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Mesopotamian chronology (2340-539 BCE) through astronomically dated synchronisms and comparison with carbon-14 dating¹

Gérard Gertoux

The Mesopotamian chronology of the 1st millennium before the Christian era (BCE) is well established. By contrast, that of the 2nd millennium remains highly controversial², until today, even though the “Middle Chronology”, anchored on the reign of Hammurabi (1793-1750), is favoured by most scholars. In 1998, H. Gasche, J.A. Armstrong and S. W. Cole proposed to anchor the reign of Hammurabi (1697-1654) on two lunar eclipses during the reigns of Dynasty Ur III as well as the Ammisaduqa tablet on Venus. This new Mesopotamian chronology, called Ultra-Low by its critics, has been strongly contested by scholars who have argued that it is based primarily on the evidence of Babylonian pottery (which is false) and that it should instead be based on statisticians and physicists specializing in carbon-14 dating (Sallaberger, Schrakamp: 2015, 5-11). Paradoxically, these specialists who are highly qualified in their field of expertise (statistics and carbon dating) are significantly less expert in the analysis of historical or linguistic data. For example, any historian knows that a father must be born before his son, that a king reigns during his lifetime and not after his death and that an astronomical phenomenon can be observed a few days later than the theoretically calculated day, but not a few days in advance (unless the observer has made a prediction). For example, Peter J. Huber, a seasoned statistician has noticed that the deviation in days between the calculated and observed value for the rising of Venus in Year 1 of Ammisaduqa is the following for the four chronologies: Ultra-Low (13 days), Low (-5 days), Middle (-6 days) and High (-3 days). He logically concludes that the worst agreement (13 days) is with the Ultra-Low Chronology (Huber: 2000, 159-176). This conclusion is rigorously correct, but the Ultra-Low Chronology is the only one to have a date observed after the calculated date ([1]3 days) while the reverse is true for the other three chronologies (the date was observed before the calculated date!). Similarly, Huber calculates a large number of lunar eclipses in order to verify that they were the ones that best matched the two dated 14 Simanu at the end of the reign of Shulgi (14/III/48) and 14 Addaru at the end of the reign of Ibbi-Sîn (14/XII/24), without taking into account two essential data that imposed a unique choice, in perfect agreement with the Ultra-Low chronology: 1) these two lunar eclipses are separated exactly by 42 years and 9 months, according to the Babylonian King lists. Furthermore, as they were bad omens signifying the death of the king, and not a usual astronomical observation, these two lunar eclipses had to be total (partial lunar eclipses are frequent and generally have no particular significance). Similarly, physicists specialising in C14 dating (naively) write: *The revised tree-ring-sequenced 14C time-series for Kültepe and Acemhöyük is compatible only with the so-called Middle Chronology and not with the rival High, Low or New Chronologies. This finding provides a robust resolution to a century of uncertainty in Mesopotamian chronology and scholarship, and a secure basis for construction of a coherent timeframe and history across the Near East and East Mediterranean in the earlier second millennium BCE* (Manning, Griggs, Lorentzen, Barjamovic, Bronk Ramsey, Kromer, Wild: 2016, 1-27).

This leads to several difficulties. Firstly, contrary to what the authors of the article assert, the dating of the Middle Chronology depends on several hypothetical and approximate synchronisms. Worse, the defence of the Middle Chronology, which would be the most “robust according to carbon-14 measurements”, is contradicted by their own dating. It reads: *Although this previous date favored the Middle Chronology, it was problematic (sic) as it left the construction of the Sarikaya Palace at Acemhöyük (then given as 1774 +/- 7 BCE) occurring more or less when Šamši-Adad I died (REL 197 = 1776 BCE on the Middle Chronology)*. To solve this problem the authors of the article suggest adopting a “Low Middle Chronology” (sic) instead of the conventional Middle Chronology, which is an absurdity for astronomers, because whereas a date can be determined at +/- 20 years by radiocarbonists, astronomers only accept observed dates that are a few days off from the calculated dates. The explanation for this paradox is simple: the timbers of this palace were reused, which artificially aged the building, and Šamši-Adad I died decades after the palace was built. Therefore, the radiocarbon measurements are not in question, but only the synchronicity of Šamši-Adad I's death with the dating of the buildings of his time. Secondly the reign of Neferhotep I was measured at +/- 20 years by carbon-14, because in Egypt carbonaceous remains are abundant (papyri, wooden sarcophagi, mummies, etc.). As there is a synchronism (at +/- 20 years) between Neferhotep I (1721-1710) and Ibni-Addu (1700-

¹ An abstract of this paper was presented in San Diego, California, at a conference on 21 November 2019 (Session 3B Archaeology and Biblical Studies I), under the supervision of Professor Jonathan Rosenbaum (Gratz College). A short report has been published (<http://www.asor.org/wp-content/uploads/2019/12/2019-ASOR-Program-and-Abstract-Book.pdf> pages 26, 98). A poster of this paper was exhibited at the Collège de France, Paris, during the 65th International Meeting of Assyriology on 8-12 July 2019 at the request of Professor Dominique Charpin (<https://rai2019.digitorient.com/en/posters/>). ORCID <http://orcid.org/0000-0001-5916-0445>

² Hammurabi is considered as the greatest Babylonian king and the chronology of his reign is well known. However, in 1863, Jules Oppert had Hammurabi's reign begin in 2394 BCE, François Thureau-Dangin, in 1927, lowered this date to 2003 BCE, which was, in 1950, lowered by consensus in 1793 BCE (“Middle Chronology”), between 1849 BCE (“High Chronology”) and 1729 BCE (“Low Chronology”). Finally, Hermann Gasche proposed, in 1998, to lower it again to 1697 BCE (“Ultra-Low Chronology”). Hammurabi has therefore rejuvenated by about 700 years during the 20th century!

1680), the king of Hazor, and another synchronism between Ibni-Addu and Hammurabi (1697-1654), the king of Babylon, this reign could be determined indirectly by carbon-14 and is again in perfect agreement with the Ultra-Low chronology. Finally, contrary to what the authors of the article claim, the calibration of carbon-14 dates by dendrochronology is not yet well established³.

This long preamble is necessary to establish a scientific method to obtain an absolute Mesopotamian chronology that is historically correct. The first step is to establish a relative chronology of the 116 Assyrian kings and the 137 Babylonian and Kassite kings, considering the chronological data from the Assyrian King lists (giving the number of eponymous years) and the Babylonian King lists (giving the number of years of reign). From n°33 onwards the durations of all Assyrian reigns are known (except n°65 and n°66). Likewise, the durations of all Babylonian reigns are known (except n°10 to n°17 and n°63 to n°71 with Samsu-iluna as n°1). The second step is to check all the synchronisms between the Assyrian and Babylonian reigns, so that the exact value of a duration can be chosen in cases where there are variants among several King lists (only four cases). This second step is essential before anchoring this relative chronology on astronomical dates. Some astronomers who claim to distinguish between one of the four chronologies by dating eclipses fail to consider key historical data. For example, Emil Khalisi's article entitled "The Double Eclipse at the Downfall of Old Babylon (2020)" develops technical astronomical calculations without 1) giving the means to verify them, 2) without linking them to any well-referenced historical event, 3) considering any of the 116 Assyrian reigns, 4) considering the 137 Babylonian and Kassite kings, and 5) proposing a complete chronological reconstruction of all these Mesopotamian reigns. Historians and Assyriologists should not be impressed by the technical aspect of such articles as they have no historical value. The fall of Babylon was a historical event of the first magnitude which occurred exactly in the 41st and last year of the Babylonian king Samsuditana. If this method of calculation is followed, the absolute Mesopotamian chronology is easy to obtain. As a matter of fact, the 614 Assyrian eponyms between the 1st year of the reign of Šamšî-Adad I (Assyrian king n°39) and the 1st year of the reign of Tiglath-pileser I (1115-1076) allow us to date the reign of Šamšî-Adad I (1728-1695) approximately (with 1 eponym = 1 solar year). We know that the temple of the god Aššur, called Ehursagkurkurra, was rebuilt several times. The lengths of time between the several reconstructions being known to be: 159, 434 and 580 years respectively (Pruzsinsky: 2009, 140–143), it is possible to verify (as shown in the table below) whether these durations in eponymous years are equivalent with the sum of the Assyrian reigns between two successive reconstructions:

TABLE 1

| n° | ASSYRIAN KING | BCE | Comments on eponyms from Chronicles | Σ eponyms | |
|------------|---------------|-------------|---|--------------|------------|
| 33 | Ērišu I | 1872 | Year 1, eponym Šu-Ištar son of Abila (N°1) | 40 | 40 |
| 34 | Ikunum | 1834 | Year 1, eponym Iddin-Suen brother of Šuli (N°41) | 14 | 14 |
| 35-38 | | | | (112) | |
| 39 | Šamšî-Adad I | 1680 | Death of Šamšî-Adad I, eponym Taḅ-šilli-Aššur (N°199) | 33 | 159 |
| 40 | Išme-Dagan I | 1679 | (Year 1, eponym Ennam-Aššur N°200) | 11 | 11 |
| 41-76 | | | | (411) | |
| 77 | Shalmaneser I | 1259 | Year 12 (eponym Ilî-qarrad? N°633) | 12 | 434 |
| | | 1258 | | 18 | 18 |
| 78-111 | | | | (538) | |
| | Sennacherib | 681 | Year 24, eponym Nabû-aḥḫē-ēreš | 24 | 580 |
| 112 | Esarhaddon | 680 | Year 1, eponym Danânu (N°1213) | 1 | 1 |
| | | 679 | Year 2, eponym Issi-Adad-anênu (N°1214) | 11 | 11 |

We note that the first period from Iddin-Suen (eponym N°41) to Taḅ-šilli-Aššur (eponym N°199) includes 159 eponyms (= 199 – 41 + 1). The second period from Year 1 of Išme-Dagan I (eponym Ennam-Aššur N°200) to Year 12 of Shalmaneser I (king n°77) has 434 eponyms. The arrangement of the 30 eponyms of the reign of Shalmaneser I (Bloch: 2012, 406-408) makes it possible to fix the eponym of the 12th year of his reign in 1259 BCE. This first calculation shows that the eponymous chronicles are accurate and reliable and that there is a total of 614 eponyms⁴ between the 1st year of the reign of Šamšî-Adad I and the 1st year of the reign of Tiglath-pileser I. The duration of Assyrian reigns comes mainly from the Assyrian King List (AKL). According to the AKL, the reign of Ninurta-apil-Ekur (n°82) had 13 eponyms, while other

³ It reads, for example: *The result is that indeed between ca. 3600 and 3500 calBP the calibration curve needs a shift of about 20 BP upwards in ¹⁴C age (...)* In such an instance, it is reasonable to report a single interval—here we obtain a 68.2% (1-σ) interval extending from 1658–1624 calBC (= 1641 BCE +/- 17). However, with IntCal20 the picture is much more complex as our ¹⁴C date of 3350 ± 10 BP hits the plateau in the curve (...) we note that the peak centered around 1625 calBC (1626 BCE +/- 19) carries the largest individual probability (McAneney /Baillie: 2019, 99–112).

