
<tr>
<td>Sennacherib</td>
<td>260, 291</td>
<td></td>
</tr>
<tr>
<td>Senwosret I</td>
<td>35, 171–172, 375–376, 481</td>
<td></td>
</tr>
<tr>
<td>Senwosret II</td>
<td>172, 341</td>
<td></td>
</tr>
<tr>
<td>Seqenenre</td>
<td>Tao 186–187, 191</td>
<td></td>
</tr>
<tr>
<td>“Serpent”</td>
<td>23–24, 39, 45, 90, 97, 108</td>
<td></td>
</tr>
<tr>
<td>Seth</td>
<td>423</td>
<td></td>
</tr>
<tr>
<td>Sethnakhte</td>
<td>42, 214, 475–476</td>
<td></td>
</tr>
<tr>
<td>Sety I</td>
<td>5, 33, 41, 210–211, 476</td>
<td></td>
</tr>
<tr>
<td>Sety II</td>
<td>42, 197, 210, 212–213, 416, 476</td>
<td></td>
</tr>
<tr>
<td>Shamshi-Adad I</td>
<td>307, 311–312</td>
<td></td>
</tr>
<tr>
<td>Shabaka</td>
<td>258–262, 298, 290, 408, 473</td>
<td></td>
</tr>
<tr>
<td>Shabataka &amp; Shebitqo, see Shebitku</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shalmaneser I</td>
<td>310–311, 321–323, 477</td>
<td></td>
</tr>
<tr>
<td>Shepenupet I</td>
<td>253, 257–258, 284</td>
<td></td>
</tr>
<tr>
<td>Shepseskaf</td>
<td>127, 134–136, 346, 484</td>
<td></td>
</tr>
<tr>
<td>Shepseskare 6</td>
<td>127–128, 134, 138, 484, 490</td>
<td></td>
</tr>
<tr>
<td>Sheshi</td>
<td>192</td>
<td></td>
</tr>
<tr>
<td>Shishak, see Shoshenq I</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shoshenq A</td>
<td>230, 237</td>
<td></td>
</tr>
<tr>
<td>Shoshenq D</td>
<td>239–240</td>
<td></td>
</tr>
<tr>
<td>Shoshenq Hekakeperre 6</td>
<td>238</td>
<td></td>
</tr>
<tr>
<td>Shoshenq Tutheperre 6</td>
<td>237–238</td>
<td></td>
</tr>
<tr>
<td>Shoshenq II</td>
<td>222–223</td>
<td></td>
</tr>
<tr>
<td>Shoshenq IIIa</td>
<td>244</td>
<td></td>
</tr>
<tr>
<td>Shoshenq IV</td>
<td>249–250, 252</td>
<td></td>
</tr>
<tr>
<td>Shoshenq VII</td>
<td>255–256</td>
<td></td>
</tr>
<tr>
<td>Shuppiluliuma I</td>
<td>313, 316–319, 477</td>
<td></td>
</tr>
<tr>
<td>Shuppiluliuma II</td>
<td>323</td>
<td></td>
</tr>
<tr>
<td>Shuttarna II</td>
<td>313</td>
<td></td>
</tr>
<tr>
<td>Siamun</td>
<td>218–221, 224, 227–230, 412–414, 474</td>