⁴ 614 eponyms = 33 eponyms (Šamšî-Adad I n°39) + 434 eponyms + 30 – 12 (Shalmaneser I n°77) + 37 (Tukultî-Ninurta I n°78) + 4 (Aššur-nâdin-apli n°79) + 6 (Aššur-nêrârî III n°80) + 5 (Enlil-kudurri-ušur n°81) + 13 (Ninurta-apil-Ekur n°82) + 46 (Aššur-dân I n°83) + 0 (n°84) + 0 (n°85) + 18 (Aššur-rêš-iši I n°86).

lists indicate 3 eponyms (Pruzsinsky: 2009, 51-52). There are variants in the reigns (n°82 and others) but the sum of these reigns is known, which implies the following equation:

$$63 = 580 - (\text{sum of the other eponyms without variants})$$

$$63 = 4/3 (\text{Aššur-nâdin-apli n°79}) + 13/3 (\text{Ninurta-apil-Ekur n°82}) + 46/36 (\text{Aššur-dân I n°83})$$

The fact that the sum of the three durations is known (63) imposes a unique set of values: 3, 13 and 46. Changing only one value changes the sum. Most studies on the Assyrian King Lists assume that the Assyrian calendar did not change over time and remained similar to the Babylonian calendar, but this assumption is false. Several researchers have indeed noticed that, before Aššur-dân I (1179-1133), the Assyrian inscriptions never mention intercalary months⁵, unlike the Babylonian calendar. Moreover, before this Assyrian king, the synchronisms between the Assyrian and Babylonian chronologies became approximate, because the number of eponyms sometimes exceeds the duration of the reign (Pruzsinsky: 2009, 42-67). The choice to ignore this change has consequences on the Assyrian chronology as well as on synchronisms with the Babylonian chronology. For example, there are 614 eponyms between the first year of Šamšî-Adad I's reign and the first year of Tiglath-pileser I's reign (1115-1076), which makes it possible to date Šamšî-Adad I's reign (1728-1695) because he died in the 17th year of King Hammurabi. This makes it possible to establish the reign of this Babylonian king as 1712-1669* (or 1697-1654 with lunar years). This dating poses a problem because the reign of Hammurabi is linked to the reign of Ammisaduqa, which is anchored in an astronomical phenomenon (Venus tablet). Astronomy offers four possibilities over this period, but none of them corresponds to the reign calculated with the 614 solar years.

TABLE 2

| Chronology (BCE): | Ultra-Low | Assyrian King List | | Low | Middle | High |
|---------------------|-----------|--------------------|------------|-----------|-----------|-----------|
| Fall of Ur | 1912 | lunar | luni-solar | 1944 | 2008 | 2064 |
| Reign of Hammurabi | 1697-1654 | 1697-1654 | 1712-1669* | 1729-1686 | 1793-1750 | 1849-1806 |
| Reign of Ammisaduqa | 1551-1530 | | | 1583-1562 | 1647-1626 | 1703-1682 |
| Fall of Babylon | 1499 | (1499) | (1514) | 1531 | 1595 | 1651 |

If the Assyrian years were lunar before the reign of Tiglath-pileser I (1115-1076), this makes it possible to slightly correct the reign of Šamšî-Adad I (1712-1680), yet as this Amorite king died in the 17th year of King Hammurabi, then this synchronism fixes the dating of this Babylonian king (1697-1654). This dating does not correspond to the “Middle Chronology” but, on the other hand, exactly satisfies the astronomical dating of the Ammisaduqa tablet on Venus, according to the “Ultra-Low Chronology”. In addition, two tablets of astronomical omens (*Enuma Anu Enlil* 20 & 21) mention a lunar eclipse dated 14 Simanu at the end of the reign of Šulgi (14/III/48, total eclipse dated 28 June 1954 BCE), and a lunar eclipse dated 14 Addaru at the end of the third dynasty of Ur, which ended with the reign of Ibbi-Sîn (14/XII/24, total eclipse dated 6 March 1911 BCE). These two total lunar eclipses are separated by 42 years of reign (= 9 years of Amar-Sîn + 9 years of Šu-Sîn + 24 years of Ibbi-Sîn) and 9 months (=XII - III). During the period 2200-1850 BCE, there was only one couple of lunar eclipses spaced 42 years and 9 months apart, and visible at Ur, corresponding to the description of the astronomical omens. These two eclipses confirm the absolute dating of the reign of Hammurabi (1697-1654) and allow one to anchor the reign of Sargon of Akkad (2243-2187). The purpose of this paper is to examine how to transform the relative chronology of Mesopotamian reigns from the period 2040-1050 BCE into an absolute chronology (Pruzsinsky: 2009, 17–44). In order to obtain this absolute Mesopotamian chronology in an unquestionable way, it is imperative that all dates obtained over the entire period be in agreement with: 1) all known durations of the Assyrian and Babylonian reigns, or at least with one of the variants, 2) all known synchronisms between the reigns: Assyrians, Babylonians, Kassites, Isinians and Elamites, 3) all clearly identified astronomical phenomena (with at least one date, region of observation, and at least partial description of the phenomenon) such as eclipses, star-rises and certain astronomical conjunctions. The establishing of the absolute Mesopotamian chronology will take place in seven successive steps:

- 1) The durations of the Babylonian reigns, from Eriba-Marduk (770-761) to Nabonidus (556-539), are all known. The chronology of these Babylonian kings is anchored on the dates set by the astronomy of five precisely described lunar eclipses. The durations of the Assyrian reigns, from Adad-nêrârî II (912-891) to Aššur-uballit II (612-609), are all known. The chronology of these Assyrian kings is anchored on six synchronisms with the Babylonian chronology and by a total solar eclipse, visible in Assyria, dated from the month of Simanu in the 10th year of Aššur-dân III (773-755), in 763 BCE. The synchronism between the Assyrian king Adad-nêrârî II (912-891) and the Babylonian king Šamaš-mudammiq (921-900) makes it possible to fix the Mesopotamian chronology in an absolute way in the period **912-539 BCE** and to note the following points: 1) the chronological data of the eponymous lists are rigorously accurate; 2) the

⁵ An Assyrian copy of a Babylonian scholarly text (VAT 8875) reads: “Intercalary Nisannu, 7th day, eponym Aššur-išmânni” (Jeffers: 2017, 151 n. 7) an eponym dated 1160 BCE during Aššur-dân I's reign (Bloch: 2010c, 43-44).

first year of Babylonian reigns (counted by the number of luni-solar years) began in the 1st Nisan, as did Assyrian reigns (counted by the number of eponyms); 3) co-regencies were removed and integrated into the reigns of official kings in order not to modify the chronology.

- 2) The durations of the Babylonian reigns, from Ninurta-nâdin-šumi (1133-1127) to Ninurta-kudurri-ušur II (944-941), are all known. Similarly, the durations of the Assyrian reigns, from Aššur-rêš-iši I (1133-1115) to Adad-nêrârî II (912-891), are all known. The synchronism between Aššur-rêš-iši I (1133-1115) and Ninurta-nâdin-šumi (1133-1127) makes it possible to fix the Mesopotamian chronology in an absolute way in the period **1133–912 BCE** (Pruzsinsky: 2009, 43).
- 3) The durations of the Babylonian reigns, from Kadašman-Enlil I (**1375–1360**) to Ninurta-nâdin-šumi (1133-1127), are all known (Joannès: 2001, 164). Similarly, the durations of the Assyrian reigns, from Shalmaneser I (1271-1242) to Aššur-rêš-iši I (1133-1115), are all known. An Assyrian chronicle gives the durations between the different reconstructions of the temple of the god Aššur (called Ehursagkurkurra), that between Year 12 of Shalmaneser I and Year 1 of Esarhaddon (681-669) had 580 eponyms, which makes it possible to determine the three Assyrian durations which have variants since the total of these three durations is known (Pruzsinsky: 2009, 51-55,136): **63** = **4**/3 (Aššur-nâdin-apli n°79) + **13**/3 (Ninurta-apil-Ekur n°82) + **46**/36 (Aššur-dân I n°83). Only durations in bold type (4, 13 and 46) satisfy this equation. There is a synchronism between Erîba-Adad I and Kadašman-Enlil I (1375-1360), however we note that there are 185 eponyms⁶ between Erîba-Adad I and Aššur-dân I (1179-1133) but only 180 years (= 1360 – 1179 – 1). The simplest way to explain this discrepancy between the number of Babylonian (luni-solar) years and the number of eponymous years is to assume that the Assyrian years were lunar (and therefore without intercalary months) before Aššur-dân I (1179-1133). As 33 lunisolar years (33 x 365.24219 = 12053 days) are approximately equivalent to 34 lunar years (34 x 12 x 29.530588 = 12048 days), the 180 lunisolar years correspond to 185 eponyms (= 180 x 34/33).
- 4) According to the Assyrian chronicle that gives the durations between the different reconstructions of the temple of the god Aššur (Ehursagkurkurra), there were 434 eponyms between Year 33 of Šamšî-Adad I and Year 12 of Shalmaneser I (1271–1242), in 1259 BCE, which makes it possible to determine the reign of Šamšî-Adad I (**1712–1680**), because 1680 = (434 x 33)/34 + 1259. As this Assyrian king died in Year 17 of Hammurabi (**1697–1654**) this synchronism allows us to calculate the reign of the Babylonian king, because 1697 - 17 = 1680 and 1712 = (1680 + 33 – 33/34).
- 5) The durations of the 11 Babylonian reigns before the fall of Babylon, from Sumu-abum to Samsuditana, are all known (Pruzsinsky: 2009, 92). Since the chronology of these reigns is anchored on the reign of Hammurabi (1697-1654), it allows us to calculate the reign of Sumu-abum (**1799–1785**), Ammišaduqa (1551–1530) and Samsuditana (1530–1499). The durations of the 15 Isinian reigns before Hammurabi are all known. The chronology of these kings is anchored on six synchronisms with the Babylonian chronology, which make possible to fix the reign of the first king of Isin: Išbi-Erra (**1923–1890**). The durations of the 5 Sumerian reigns before Išbi-Erra are all known, which make possible to fix the reign of the first king of Ur III: Ur-Namma (**2020–2002**) as well as the last one Ibbi-Sîn (**1936–1912**).
- 6) Current academic studies use astronomical phenomena to anchor Mesopotamian chronology on absolute dates, such as the Ur III eclipses (EAE 20 and 21) at the end of the reigns of Šulgi (2002-1954) and Ibbi-Sîn (1936-1912), as well as the cycle of Venus (EAE 63) during the reign of Ammišaduqa (1551-1530), but these studies do not consider the relative chronology deduced from the Assyrian and Babylonian King lists (Pruzsinsky: 2009, 69-82). However, three astronomical phenomena make it possible to anchor on absolute dates the relative chronology obtained from the Assyrian King List. The informative data recorded for the two lunar eclipses of EAE 20 and 21 can be reduced to six main parameters: 1) the entering and 2) exit positions of the darkening of the lunar disk; 3) the watch-times of the beginning and 4) the end of the eclipse; 5) the day of the eclipses: EAE 20 is dated to 14 Simanu and 6) EAE 21 to 14 Addaru (Gurzadyan: 2000, 175-184). Two additional data make it possible to restrict the dating of these two lunar eclipses⁷ to a unique choice: **28 June 1954 BCE & 6 March 1911 BCE**, over the period 2200-1850 BCE because these two lunar eclipses are separated by 42 years of reign (= 9 years of Amar-Sîn + 9 years of Šu-Sîn + 24 years of Ibbi-Sîn) and 9 months (=XII - III). Moreover, lunar eclipses were always interpreted as a bad omen, usually the death of a king⁸, when they were total (partial eclipses were too frequent to receive such an interpretation). If one looks for two separate total lunar eclipses of 42 years

⁶ 185 = 36 (Aššur-uballiṭ I) + 10 (Enlil-nêrârî) + 12 (Arik-dên-ili) + 32 (Adad-nêrârî I) + 30 (Shalmaneser I) + 37 (Tukultî-Ninurta I) + 4 (Aššur-nâdin-apli) + 6 (Aššur-nêrârî III) + 5 (Enlil-kudurri-ušur) + 13 (Ninurta-apil-Ekur).

⁷ The first lunar eclipse is dated 14 Simanu at the end of the reign of Šulgi (14/III/48) and the second eclipse is dated 14 Addaru at the end of the third dynasty Ur III, which ended with the reign of Ibbi-Sîn (14/XII/24).

⁸ The astronomical tablet BM 32234 specifies that King Xerxes died on 14/V/21 (24 August 475 BCE) just after the total lunar eclipse dated 14/III/21 (26 June 475 BCE). Similarly, the astronomical tablet BM 36761 specifies that King Darius III was defeated by Alexander the Great on 24/VI/5 (1 October 331 BCE) just after the total lunar eclipse dated 13/VI/5 (20 September BCE).

and 9 months over the period 2200-1850 BCE, there is only one solution, the same as previously. The lunar eclipse dated: *Year 38 that Babylon was resettled (...) Month of Abu (V), Day 10*⁹, mentioned in the economic texts from Tell Muhammad (Gasche, Armstrong, Cole: 1998, 86) confirms definitively the Ultra-Low Chronology, because if the fall of Babylon was Year 1 of the “resettlement”, Year 38 was in 1462 BCE, and there was indeed a total lunar eclipse on 14/V/38 (19 July 1462). There is no lunar eclipse on 14/V/38 with the other chronologies, including the Middle Chronology.

- 7) Some absolute dates over the period 2000-1000 BCE have been compared with ¹⁴C dates. For example, the reign of Neferhotep I (1721-1710) has been measured at +/- 20 years by ¹⁴C. As there is a synchronism between Neferhotep I and Ibni-Addu (1700-1680), and another synchronism between Ibni-Addu and Hammurabi (1697-1654), this reign could be determined indirectly by ¹⁴C and is again in perfect agreement with the Ultra-Low chronology. As radiocarbonists claim that ¹⁴C dating is in favour of the Middle Chronology, a detailed part of this article has been devoted to these dates.

CHRONOLOGY OF MESOPOTAMIAN REIGNS OVER THE PERIOD 912–539 BCE

The chronological reliability of the Babylonian King lists can sometimes be misleading, despite their anchoring on astronomical phenomena precisely dated. The Assyrian King lists have the same problem, but they are even more difficult to verify for the following reasons:

- The duration of the Assyrian reigns is not counted in number of years but in number of eponyms (knowing, however, that there is a new eponym each year), which prevents dating an event of the reign, unless the eponym of this year is known (in about 1% of cases).
- The Assyrian annals are fragmentary and contain many lacunae.
- The lists of eponymous names are also fragmentary and, therefore, difficult to reconstruct.
- Assyrian inscriptions and records regularly date the reigns according to their military campaigns, knowing that there was one campaign per year (usually between early spring and late autumn). However, there was generally no campaign in the year of accession, and a difficult campaign could be completed the following year.
- If an eponym died during the year of his eponymy, he was replaced by a new eponym who became a canonical eponym, but in this case, there were two eponyms in the same year.

Despite all these limitations, Assyrian chronology may be reconstructed over the period 912–609 BCE using eponyms and can be anchored on the solar eclipse which occurred on [30] Simanu in the eponymy of Bur-Sagale (15 June 763 BCE). The Assyrian period 912–648 BCE is dated owing to its canonical eponyms (Parpola: 2007, 381–430) and the period 648–609 BCE by a prosopography of its eponyms (Parpola: 1998, XVIII-XX), but the ranking of eponyms over this period remains controversial¹⁰ (Novotny, Jeffers: 2018, 30-32). The chronological reconstruction of the Assyrian reigns based on eponyms is different from that given in the Assyrian King lists as can be seen in the table below:

TABLE 3

| BCE | n° | ASSYRIAN KING | According to years of reign (AKL) | | | | BABYLONIAN KING |
|-----|-----|-------------------------|-----------------------------------|-----------|----------|----------|-----------------------|
| 630 | 112 | Aššurbanipal | (669–627) | 39 | | | 18 Kandalanu |
| 629 | | | | 40 | | | 19 |
| 628 | | | | 41 | | | 20 |
| 627 | | | | 42 | 0 | | 21 |
| 626 | 113 | Aššur-etel-ilāni | (627–626) | 1 | 0 | 0 | 22 |
| 625 | 114 | Sin-šar-iškun | (626–612) | 1 | | | 1 Nabopolassar |
| 624 | | | | 2 | | | 2 |

| BCE | n° | ASSYRIAN KING | According to eponyms | | | | BABYLONIAN KING |
|-----|-----|-------------------------|-------------------------------------|-----------|----------|----------|--------------------------|
| 630 | 112 | Aššurbanipal | <i>Salmu-šarri-iqbi?</i> | 39 | 0 | | 18 Kandalanu |
| 629 | 113 | Aššur-etel-ilāni | <i>Nabû-šarru-ušur?</i> | 1 | [40] | | 19 |
| 628 | | | <i>Nur-salam-sarpi?</i> | 2 | [41] | | 20 |
| 627 | | | <i>Marduk-šarru-ušur?</i> | 3 | [42] | 0 | 21 |
| 626 | | | <i>Iqbi-ilani? /Marduk-remanni?</i> | 4 | 0 | 0 | [1] Sin-šum-lišir |
| 625 | 114 | Sin-šar-iškun | <i>Sin-šarru-ušur?</i> | 1 | | | 1 Nabopolassar |
| 624 | | | <i>Kanunai?</i> | 2 | | | 2 |

The presence of co-regencies modifies the dating of some synchronisms. For example, in the Assyrian King List (AKL) there is a synchronism between Year 1 of the Assyrian king Aššur-etel-ilāni and Year 22 of

⁹ The lunar eclipse was total since it is an economic text. Day 10 is a mistake because eclipses occur on the 14th-15th of the month.

¹⁰ The chronological study of the eponyms over the period 648-609 BCE is still in progress (<http://oracc.org/rinap/rinap5/rinap52/>).

the Babylonian king Kandalanu (meaning “Clubfoot”!) in 626 BCE, but in fact this synchronism occurs between Year 1 of Aššur-etel-ilâni and Year 19 of Kandalanu in 629 BCE. Therefore, King lists can be used to date synchronisms if the presence of co-regencies does not modify the chronology of the reigns. Coregencies modify the individual durations of the reigns but not their global duration. Moreover, the dates of several reigns can be anchored by means of eclipses dated by astronomy (Stephenson: 1997, 93-127).

Several parts of these King lists can also be verified by the: 1) lengths of reigns that are known (#); 2) position of eponyms, all known over the period 912–648 BCE; 3) synchronisms between the Assyrian and Babylonian reigns (highlighted in grey); 4) absolute dates calculated by astronomy (highlighted in sky blue).

TABLE 4

| n° | ASSYRIAN KING | # | Reign | n° | BABYLONIAN KING | # | Reign | |
|-----|---------------------|----|---------|----|----------------------------|----|---------|---------------|
| 99 | Adad-nêrârî I | 21 | 912-891 | 58 | Šamaš-mudammiq | 21 | 921-900 | |
| 100 | Tukultî-Ninurta II | 7 | 891-884 | 59 | Nabû-šum-ukîn I | 12 | 900-888 | |
| 101 | Aššurnaširpal II | 25 | 884-859 | 60 | Nabû-apla-iddina | 33 | 888-855 | |
| 102 | Šalmaneser III | 35 | 859-824 | 61 | Marduk-zâkir-šumi I | 36 | 855-819 | |
| 103 | Samšî-Adad V | 13 | 824 - | 62 | Marduk-balâssu-iqbi | 6 | 819-813 | |
| | | | -811 | 63 | Bâba-ah-iddina | - | 813-812 | |
| 104 | Adad-nêrârî III | 28 | 811 - | - | no kings | - | 812-801 | |
| | | | | | 5 unknown kings (64-68) | - | 801-800 | |
| | | | -783 | 69 | Ninurta-apla-[...] | - | 800-790 | |
| 105 | Šalmaneser IV | 10 | 783-773 | 70 | Marduk-bêl-zêri | - | 790-780 | |
| 106 | Aššur-dân III | 18 | 773-755 | 71 | Marduk-apla-ušur | - | 780-770 | |
| 107 | Aššur-nêrârî V | 10 | 755-745 | 72 | Erîba-Marduk | 9 | 770-761 | |
| 108 | Tiglath-pileser III | 18 | 745 - | 73 | Nabû-šuma-iškun | 13 | 761-748 | |
| | | | | 74 | Nabû-našir | 14 | 748-734 | |
| | | | | 75 | Nabû-nâdin-zêri | 2 | 734-732 | |
| | | | | 76 | Nabû-šum-ukîn II | 0 | 732-732 | |
| | | | -727 | 77 | Nabû-mukîn-zêri | 3 | 732-729 | BM 35789 |
| | | | | 78 | Pûlu (Tiglath-pileser III) | 2 | 729-727 | |
| 109 | Šalmaneser V | 5 | 727-722 | 79 | Ulûlaiu (Šalmaneser V) | 5 | 727-722 | |
| 110 | Sargon II | 17 | 722 - | 80 | Merodachbaladan II | 12 | 722-710 | Almagest IV:6 |
| | | | -705 | 81 | Sargon II | 5 | 710-705 | |
| 111 | Sennacherib | 24 | 705 - | 82 | Sennacherib | 2 | 705-703 | |
| | | | | 83 | Marduk-zâkir-šumi II | 0 | 703-703 | |
| | | | | 84 | Bêl-ibni | 3 | 703-700 | |
| | | | | 85 | Aššur-nâdin-šumi | 6 | 700-694 | |
| | | | | 86 | Nergal-ušezi | 1 | 694-693 | |
| | | | | 87 | Mušezi-Marduk | 4 | 693-689 | |
| | | | -681 | 88 | Sennacherib | 8 | 689-681 | |
| 112 | Esarhaddon | 12 | 681-669 | 89 | Esarhaddon | 12 | 681-669 | |
| 113 | Aššurbanipal | 42 | 669-627 | 90 | Šamaš-šuma-ukîn | 20 | 668-648 | BM 45640 |
| 114 | Aššur-etel-ilâni | 1 | 627-626 | 91 | Kandalanu | 22 | 648-626 | |
| 115 | Sin-šar-iškun | 14 | 626-612 | 92 | Nabopolassar | 21 | 626 - | Almagest V:14 |
| 116 | Aššur-uballiṭ II | 3 | 612-609 | | | | -605 | |
| | | | | 93 | Nebuchadnezzar II | 43 | 605-562 | VAT 4956 |
| | | | | 94 | Amel-Marduk | 2 | 562-560 | |
| | | | | 95 | Neriglissar | 4 | 560-556 | |
| | | | | 96 | Nabonidus | 17 | 556-539 | |