<td></td>
</tr>
<tr>
<td>Siptah</td>
<td>33, 42, 213</td>
<td></td>
</tr>
<tr>
<td>Smendes I</td>
<td>43, 218, 225, 227–228, 230, 414, 475</td>
<td></td>
</tr>
<tr>
<td>Smendes II, HP</td>
<td>224–225, 228, 231</td>
<td></td>
</tr>
<tr>
<td>Smendes III, HP</td>
<td>239</td>
<td></td>
</tr>
<tr>
<td>Smenkhkare, see ‘Ankhkheprure’</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sobekemsa I</td>
<td>184, 186, 190</td>
<td></td>
</tr>
<tr>
<td>Sobekhotep I</td>
<td>175, 481</td>
<td></td>
</tr>
<tr>
<td>Sobekhotep II</td>
<td>175, 178–179, 422–423, 480</td>
<td></td>
</tr>
<tr>
<td>Sobekhotep III</td>
<td>180, 422–424</td>
<td></td>
</tr>
<tr>
<td>Sobekhotep IV</td>
<td>179, 181, 424, 481</td>
<td></td>
</tr>
<tr>
<td>Sobekhotep V</td>
<td>179</td>
<td></td>
</tr>
<tr>
<td>Sobekhotep VI</td>
<td>179</td>
<td></td>
</tr>
<tr>
<td>Sobekhotep VII</td>
<td>180</td>
<td></td>
</tr>
<tr>
<td>Sobekhotep VIII</td>
<td>186, 372</td>
<td></td>
</tr>
<tr>
<td>Sonbef</td>
<td>31, 481</td>
<td></td>
</tr>
<tr>
<td>Sorakarora</td>
<td>300, 302</td>
<td></td>
</tr>
<tr>
<td>Taharqa</td>
<td>13, 258, 261, 265, 268, 288–291, 293, 408, 458, 468, 473</td>
<td></td>
</tr>
<tr>
<td>Takelot E</td>
<td>248–251</td>
<td></td>
</tr>
<tr>
<td>Takelot F</td>
<td>240</td>
<td></td>
</tr>
<tr>
<td>Takelot I</td>
<td>236, 238–239, 242, 474</td>
<td></td>
</tr>
<tr>
<td>Takelot III</td>
<td>220, 252–254, 257</td>
<td></td>
</tr>
<tr>
<td>Takideamani (?)</td>
<td>302</td>
<td></td>
</tr>
<tr>
<td>Talakhamani</td>
<td>294, 294</td>
<td></td>
</tr>
<tr>
<td>Taneyidamani</td>
<td>298</td>
<td></td>
</tr>
<tr>
<td>Tanwetamani</td>
<td>284, 288–289, 291–293</td>
<td></td>
</tr>
<tr>
<td>Tarekeniwala</td>
<td>302</td>
<td></td>
</tr>
<tr>
<td>Tefnakhte</td>
<td>246, 257, 262–263, 408, 473</td>
<td></td>
</tr>
<tr>
<td>Teos/Tachos</td>
<td>270, 280</td>
<td></td>
</tr>
<tr>
<td>Teqorideamani</td>
<td>289, 300, 302–303</td>
<td></td>
</tr>
</tbody>
</table>
INDEX OF PERSONAL NAMES