The Assyrian and Babylonian King lists can be reconstructed chronologically over the period 2020-900 in the same way as those over the period 912-609 BCE but with two (2) additional difficulties: 1) the Assyrian calendar for counting eponyms was different before Tiglath-pileser I (1115-1076); and, 2) the durations of the Babylonian reigns, from Agum II (n°10) to Kurigalzu (n°17), after the first fall of Babylon as well as the durations of the Assyrian reigns during the same period of time of Aššur-rabi I (n°65) and Aššur-nâdin-aḥḥe I (n°66), are not known. The following inscriptions of Tiglath-pileser I with several double dates can be used to synchronize the ancient Assyrian calendar:

I crossed the Euphrates 28 times, 2 times in one year, in pursuit of the Arameans aḥlamû (...) I captured the palaces of Babylon which belonged to Marduk-nadîn-ahhê king of Karduniash (1101-1083), and I burned them. In the eponymy of Aššur-šumu-ereš (and) in the eponymy of Ninuaya, 2 times, I drove a battle of chariots online against Marduk-nadîn-aḥḥê king of Karduniash, and I defeated him (...) Month of Hibur, equivalent of the (Babylonian) month of Kislev, 18th day, [eponymy] of Taklak-ana-Aššur; I crossed the Euphrates [28?] times, 2 times in one year, in pursuit of the Arameans aḥlamû (...) Month of Kuzallu, 13th day, eponymy of Ninuaya son of Aššur-aplu-lišir (Grayson 1991: 3-45).

Assyrian kings performed a traditional military campaign each year¹¹. The mention of 28 crossings of the Euphrates, including two in one year, implies dating this inscription at the end of year 1088 BCE (= 1115 - 27) or shortly after. Thus, at that time, the twelfth months of the Assyrian calendar (Ḫubur) matched the 9th month of the Babylonian calendar (Kislev), which confirms their desynchronization. Consequently, the Babylonian year began on 1st Nisan, or 12 April in 1088 BCE, while the Assyrian year began on 1st Šippu or 13 January¹². The presence of these double dates in the reign of Tiglath-pileser I shows that the new Babylonian calendar adopted by the Assyrian scribes was not yet familiar to them. The main difference between the old Assyrian calendar and the Babylonian calendar adopted by Tiglath-pileser I concerns the length of the year, which was lunisolar in the Babylonian calendar (i.e., an average solar year) but strictly lunar in the old Assyrian calendar (which, therefore, did not have an intercalary year used for the synchronization with the solar cycle)¹³.

The two calendars (Assyrian and Babylonian) used by Tiglath-pileser raise the problem of calendar changes. The presence of several double dates in Tiglath-pileser's reign shows that the new Babylonian calendar (highlighted in grey) adopted by the Assyrians was not yet familiar to them.

TABLE 5

| BCE | Babylonian month | | | Assyrian month | | (C) | (Y) | Eponym (King Tiglath-pileser I n°87) | | |
|------|------------------|------|-----------|----------------|------------------|-----|------|--|------|---------------------------------------|
| 1090 | 1 | X | Tebētu | <i>xii</i> | Ḫubur | 25 | [24] | | | |
| | 2 | XI | Šabātu | <i>i</i> | Šippu | | | | | |
| | 3 | XII | Addáru | <i>ii</i> | Qarrātu | | | | | |
| | 4 | I | Nisannu | <i>iii</i> | Kalmartu | | | | [25] | <i>Aššur-šuma-êriš</i> (MARV V 43) |
| | 5 | II | Ayyaru | <i>iv</i> | ^d Sin | | | | | |
| | 6 | III | Simanu | <i>v</i> | Kuzallu | | | | | |
| | 7 | IV | Du'uzu | <i>vi</i> | Allanātu | | | | | |
| | 8 | V | Abu | <i>vii</i> | Belêt-ekalli | | | | | |
| | 9 | VI | Ulûlû | <i>viii</i> | Ša sarrâte | | | | | |
| | 10 | VII | Tašrîtu | <i>ix</i> | Ša kênâte | | | | | |
| | 11 | VIII | Araḥsamna | <i>x</i> | Muḫḫur ilâni | | | | | |
| | 12 | IX | Kisilimu | <i>xi</i> | Abû šarrâni | | | | | |
| 1089 | 1 | X | Tebētu | <i>xii</i> | Ḫubur | 26 | [26] | <i>Ninuaya son of Aššur-aplu-lišir</i> (RIMA 2, A.0.87.3) | | |
| | 2 | XI | Šabātu | <i>i</i> | Šippu | | | | | |
| | 3 | XII | Addáru | <i>ii</i> | Qarrātu | | | | | |
| | 4 | XIIa | Addáru2 | <i>iii</i> | Kalmartu | | | | | |
| | 5 | I | Nisannu | <i>iv</i> | ^d Sin | | | | | |
| | 6 | II | Ayyaru | <i>v</i> | Kuzallu | | | | | |
| | 7 | III | Simanu | <i>vi</i> | Allanātu | | | | | |
| | 8 | IV | Du'uzu | <i>vii</i> | Belêt-ekalli | | | | | |
| | 9 | V | Abu | <i>viii</i> | Ša sarrâte | | | | | |
| | 10 | VI | Ulûlû | <i>ix</i> | Ša kênâte | | | | | |
| | 11 | VII | Tašrîtu | <i>x</i> | Muḫḫur ilâni | | | | | |
| | 12 | VIII | Araḥsamna | <i>xi</i> | Abû šarrâni | | | | | |
| 1088 | 1 | X | Tebētu | <i>i</i> | Šippu | 27 | [27] | <i>Taklak-ana-Aššur</i> (RIMA 2, A.0.87.4) | | |
| | 2 | XI | Šabātu | <i>ii</i> | Qarrātu | | | | | |
| | 3 | XII | Addáru | <i>iii</i> | Kalmartu | | | | | |
| | 4 | I | Nisannu | <i>iv</i> | ^d Sin | | | | | |
| | 5 | II | Ayyaru | <i>v</i> | Kuzallu | | | | | |
| | 6 | III | Simanu | <i>vi</i> | Allanātu | | | | | |
| | 7 | IV | Du'uzu | <i>vii</i> | Belêt-ekalli | | | | | |
| | 8 | V | Abu | <i>viii</i> | Ša sarrâte | | | | | |
| | 9 | VI | Ulûlû | <i>ix</i> | Ša kênâte | | | | | |
| | 10 | VII | Tašrîtu | <i>x</i> | Muḫḫur ilâni | | | | | |
| | 11 | VIII | Araḥsamna | <i>xi</i> | Abû šarrâni | | | | | |
| | 12 | IX | Kisilimu | <i>xii</i> | Ḫubur | | | | | |

A study of Tiglath-pileser I's reign (Bloch: 2012, 67-69,342-350,398-413) has confirmed two points: the change of calendar (year beginning on 1st Nisan instead of 1st Šippu) occurred shortly before the reign of Tiglath-pileser I, as it was already in use in his first year of reign —*in the month of Ḫibur (which is) the month Abu (V), day 20, the eponymy of Tiglath-pileser, the king of Assyria*. In addition, two other studies showed that a non-intercalated calendar was used in Assyria under Tukultî-Ninurta I's reign (Gauthier: 2016, 725-739) and before Aššur-dân I's reign (Jeffers: 2017, 151-191). The eponym marking each new Assyrian

¹¹ For reasons of stewardship, the army on campaign had to be fed. In addition, the movements should be done on practicable grounds. Military campaigns took place outside the rainy season between the spring and autumn equinoxes.

¹² Given that the spring equinox occurred on 31 March in 1090 BCE, the 1st Nisan (1st lunar crescent after spring equinox) has to be dated on 4 April in 1090 BCE, but on 22 April in 1089 BCE, consequently, there was a month Addáru2 in year 25 of Tiglath-pileser.