Teriteqase 298–299
Teti 21, 145–146, 154–156, 346, 483
Thamphris 136, 485
Thutmose I 10, 199–200, 479
Thutmose II 10, 198, 200, 479
Thutmose III 4, 11, 21, 201–203, 374, 378, 419–422, 478, 489–490
Thutmose IV 10–11, 203–204, 313–314, 375, 478
Tiglathpileser I 310
Tjuloy, priest 26, 33
Tukulti-Ninurta I 322–323, 477
Tushratta 313, 477
Tutkhaliya I 316–317
Tutkhaliya IV 322–323
Twoșre 42, 210, 212–214, 415–417, 475–476
Ukhhotep, nomarch 40
Urkhi-Teshshup, see Murshili III
Userkaf 136–137, 484
Userkare 21, 146, 151, 156
Usertesen, see Senwosret
Wadj, see “Serpent”
Wegaf 175, 179, 424
Weneg 102–104, 106
Weni, official 154–155, 370, 483
Wenis 29, 142–143, 429–431, 483
Wennefer, HP 41
Xerxes 265–266, 283, 294, 463–465
Yamani 259–260, 290–291
Yesebokheamani 302–303
Zanakht 117, 120, 122
INDEX OF PLACE NAMES

Alexandria 437, 440, 442–443
Amarna 13, 205–209, 335–338, 375, 419, 477
Armant 59, 64–65, 67–70, 75–77, 80–84, 93, 201
Asyut 1, 376, 452
Aswan 71, 200, 203–204, 211, 299, 369–372
Athens 270, 395
Avaris 34, 195, 199, 481

Babylon 8, 13, 304–305, 310, 312, 436–437, 462, 477
Ballas 61, 63
Barkal, see Gebel Barkal
Begerawiya 285–287, 295, 298, 300–303
Bubastis 234–235, 246, 250, 263
Buhen 204, 206, 210, 213
Buto 56, 79, 93, 96, 246

Coptos 96, 184, 187–188, 452
Dahshur 121, 129–130, 148, 172, 208, 341, 486
Deir el-Bahri 181, 201, 214, 414–415
Diospolis Inferior 440, 451
Diospolis Parva 60–63
Elephantine 121, 161, 291–292, 437, 440–441, 451, 489
el-Kurru 284–285, 293
Eltekeh 260–261, 291

Giza 113, 153, 155, 200, 339–348, 378, 485
Heliopolis 21, 199, 243, 291, 386, 448
Helwan 87, 95, 133–134, 487–489
Herakleopolis 31, 167, 218, 234, 247, 252, 256
Hermopolis 247, 253, 255–257
Hierakonpolis 78, 81, 83, 95, 105
Illahun 46, 173, 341, 400–402, 446, 448
Jerusalem 13, 232, 434, 474
Kawa 261, 293, 299
Konosos 172, 203
Leontopolis 246, 248
Luxor 371–373
Maadi 56, 93
Maidum 46, 119, 128–131, 339–347, 486
Malqata 205, 375
Matmar 58, 74–77
Medamud 175, 184, 423
Megiddo 202, 421, 479
Meroe 286–287, 295–296, 302–303
Musawwarat es-Sufra 295, 297
Napata 291, 293, 301
Naqa 298, 300–301
Naqa (Naga) ed-Deir 68, 74, 78
Naqada 55, 60–61, 63, 68, 70, 76–78, 90
Nuri 285, 293, 295–296
Phylae 299, 303, 385
Piramesses 414
Qasr Ibrim 299, 303
Roda 370–372
Sais 257, 468
Saqqara, see also Step Pyramid 26, 57, 88, 90–91, 105, 146–148, 152–153,
INDEX OF PLACE NAMES

157, 199, 201–204, 206, 208–209, 346, 418
Semna 173, 177, 199, 201, 203, 370
Step Pyramid 102–103, 105, 107, 109, 111–114, 117–121
Syene, see Aswan
Tarkhan 62, 81, 83–85, 90, 93
Tell el-Dab(a), see also Avaris 192, 223
Turah 85, 88, 198–199, 203
Uronarti 178, 199, 370
Uruk 487
Wadi Maghara 121, 201
Zaw(i)yet el-Aryan 118–122, 485
**GENERAL INDEX**


annals 19–25, 45–46, 94, 100–101, 107, 122, 125, 128, 131, 136, 144–147, 151, 154, 156, 202, 484–486, 490

archives
- Amarna 206, 309, 313–315, 478
- Hattusha 309, 320, 322–323, 478
- Neferirkare 140–141, 388, 429–431, 483
- Ra’neferef 140–142, 446
- Apis stelae, see Serapeum stelae

Babylon, fall of 305–306, 310
Badarian 58–60, 71

calendar
- Alexandrian 48
- Babylonian 399–400, 459–460, 467–468
- day 49–51
- Egyptian 47–48, 391, 459
- epagomenai 47, 442, 450, 459, 466
- Gregorian 49
- intercalation 48, 456–457
- Julian 48, 459
- lunar calendar 48, 460
- lunar calendar, civil-based 389–391
- lunar calendar, Sothis-based 452–456
- lunar days 386
- lunar months 387–389, 411, 461, 479