¹³ Since the lunar year lasts 354.36706 days (= 29.530588x12), 10.875 days less than the solar year of 365.24219 days, the two calendars are in phase every 32 solar years, corresponding to 33 lunar years (with an accuracy of 6 days).

year was, therefore, chosen from the month of Nisan and not from the month of Šippu. For practical reasons: military campaigns took place outside the rainy season, between the spring equinox (Babylonian month I) and the autumnal equinox (Babylonian month VII) with the new equivalence: 1 year = 1 eponym (E) = 1 campaign (C). This equivalence system was approximate because the 27th campaign (C) does not exactly correspond to the 27th year of reign (E) which was based on eponyms (Taklak-ana-Aššur). The beginning of regnal years was different depending on dating systems¹⁴. Although during the period 1500-1150 BCE there is no explicit notation or other inscriptional evidence for intercalary lunar months, some scholars postulate a kind of “invisible intercalation” (*sic*): the additional month being indicated through the repetition of a standard month name without any indication (Cancik-Kirschbaum, Johnson: 2011-2012, 125). All the double-dated inscriptions make it possible to reconstruct the Assyrian calendar:

TABLE 6

| Text of the inscription | regnal year | Text reference |
|---|-------------|------------------|
| In the month of Ḫibur (which is) the month Abu, day 20, the eponym year of Tiglath-pileser, the king of Assyria | [1] | MARV I 73 |
| The month of Ša-kênâte (which is) the month Nisannu, day 6, the eponym year of Ḫiyašânu | [5] | MARV I 62 |
| The month of Abû-šarrâni (which is) the month Simânu, day 24, the eponym year of Ḫiyašânu | [5] | MARV V 42 |
| The month of Abû-šarrâni (which is) the month Du'ûzu*, day 28, the eponym year of Ḫiyašânu | [5] | MARV IX 16 |
| The month of Abû-šarrâni which is the month Simânu, the eponym year of Ina-ilîya-allak | [6] | MARV III 84 |
| The month of Kuzallu which is the month Kissilîmu, the eponym year of Šadânâyu | [7] | MARV V 6 |
| The month of Kamaru (which is) the month Nisannu, day 18, the eponym year of Aššur-šuma-êriš | [25 ?] | MARV V 43 |
| Month of Kuzallu, day 13, the eponym year of Ninuaya son of Aššur-aplu-lišir | [26 ?] | RIMA 2, A.0.87.3 |
| The month of Ḫibur, which is during the month Kissilîmu, day 18, the eponym year of Taklak-ana-Aššur | [27 ?] | RIMA 2, A.0.87.4 |

Given that the spring equinox occurred on 1 April in 1114 BCE, the 1st Nisan (1st lunar crescent after spring equinox) has to be dated on 29 April and 1st Abu on 25 August. In 1114 BCE one notices that 1st Abu equals 1st Ḫibur. The intercalary Babylonian month (Addarû2) is highlighted in brown and Assyrian month Šippu is highlighted in blue (Mahieu: 2018, 86-91):

TABLE 7

| BCE | Babylonian month | | | Assyrian month | (C) | (Y) | Eponym (King Tiglath-pileser I) |
|------|------------------|------|-----------|----------------|------------------|-----|--|
| 1115 | 10 | VII | Tašrîtu | <i>i</i> | Šippu | 1 | [0] <i>Ninurta-nâdin-apli</i> |
| | 11 | VIII | Araḥsamna | <i>ii</i> | Qarrâtu | | |
| | 12 | IX | Kisilîmu | <i>iii</i> | Kalmartu | | |
| 1114 | 1 | X | Tebêtu | <i>iv</i> | ^d Sin | 2 | [1] <i>Tiglath-pileser</i> |
| | 2 | XI | Šabâtu | <i>v</i> | Kuzallu | | |
| | 3 | XII | Addâru | <i>vi</i> | Allanâtu | | |
| | | XIIa | Addâru2 | <i>vii</i> | Belêt-ekalli | | |
| | 4 | I | Nisannu | <i>viii</i> | Ša sarrâte | | |
| | 5 | II | Ayyaru | <i>ix</i> | Ša kênâte | | |
| | 6 | III | Simanu | <i>x</i> | Muḥḥur ilâni | | |
| | 7 | IV | Du'ûzu | <i>xi</i> | Abû šarrâni | | |
| | 8 | V | Abu | <i>xii</i> | Ḫibur | | |
| 1113 | 9 | VI | Ulûlû | <i>i</i> | Šippu | 2 | [2] <i>Ištu-Aššur-ašamšu son of Aššur-aḫa-iddina</i> |
| | 10 | VII | Tašrîtu | <i>ii</i> | Qarrâtu | | |
| | 11 | VIII | Araḥsamna | <i>iii</i> | Kalmartu | | |
| | 12 | IX | Kisilîmu | <i>iv</i> | ^d Sin | | |
| | 1 | X | Tebêtu | <i>v</i> | Kuzallu | | |
| | 2 | XI | Šabâtu | <i>vi</i> | Allanâtu | | |
| | 3 | XII | Addâru | <i>vii</i> | Belêt-ekalli | | |
| | 4 | I | Nisannu | <i>viii</i> | Ša sarrâte | | |
| | 5 | II | Ayyaru | <i>ix</i> | Ša kênâte | | |

¹⁴ For example, in 1088 BCE, 1st Nisan was 12 April for Babylonians and Judeans (years with accession). 1st Šippu was 13 January for Assyrians (years with accession). 1st Thot was 22 May for Egyptians (years without accession). 1st Tishri was 5 October for Israelites (years without accession). The accession year is the duration between the accession and the 1st year of reign. "year with accession" means that the accession year is reckoned as "year 0" and "year without accession" means that the accession year is reckoned as "year 1". Thus, according to the Assyrian calendar of this period, year 1 of Tiglath-pileser I, based on eponyms, not 1st Šippu, began on 1st Nisan (10 April 1114 BCE) and accession year began after April 1115 BCE.

| | | | | | | | |
|------|------|---------|-----------|-------------|------------------|-----|---|
| | 6 | III | Simanu | <i>x</i> | Muḥḥur ilāni | | |
| | 7 | IV | Du'uzu | <i>xi</i> | Abū šarrāni | | |
| | 8 | V | Abu | <i>xii</i> | Ḥubur | | |
| | 9 | VI | Ulūlū | <i>i</i> | Šippu | 3 | |
| | 10 | VII | Tašrītu | <i>ii</i> | Qarrātu | | |
| | 11 | VIII | Arašsamna | <i>iii</i> | Kalmartu | | |
| | 12 | IX | Kisilimu | <i>iv</i> | ^d Sin | | |
| 1112 | 1 | X | Tebētu | <i>v</i> | Kuzallu | | |
| | 2 | XI | Šabātu | <i>vi</i> | Allanātu | | |
| | 3 | XII | Addāru | <i>vii</i> | Belēt-ekalli | | |
| | 4 | I | Nisannu | <i>viii</i> | Ša sarrāte | [3] | <i>Aššur-šallimšunu</i> |
| | 5 | II | Ayyaru | <i>ix</i> | Ša kēnāte | | |
| | 6 | III | Simanu | <i>x</i> | Muḥḥur ilāni | | |
| | 7 | IV | Du'uzu | <i>xi</i> | Abū šarrāni | | |
| | 8 | V | Abu | <i>xii</i> | Ḥubur | | |
| | 9 | VI | Ulūlū | <i>i</i> | Šippu | 4 | |
| | 10 | VII | Tašrītu | <i>ii</i> | Qarrātu | | |
| | 11 | VIII | Arašsamna | <i>iii</i> | Kalmartu | | |
| | 12 | IX | Kisilimu | <i>iv</i> | ^d Sin | | |
| 1111 | 1 | X | Tebētu | <i>v</i> | Kuzallu | | |
| | 2 | XI | Šabātu | <i>vi</i> | Allanātu | | |
| | 3 | XII | Addāru | <i>vii</i> | Belēt-ekalli | | |
| | 4 | I | Nisannu | <i>viii</i> | Ša sarrāte | [4] | <i>Šamaš-apla-êriš son of Aššur-šeziḫanni</i> |
| | 5 | II | Ayyaru | <i>ix</i> | Ša kēnāte | | |
| | 6 | III | Simanu | <i>x</i> | Muḥḥur ilāni | | |
| | 7 | IV | Du'uzu | <i>xi</i> | Abū šarrāni | | |
| | 8 | V | Abu | <i>xii</i> | Ḥubur | | |
| | 9 | VI | Ulūlū | <i>i</i> | Šippu | 5 | |
| | 10 | VII | Tašrītu | <i>ii</i> | Qarrātu | | |
| | 11 | VIII | Arašsamna | <i>iii</i> | Kalmartu | | |
| | 12 | IX | Kisilimu | <i>iv</i> | ^d Sin | | |
| 1110 | 1 | X | Tebētu | <i>v</i> | Kuzallu | | |
| | 2 | XI | Šabātu | <i>vi</i> | Allanātu | | |
| | 3 | XII | Addāru | <i>vii</i> | Belēt-ekalli | | |
| | 4 | XIIa | Addāru2 | <i>viii</i> | Ša sarrāte | | |
| | 5 | I | Nisannu | <i>ix</i> | Ša kēnāte | [5] | <i>Ḥiyašānu</i> |
| | 6 | II | Ayyaru | <i>x</i> | Muḥḥur ilāni | | |
| | 7 | III | Simanu | <i>xi</i> | Abū šarrāni | | |
| | 8 | IV | Du'uzu* | <i>xii</i> | Ḥubur | | |
| | 9 | V | Abu | <i>i</i> | Šippu | 6 | |
| | 10 | VI | Ulūlū | <i>ii</i> | Qarrātu | | |
| | 11 | VII | Tašrītu | <i>iii</i> | Kalmartu | | |
| | 12 | VIII | Arašsamna | <i>iv</i> | ^d Sin | | |
| 1109 | 1 | X | Tebētu | <i>vi</i> | Allanātu | | |
| | 2 | XI | Šabātu | <i>vii</i> | Belēt-ekalli | | |
| | 3 | XII | Addāru | <i>viii</i> | Ša sarrāte | | |
| | 4 | I | Nisannu | <i>ix</i> | Ša kēnāte | [6] | <i>Ina-ilīya-allak (rab šaqe)</i> |
| | 5 | II | Ayyaru | <i>x</i> | Muḥḥur ilāni | | |
| | 6 | III | Simanu | <i>xi</i> | Abū šarrāni | | |
| | 7 | IV | Du'uzu | <i>xii</i> | Ḥubur | | |
| | 8 | V | Abu | <i>i</i> | Šippu | 7 | |
| | 9 | VI | Ulūlū | <i>ii</i> | Qarrātu | | |
| | 10 | VII | Tašrītu | <i>iii</i> | Kalmartu | | |
| | 11 | VIII | Arašsamna | <i>iv</i> | ^d Sin | | |
| | 12 | IX | Kisilimu | <i>v</i> | Kuzallu | | |
| 1108 | 1 | X | Tebētu | <i>vi</i> | Allanātu | | |
| | 2 | XI | Šabātu | <i>vii</i> | Belēt-ekalli | | |
| | 3 | XII | Addāru | <i>viii</i> | Ša sarrāte | | |
| | 4 | I | Nisannu | <i>ix</i> | Ša kēnāte | [7] | <i>Šadānāyu</i> |
| | 5 | II | Ayyaru | <i>x</i> | Muḥḥur ilāni | | |
| | 6 | III | Simanu | <i>xi</i> | Abū šarrāni | | |
| | 7 | IV | Du'uzu | <i>xii</i> | Ḥubur | | |
| | 8 | V | Abu | <i>i</i> | Šippu | 8 | |
| | 9 | VI | Ulūlū | <i>ii</i> | Qarrātu | | |
| | 10 | VII | Tašrītu | <i>iii</i> | Kalmartu | | |
| | 11 | VIII | Arašsamna | <i>iv</i> | ^d Sin | | |
| | 12 | IX | Kisilimu | <i>v</i> | Kuzallu | | |
| 1107 | 1 | X | Tebētu | <i>vi</i> | Allanātu | | |
| | 2 | XI | Šabātu | <i>vii</i> | Belēt-ekalli | | |
| | 3 | XII | Addāru | <i>viii</i> | Ša sarrāte | | |
| | XIIa | Addāru2 | <i>ix</i> | Ša kēnāte | | | |

| | | | | | | |
|--|---|-----|---------|------------|--------------|-------|
| | 4 | I | Nisannu | <i>x</i> | Muḥḥur ilāni | [8] ? |
| | 5 | II | Ayyaru | <i>xi</i> | Abû šarrāni | |
| | 6 | III | Simanu | <i>xii</i> | Ḥubur | |
| | 7 | IV | Du'ūzu | <i>i</i> | Šippu | |

The concordance of months is excellent between the Babylonian year, which was lunisolar (365.25 days in average), and the Assyrian year, which was lunar (354.36 days). The only discrepancy appears in regnal year 5: *The month of Abû-šarrāni (which is) the month Simānu (instead of Du'ūzu*), day 28, the eponym year of Ḥiyašānu.* The shift of one month is probably due to a miscalculation in the number of campaigns. Complete reconstruction of the first 28 years of the reign of Tiglath-Pileser I, but only the order of the eponyms of years 1 to 7 and 23 to 26 (highlighted in light grey) is confirmed (Mahieu: 2018, 77-82):

TABLE 8

| BCE | Eponym | son of: | (C) | (Y) | 1st Nisan (Babylonian) | Intercalary month | month (Assyrian) |
|------|----------------------------|------------------|------|------|---------------------------|----------------------|---------------------|
| 1115 | Ninurta-nâdin-apli | | 18th | [0] | 10 April | Addar2 | Belêt-ekalli |
| 1114 | Tiglath-pileser (I) | | 1st | [1] | 29 April | | Ša sarrâte |
| 1113 | Ištu-Aššur-ašamšu | Aššur-aḡa-iddina | 2nd | [2] | 17 April | | Ša sarrâte |
| 1112 | Aššur-šallimšunu | | 3rd | [3] | 6 April | | Ša sarrâte |
| 1111 | Šamaš-apla-êriš | Aššur-šezibanni | 4th | [4] | 27 March | Addar2 | Ša sarrâte |
| 1110 | Ḥiyašānu | | 5th | [5] | 15 April | | Ša kênâte |
| 1109 | Ina-ilīya-allak (rab šaqe) | | 6th | [6] | 3 April | | Ša kênâte |
| 1108 | Šadânāyu | | 7th | [7] | 24 March | Addar2 | Ša kênâte |
| 1107 | ? | | 8th | [8] | 12 April | | Muḥḥur ilāni |
| 1106 | Aššur-mudammeq | | 9th | [9] | 1 April | Addar2 | Muḥḥur ilāni |
| 1105 | Ibri-šarre | | 10th | [10] | 19 April | | Abû šarrāni |
| 1104 | Aššur-kêtti-šêssi | | 11th | [11] | 8 April | Addar2 | Abû šarrāni |
| 1103 | Mutakkil-Aššur | | 12th | [12] | 27 April | | Ḥubur |
| 1102 | Mušêzib-Aššur | | 13th | [13] | 16 April | | Ḥubur |
| 1101 | Ippitte | | 14th | [14] | 4 April | Addar2 | Ḥubur |
| 1100 | Mudammeq-Bêl | | 15th | [15] | 23 April | | Šippu |
| 1099 | Aššur-apla-iqîša | | 16th | [16] | 13 April | | Šippu |
| 1098 | Šahhutu | | 17th | [17] | 3 April | Addar2 | Šippu |
| 1097 | Bêl-libûr | | 18th | [18] | 21 April | | Qarrātu |
| 1096 | Nusku-âlik-pânî | | 19th | [19] | 10 April | | Qarrātu |
| 1095 | Aplaya | | 20th | [20] | 30 March | Addar2 | Qarrātu |
| 1094 | Ninurta-aha-iddina | | 21th | [21] | 18 April | | Kalmartu |
| 1093 | Adad-apla-iddina | | 22th | [22] | 6 April | | Kalmartu |
| | <i>No eponym</i> | | 23th | | | | |
| 1092 | Aššur-šuma-êriš | | 24th | [23] | 26 March | Addar2 | Kalmartu |
| 1091 | Ninuaya | Aššur-aplu-lišir | 25th | [24] | 14 April | | °Sin |
| 1090 | Taklak-ana-Aššur | | 26th | [25] | 4 April | Addar2 | °Sin |
| 1089 | | | 27th | [26] | 22 April | | Kuzallu |
| 1088 | | | 28th | [27] | 12 April | | Kuzallu |
| 1087 | | | 29th | [28] | 1 April | Addar2 | Kuzallu |

Babylonian year (Y) and Assyrian year are an excellent match based on campaigns (C), but there is a shift of one year for the regnal years 25 to 27 (instead of 24 to 26) because the 27th campaign (with a campaign each Assyrian lunar year) corresponds to the 26th Babylonian luni-solar year (with two campaigns in 1093 BCE). Two Assyrian campaigns (based on the lunar year beginning on 1st Šippu) overlapped the 22nd year of reign (based on the lunisolar year linked to eponyms beginning on 1st Nisan). The Assyrian campaigns occurred every lunar year but since there is no eponym in 1093 BCE (because 34 lunar years = 33 luni-solar years), the eponyms were named at the 1st Nisannu, the beginning of the Babylonian year. The eponyms were already named in the 1st Nisannu under Aššur-dân I, because Aššur-išmânni" was an eponym (Jeffers: 2017, 151 n. 7) who is dated in 1160 BCE (Bloch: 2010c, 43-44), a year that should have had two eponyms if they were named in the 1st Šippu (because 1160 BCE = 1092 BCE + 2 x 34 lunar years).

TABLE 9

| BCE | ASSYRIAN KING | (C) | (Y) | Month: | Intercalary | Assyrian |
|------|--------------------------|-----|-------------|--------|-------------|--------------|
| 1115 | Aššur-reš-iši I | 18 | 18/0 | | Addar2 | Belêt-ekalli |
| 1114 | Tiglath-pileser I | 1st | 1 | | - | Ša sarrâte |
| 1113 | | 2nd | 2 | | - | Ša sarrâte |

The previous system of dating was still used during the reign of Aššur-dân I (1179-1133) because his 46th year began on the eponym Pišqīya son of Kaššu (April 1133 BCE), the same as Ninurta-tukultî-Aššur who reigned from the months Ša kênâte to Abu šarrâni (from February to April 1132 BCE). Afterwards, Mutakkil-Nusku reigned briefly (a few days)¹⁵, followed by Aššur-reš-iši I (1133-1115) whose year 1 began with the eponym Sîn-šēya. There is a gap (Bloch: 2010, 1-87; 2012: 307-310,411) between the eponyms that start on 1st Nisan and the Assyrian year beginning on 1st Šippu (June 16 in 1132 BCE). Consequently, during the reign of Aššur-dân I (1179-1133) eponyms still began on 1st Nisan, instead of 1 Šippu, and those Assyrian lunar years without intercalation remain the norm. However, as the Babylonian year began on the 1st Nisan (shortly after the spring equinox) Assyrian years (based on eponyms) thus coincide with Babylonian luni-solar years (with intercalation).

TABLE 10

| BCE | | | Assyrian month | (Y) | ASSYRIAN KING | Eponym | BABYLONIAN KING | | | | |
|------|----|------|----------------------------|-----|----------------------------|-------------------------------------|----------------------|----|--|----------------------------|---|
| 1134 | 6 | III | <i>i</i> Šippu | 45 | Aššur-dân I n°83 | <i>Marduk-aḫa-ēriš</i> | 7 Itti-Marduk-balaṭu | | | | |
| | 7 | IV | <i>ii</i> Qarrātu | | | | | | | | |
| | 8 | V | <i>iii</i> Kalmartu | | | | | | | | |
| | 9 | VI | <i>iv</i> ^d Sin | | | | | | | | |
| | 10 | VII | <i>v</i> Kuzallu | | | | | | | | |
| | 11 | VIII | <i>vi</i> Allanātu | | | | | | | | |
| | 12 | IX | <i>vii</i> Belêt-ekalli | | | | | | | | |
| 1133 | 1 | X | <i>viii</i> Ša sarrâte | | | | | 46 | | <i>Pišqīya s. of Kaššu</i> | 8 |
| | 2 | XI | <i>ix</i> Ša kênâte | | | | | | | | |
| | 3 | XII | <i>x</i> Muḫḫur ilâni | | | | | | | | |
| | 4 | I | <i>xi</i> Abû šarrâni | | | | | | | | |
| | 5 | II | <i>xii</i> Ḫubur | | | | | | | | |
| | 6 | III | <i>i</i> Šippu | | | | | | | | |
| | 7 | IV | <i>ii</i> Qarrātu | | | | | | | | |
| | 8 | V | <i>iii</i> Kalmartu | | | | | | | | |
| | 9 | VI | <i>iv</i> ^d Sin | | | | | | | | |
| | 10 | VII | <i>v</i> Kuzallu | | | | | | | | |
| | 11 | VIII | <i>vi</i> Allanātu | | | | | | | | |
| | 12 | IX | <i>vii</i> Belêt-ekalli | | | | | | | | |
| 1132 | 1 | X | <i>viii</i> Ša sarrâte | 0 | Ninurta-tukultî-Aššur n°84 | <i>Aššur-šēzibanni s. of Pa'uzu</i> | 0 | | | | |
| | 2 | XI | <i>ix</i> Ša kênâte | | | | | | | | |
| | 3 | XII | <i>x</i> Muḫḫur ilâni | | | | | | | | |
| | 4 | I | <i>xi</i> Abû šarrâni | | | | | | | | |
| | 5 | II | <i>xii</i> Ḫubur | | | | | | | | |
| | 6 | III | <i>i</i> Šippu | | | | | | | | |
| | 7 | IV | <i>ii</i> Qarrātu | | | | | | | | |
| | 8 | V | <i>iii</i> Kalmartu | | | | | | | | |
| | 9 | VI | <i>iv</i> ^d Sin | | | | | | | | |
| | 10 | VII | <i>v</i> Kuzallu | | | | | | | | |
| | 11 | VIII | <i>vi</i> Allanātu | | | | | | | | |
| | 12 | IX | <i>vii</i> Belêt-ekalli | | | | | | | | |
| 1131 | 1 | X | <i>viii</i> Ša sarrâte | 1 | Aššur-reš-iši I n°86 | <i>Sîn-šēya s. of Urad-ilāne</i> | Ninurta-nâdin-šumi | | | | |
| | 2 | XI | <i>ix</i> Ša kênâte | | | | | | | | |
| | 3 | XII | <i>x</i> Muḫḫur ilâni | | | | | | | | |
| | 4 | I | <i>xi</i> Abû šarrâni | | | | | | | | |
| | 5 | II | <i>xii</i> Ḫubur | | | | | | | | |
| | 6 | III | <i>i</i> Šippu | | | | | | | | |
| | 1 | X | <i>viii</i> Ša sarrâte | 2 | | <i>Aššur-rēš-iši</i> | 2 | | | | |
| | 2 | XI | <i>ix</i> Ša kênâte | | | | | | | | |
| | 3 | XII | <i>x</i> Muḫḫur ilâni | | | | | | | | |
| | 4 | I | <i>xi</i> Abû šarrâni | | | | | | | | |
| | 5 | II | <i>xii</i> Ḫubur | | | | | | | | |
| | 6 | III | <i>i</i> Šippu | | | | | | | | |