census, biennial 45–46, 124–126, 144–158, 429–430, 483–485
Coptos decrees 150, 152–153, 157
coregencies 30, 170–173, 197, 205, 258, 374, 419–420, 426, 478, 481
Dakhla stela 230, 411–412, 474

dating system
- antedating 46
- postdating 461–462
- pre-dating 461–462
- regnal year 46, 235
dendrochronology 361–368
- Distanzangaben 310–311
eclipses 307, 377–378, 394

era
- apo Menophreos 443
- whm mwet 46, 217, 475
- Seth Nubti 46

expedition dates 12, 369
genealogies 37–44, 219, 235

harvest, dates of 374–376, 419–420
- heb-sed, see sed-festival
- Herodotus 3–4, 33–34, 282, 485
- Horus, following of 20, 22, 24, 45


King-list 5, 14, 26–32, 33–35, 40, 116–118, 121, 156, 160, 166, 269, 282

Thermoluminescence dating 356–360

lunar dates
- computation of 395–397, 407
- feast of Ptolemy 418
- feast-of-the-valley dates 414–417, 476
- foundation dates 384, 419–421, 479
- Khozam date 427–429, 482–483
- Megiddo date 421–422, 479
- Monthu feast 422–424, 480
- observational errors 398–404
- Piramesses date 414–418, 476
- Tepi Shemu feast 408–414, 473–474
wagi feast 423, 425
weresh (wārš) feast 411–412, 474
lunar phenomena
conjunction 387, 395, 460, 467–468
25 year cycle 389, 404–407, 431, 480
variations in lunar motion 393
visibility, last/first 387–389, 398–400, 460
Maadi-Buto culture 56, 79, 92–93
mummies, royal 197, 207
Naqada I (A-C) 71–75
Naqada II (A-D2) 75–81
Nile flood dates 369–374
papyrus, papyri
Carlsberg 9 389–390
Gebelein 135
Heqanakht papyri 391
Illahun 7, 424–427
Rhind 199
Westcar 116, 120
planets 50, 378, 383, 436
precession 380, 435, 438, 441, 457
Ptolemy, Claudius
Canon 49, 464–465, 473
Almagest 50–51, 433, 438
pyramids, orientation of 378–379
radiocarbon dating 11, 90–92, 327–355, 486–487
Amarra 335–338
history 327–332
MK pyramids 341–343
OK pyramids 338–350
wiggle matching 333, 339, 354
rotation, slowing of earth’s 392–393, 396, 402–404
rpt m-ht zp 23, 124–158, 429, 482–485
rpt znr-thwy 23, 45, 136, 139–140, 151, 157, 484
rpt zp 23, 46, 124–143, 144–158, 429, 482–485
sed-festival 2, 10–11, 100, 107, 149–151, 172, 199–202, 204–205
Sequence Dating, Petrie’s 7, 55, 60–64
Serapeum stelae 234–235, 244, 267–268, 290, 408, 466, 473
seriation, computer 66–67
Sirius
in Babylonian calendar 432–434
in Egyptian calendar, see Sothis
Sothic cycle 47, 442–445
Sothic dates
Censorinus date 442, 444, 446
Canopus date 444, 444, 457
Ebers calendar date 450–452, 477, 479–480
Illahun date(s) 7, 9, 441, 448–450, 454–455, 480, 489
star clock dates 447
Sothis
arcus visionis 433–434, 440
geographical reference 440–445
heliacal rising 432–438
quadrennium 439
triennium 441, 443
Stufen chronology, Kaiser’s 64–68, 70–71, 76, 80, 82–84, 86
synchronisms 8, 12–14, 304–324, 476–478
Synkellos, Georgios 4, 33, 35
Tang-i Var inscription 13, 258, 289–290, 473
Tasian 57–58
tomb of
Psusennes I 223, 237
Ramesses IV 381
Senenmut 379
Sety II 213
Tut’ankhamun 208, 376–377
Venus dates 9, 304–305
wine delivery, dates of 375
year labels 45