Whereas the eponyms began on the 1st Nisan during the reign of Aššur-dân I (1179-1133), before this king the synchronisms between Assyrian king Tukultî-Ninurta I and Babylonian kings show that Assyrian eponyms started on 1st Šippu, not on 1st Nisan. Actually, the capture of Babylon and the replacement of its king, Kaštiliašu IV, are dated to (Ina)-Aššur-šuma-ašbat (Cancik-Kirschbaum: 1996, 9-18), the 19th eponym of Tukultî-Ninurta I (Freydank: 2005, 45-56), which corresponds to Year 8 of Kaštiliašu IV (1233-1225) dated 1225 BCE. The order of eponyms from the capture of Babylon is uncertain (Bloch: 2010b, 1-35), but the sequence of eponyms in this period is as follows: Ina-Aššur-šuma-ašbat (N°18), Ninu'aju (N°19), Bêr-nâdin-apli (N°20), Abi-ili son of Katiri (N°21), Šalmanu-šuma-ušur (N°22). Counting reigns by Babylonian scribes seems incorrect since Tukultî-Ninurta I regimented Babylonia (not reigned) through three successive Viceroy for 7 years (the first two of whom were killed by the King of Elam), reckoned as 1.5 years, 1.5 years and 6 years giving a total of 9 years (Munn-Rankin: 2000, 287-291). In fact, the system used is the cause of these differences. The 7 years of Tukultî-Ninurta I match the 7 eponyms and the 3 years (= 1.5 + 1.5) of the vassal kings match the 3 eponyms or 2 years reign, because 1.5 years (partial years) has no sense

¹⁵ Mutakkil-Nusku's victory over his brother was short-lived. According to one tablet: "(he) held the throne for tuppišu (his tablet), then died," showing that his year of accession was followed by only a small portion of his first year (a few days).

in the Babylonian system (the Assyrian year started on 1st Šippu or 27 March in 1225 BCE)¹⁶. Consequently, the reign of Tukultî-Ninurta I, which has 37 eponyms, must be dated 1242-1206, because each eponym is equivalent to a lunar year, and not 1243-1206, if each eponym had been equivalent to a solar year.

TABLE 11

| BCE | Eponym | son of | (C) | (Y) | BABYLONIAN KING | Year |
|------|----------------------------|------------------|------|----------|-------------------|-------|
| 1242 | Ubru | | 30th | [29]/[0] | Šagarakti-šuriaš | 4 |
| 1241 | Tukultî-Ninurta (I) | | 1st | [1] | | 5 |
| 1240 | Qibi-Aššur | Ibašši-ili | 2nd | [2] | | 6 |
| 1239 | Mušallim-Adad | Šalmanu-qarrâd | 3rd | [3] | | 7 |
| 1238 | Adad-bêl-gabbe | King | 4th | [4] | | 8 |
| 1237 | Šunu-qardû | | 5th | [5] | | 9 |
| 1236 | Libur-zanin-Aššur | | 6th | [6] | | 10 |
| 1235 | Aššur-nâdin-apli | King | 7th | [7] | | 11 |
| 1234 | Urad-ilani | | 8th | [8] | | 12 |
| 1233 | Adad-uma''i | | 9th | [9] | Kaštiliašu IV | 13/0 |
| 1232 | Abattu | Adad-šamši | 10th | [10] | | 1 |
| 1231 | Abattu | Adad-šumu-lêšir | 11th | [11] | | 2 |
| 1230 | Aššur-da''an | | 12th | [12] | | 3 |
| 1229 | Etel-pî-Aššur | Kurbânu | 13th | [13] | | 4 |
| 1228 | Ušur-namkûr-šarri | | 14th | [14] | | 5 |
| 1227 | Aššur-bêl-ilâni | | 15th | [15] | | 6 |
| 1226 | Aššur-zera-iddina | | 16th | [16] | | 7 |
| 1225 | Enlil-nâdin-apli (?) | | 17th | [17] | Enlil-nâdin-šumi | 8/0 |
| 1224 | Ina-Aššur-šuma-ašbat | Aššur-nâdin-šume | 18th | [18]/1 | Kadašman-Harbe II | 1.5/0 |
| 1223 | Ninu'aju | Aššur-iddin | 19th | [19]/2 | Adad-šuma-iddina | 1.5/0 |
| | Abi-ili | | 20th | 3 | | |
| 1222 | Šalmanu-šuma-ušur | Katiri | 21th | [20]/4 | | 1 |
| 1221 | Bêr-nâdin-apli | | 22th | [21]/5 | | 2 |
| 1220 | Adad-šamšî | Mariannu (?) | 23th | [22]/6 | | 3 |
| 1219 | Kaštiliašu (?) | | 24th | [23]/7 | | 4 |
| 1218 | Bêr-išmanni (?) | | 25th | [24]/8 | | 5 |
| 1217 | Ilî-padâ (?) | Aššur-iddin | 26th | [25]/9 | Adad-šuma-ušur | 6/0 |
| 1216 | Qarrad-Aššur (?) | Aššur-iddin | 27th | [26] | | 1 |
| 1215 | Sarniqu (?) | | 28th | [27] | | 2 |
| 1214 | Ninurta-nâdin-apli (?) | Bukruni | 29th | [28] | | 3 |
| 1213 | Urad-Kube (?) | Aššur-bel-ilani | 30th | [29] | | 4 |
| 1212 | Mudammiq-Nusku (?) | Ibašši-ili | 31th | [30] | | 5 |
| 1211 | Kîdin-Aššur (?) | | 32th | [31] | | 6 |
| 1210 | Sin-uballit (?) | | 33th | [32] | | 7 |
| 1209 | Nabu-bela-ušur (?) | | 34th | [33] | | 8 |
| 1208 | Riš-Aššur (?) | | 35th | [34] | | 9 |
| 1207 | Aššur-nirari (?) | Šarri | 36th | [35] | | 10 |
| 1206 | Urad-Kube | | 37th | [36]/[0] | | 11 |
| 1205 | Aššur-nâdin-apli | | 1st | [1] | | 12 |
| 1204 | Erîb-Sîn | | 2nd | [2] | | 13 |

The position of the first 16 eponyms have been confirmed (Llop, 2013, 549-559), but the 17th eponym in year 7 of Kaštiliašu IV could be Enlil-nâdin-apli and Bêr-nâdin-apli the 22th (Nahm, 2020, 43-45). Tukultî-Ninurta I ruled over Babylonia for 7 years (1224-1217) from the 18th to the 26th eponym. Enlil-nâdin-šumi (1225-1225) and Kadašman-Harbe II (1225-1224) each ruled Babylonia for 1.5 years from the 18th to the 20th eponym. The third pro-Assyrian vassal king, Adad-šuma-iddina (1224-1217), was subsequently overthrown by Babylonian officers in the 26th eponym. The Assyrians would have liked to impose their candidate Enlil-kudur-ušur (?), but the Babylonians settled upon Adad-šuma-ušur (1217-1187), freeing themselves from the Assyrian suzerainty. The reckoning of the years of reign, therefore, changed from Aššur-dân I (1179-1133) because, from that king (the eponyms being linked to 1st Nisan, as in the Babylonian year), the total number of eponyms during the reign of an Assyrian king corresponded to a number of luni-solar years, whereas previously the years had a lunar duration. When the number of eponyms does not match the total duration of the reign, it has been underlined:

¹⁶ N = 1225, (N - 1088) × 365,24219 = (141) × 12 × 29,530588 + 72 => 72 + 13 = 85th day of the year = 27 March.

| n° | ASSYRIAN KING | # | Reign | n° | BABYLONIAN KING | # | Reign |
|----|--------------------|----|-----------|----|------------------|----|-----------|
| 78 | Tukultî-Ninurta I | 37 | 1242-1206 | 27 | Šagarakti-šuriaš | 13 | 1246-1233 |
| 79 | Aššur-nâdin-apli | 4 | 1206-1203 | 32 | Adad-šuma-ušur | 30 | 1217 - |
| 80 | Aššur-nêrârî III | 6 | 1203-1197 | | | | -1187 |
| 81 | Enlil-kudurri-ušur | 5 | 1197-1192 | | | | |

TABLE 12

| BCE | Month | Assyrian | [A] | [B] | King / eponym | | | | |
|------|-------|------------------|------------------|-----|---------------|--------------------------------|----|---|------------------------------------|
| 1225 | 1 | X <i>x</i> | Muḥḥur ilâni | 17 | 7 | [A] Tukultî-Ninurta I Assyrian | | | |
| | 2 | XI <i>xi</i> | Abû šarrâni | | | [B] Kaštiliašu IV Babylonian | | | |
| | 3 | XII <i>xii</i> | Ḥubur | | | | | | |
| | 4 | I <i>i</i> | Šippu | 18 | 8 | <i>Ina-Aššur-šuma-ašbat</i> | | | |
| | 5 | II <i>ii</i> | Qarrātu | | | | | | |
| | 6 | III <i>iii</i> | Kalmartu | | | | | | |
| | 7 | IV <i>iv</i> | ^d Sin | | | | 0 | <i>(Babylon taken)</i> [B] Enlil-nâdin-šumi (Babylonian Viceroy) | |
| | 8 | V <i>v</i> | Kuzallu | | | | | | |
| | 9 | VI <i>vi</i> | Allanātu | | | | | | |
| | 10 | VII <i>vii</i> | Belêt-ekalli | | | | | | |
| | 11 | VIII <i>viii</i> | Ša sarrâte | | | | | | |
| | 12 | IX <i>ix</i> | Ša kênâte | | | | | | |
| 1224 | 1 | X <i>x</i> | Muḥḥur ilâni | | | | 19 | 1 | <i>Ninu'aju son of Aššur-iddin</i> |
| | 2 | XI <i>xi</i> | Abû šarrâni | | | | | | |
| | 3 | XII <i>xii</i> | Ḥubur | | | | | | |
| | 4 | I <i>i</i> | Šippu | | | | | | |
| | 5 | II <i>ii</i> | Qarrātu | | | | | | |
| | 6 | III <i>iii</i> | Kalmartu | | | | | | |
| | 7 | IV <i>iv</i> | ^d Sin | | | | | | |
| | 8 | V <i>v</i> | Kuzallu | | | | | | |
| | 9 | VI <i>vi</i> | Allanātu | | | | | | |
| | 10 | VII <i>vii</i> | Belêt-ekalli | | | | | | |
| | 11 | VIII <i>viii</i> | Ša sarrâte | | | | | | |
| | 12 | IX <i>ix</i> | Ša kênâte | | | | | | |
| 1223 | 1 | X <i>x</i> | Muḥḥur ilâni | 20 | 1 | <i>Abi-ili (?)</i> | | | |
| | 2 | XI <i>xi</i> | Abû šarrâni | | | | | | |
| | 3 | XII <i>xii</i> | Ḥubur | | | | | | |
| | 4 | I <i>i</i> | Šippu | | | | | | |
| | 5 | II <i>ii</i> | Qarrātu | | | | | | |

CHRONOLOGY OF MESOPOTAMIAN REIGNS OVER THE PERIOD 2020–912 BCE

The chronology of Assyrian reigns can, therefore, be fully reconstructed starting from Aššur-uballiṭ II (612-609) up to Erišu I (n°33), since all the years of reign between these two kings are known, being aware that Assyrian years are solar up to Aššur-dân I (1179-1133) and lunar prior to this king. The durations of four reigns are missing (N° 65, 66, 37, and 38), but they can be calculated through synchronisms from Assyrian annals that indicate the exact length between the reconstruction of some famous temples (Gasche, Armstrong, Cole: 1998, 57-80):

- Shalmaneser I (n°77) states in his inscriptions that the temple of Assur (Ehursagkurkurra) was built by Ušpiya and rebuilt by Erišu I, then 159 years later by Šamšî-Adad I, and 580 years later by himself. Shalmaneser I does not specify the point used to determine these durations, but Esarhaddon gives a figure of 126 years for the duration between Erišu I and Šamšî-Adad I, proving that Shalmaneser I included the 33-year reign of Šamšî-Adad I in his calculation (159 = 126 + 33). The 159 years must, therefore, have started at the end of the reign of Erišu I to the end of the reign of Šamšî-Adad I and 580 years are completed at the beginning of the reign of Shalmaneser I (in 1271 BCE). There are, therefore, 421 lunar years (421 = 580 - 159) between the reigns of Šamšî-Adad I and Shalmaneser I, a duration of 409 solar years, which sets the end of the reign of Šamšî-Adad I in 1680 BCE (= 1271 + 409)
- Tiglath-pileser I (n°87) states in his annals of having rebuilt the temple called Anu-Adad at the beginning of his reign (in 1115 BCE); It was however built 641 years earlier by Šamšî-Adad I. These 641 years (= 68 solar + 573 lunar) correspond to 624 (= 68 + 556) solar years, which dates back the reign of Šamšî-Adad I in 1739 BCE (= 1115 + 624) instead of 1712 BCE. However, the scribe probably used a King list with a reign of 40 years instead of 11 for Išme-Dagan I, since Šamšî-Adad I died in the year 17 of Hammurabi and Išme-Dagan I died in the year 28 of this king (Gasche, Armstrong, Cole: 1998, 52). This data reduces the 641 years to 612 BCE (= 641 - 29), or a duration of 596 solar years, which fixes the beginning of the reign of Samsi-Adad I in 1711 BCE (= 1115 + 596), in good agreement with the previous date of 1712 BCE (= 1680 + 33 - 1).

- Esarhaddon (n°112) also claimed to have rebuilt the temple of Aššur. In an inscription (Assur A) dated eponym Issi-Adad-anīnu (dated 679 BCE), at the beginning of his reign, he claimed that 129 years elapsed between the reconstruction of Erišu I and the one of Šamšī-Adad I. Shalmaneser I rebuilt the temple again 434 years later, then 580 years later Esarhaddon rebuilt the temple for the final time. The information of Esarhaddon seems accurate. Indeed, the first term is correct, because it actually falls in the reign of Shalmaneser I ($679 + 580 = 1259$). With the duration between the beginning of the reign of Esarhaddon and the end of the reign of Šamšī-Adad I being 1014 years ($= 580$ solar + 434 lunar or 1001 solar years), the end of the reign of Šamšī-Adad I can be set at 1680 BCE ($= 679 + 1001$). The reign of this king can, therefore, be set from 1712 to 1680 BCE. His death in the year 17 of Hammurabi allows one to anchor it to the Babylonian chronology (Gasche, Armstrong, Cole, Gruzadyan: 1998, 1-4). After his death the documents dated in different calendars allow some synchronisms (Barreyra Fracaroli: 2011, 185-198).
- The paleo-Assyrian dynasty begins after the fall of Ur (Joannès 2001: 617-621,823) with king Puzur-Aššur I (n°30), which enables us to date the fall of this city around 1913 BCE (the average length of an Assyrian reign is 14 years over all the period).

This chronology obtained from Assyrian king lists is confirmed over the period 1873-1663 (table below) from King Erišu I (n°33) to King Aššur-dugul (n°40) owing to lists of 255 eponyms (Barjamovic, Hertel, Larsen: 2012, 3-161; Veenhof, Günbatti, Kryszat: 2008, 10-27, 103-132, 156-171, 195-219) and some comments associated with eponyms allowing one to fix several synchronisms, especially the start and the duration (in Assyrian years) of certain reigns:

TABLE 13

| n° | ASSYRIAN KING | Years | Comments on eponyms from Chronicles | Σ eponyms | |
|----|----------------|-------|--|-----------|-----|
| 33 | Ērišu I | 40 | year 1, eponym Šu-Ištar son of Abila (N°1) | 40 | 40 |
| 34 | Ikunum | 14 | year 1, eponym Iddin-Suen brother of Šuli (N°41) | 14 | 14 |
| 35 | Sargon I | 40 | year 1, eponym Aššur-malik son of Agatum (N°55) | 40 | 54 |
| 36 | Puzur-Aššur II | 8 | year 1, eponym Aššur-nada son of Puzur-Ana (N°95) | 8 | 62 |
| 37 | Naram-Sîn | [-]4 | year 1, eponym Šu-Su'en son of Pappilum (N°103) | 54 | 116 |
| 38 | Ērišu II | [-] | Šamšī-Adad I conquers Assyria, eponym Ibni-Ištar (N°157) | 10 | 126 |
| 39 | Šamšī-Adad I | 33 | Death of Šamšī-Adad I, eponym Ṭab-šilli-Aššur (N°199) | 33 | 159 |
| 40 | Išme-Dagan I | 11 | (year 1, eponym Ennam-Aššur N°200) | 11 | 11 |

The set of two lists of eponyms, the Kültepe Eponym List (KEL) and the Mari Eponym Chronicle (MEC), made it possible to restore the complete list of 255 eponyms¹⁷ beginning in Ērišu I's year 1. The MEC has been essential for the establishment of the correct Old Babylonian chronology (Nahm 2018: 109-110). The deficiencies of the KEL (Glassner: 2004, 157-160) have been filled by the MEC. The only difficulty was to connect the five parts of the MEC (noted A, B, C, D, E) because there was no overlap between the end of the MEC D and the beginning of the MEC E (Charpin, Ziegler: 2003, 156-157). For example, the last eponym of the MEC C (N°195) must be Aḥiyaya son of Lā-qēpum (Bloch: 2014, 191-210). However, synchronisms with the Babylonian reigns allowed one to establish that the first two eponymous (illegible) names of the MEC D corresponded to the years 16 and 17 of the reign of Sîn-muballit and the last eponym of this short list corresponded to the year 20, which was also the year Hammurabi's accession (year 0). Neither the accession nor the death of Ērišu II is detailed in the lists, but this reign can be framed by two dates: the first year of Naram-Sîn in 1773 BCE during the eponymy Šu-Suen (N°95) in the beginning of the list MEC A, and the death of Šamšī-Adad during the eponymy of Ṭab-šilli-Aššur in 1680 BCE, after 33 years of reign. Consequently, the death of Erišu II must go back to 1713 BCE ($= 1680 + 33$), end of the list C L2. The eponyms of the list KEL G being completely unreadable over about 16 lines (eponyms N°179 to N°194), they were supplemented by the list MEC E but two eponyms of the overlap are uncertain (Charpin, Ziegler: 2003, 72-73, 134-169). Since the accession of Naram-Sîn was in 1774 BCE and the death of Erišu II was in 1712 BCE, then the two kings ruled a total of 62 solar years ($= 1774 - 1712$), or 64 lunar years (or eponyms). The reign of Naram-Sîn was over 27 years since the list KEL A includes 27* eponyms after his accession. However, according to Assyrian king lists, his reign was [-]4 years, implying a duration of 54 years (Veenhof: 2002, 1-78). Indeed, during the eponymy Ibni-Ištar (eponym N°157) it is stated that "Šamšī-Adad I conquered Assyria," which corresponds to the 1st year of Erišu II, his father Naram-Sîn having died the previous year. This would mean that the Amorite king Šamšī-Adad I conquered Assyria only gradually, starting with the city of Ekallatum at the end of the reign of Naram-Sîn. So, when Erišu II ascended the throne he reigned only over a small part of Assyria and at his death, after 10 years of reign, what was left of Assyria was absorbed by Šamšī-Adad I (who became an Assyrian king).

¹⁷ http://cdli.ox.ac.uk/wiki/doku.php?id=list_of_old_assyrian_limmu_officials

TABLE 14

| BCE | N° | eponym | son of | Comments in chronicles | | |
|------|----|--------------------|------------------------|--|-----------|-----------|
| 1873 | | | | accession of Erišu I (king n°33) | 0 | |
| 1872 | 1 | Šu-Ištar | Abila | year 1 (beginning of the list KEL A) | 1 | |
| 1871 | 2 | Šukkuttum | Išuhum | | 2 | |
| | 3 | Iddin-ili | Kurub-Ištar | | 3 | |
| 1870 | 4 | Su-Anum | Isaliya | | 4 | |
| 1869 | 5 | Anah-ilī | Kiki | | 5 | |
| 1868 | 6 | Suetaya | Ir'ibum | | 6 | |
| 1867 | 7 | Daya | Išuhum | | 7 | |
| 1866 | 8 | Ilī-ellītī | | | 8 | |
| 1865 | 9 | Šamaš-ṭab | | | 9 | |
| 1864 | 10 | Agusa | | | 10 | |
| 1863 | 11 | Idnaya | Šudaya | | 11 | |
| 1862 | 12 | Quqādum | Buzu | | 12 | |
| 1861 | 13 | Puzur-Ištar | Bedaki | | 13 | |
| 1860 | 14 | Lā-qēpum | Babidi | | 14 | |
| 1859 | 15 | Šu-Laban | Kurub-Ištar | | 15 | |
| 1858 | 16 | Šu-Bēlum | Išuhum | | 16 | |
| 1857 | 17 | Nabi-Suen | Šu-Ištar | | 17 | |
| 1856 | 18 | Hadaya | Elāli | | 18 | |
| 1855 | 19 | Ennam-Aššur | Begaya | | 19 | |
| 1854 | 20 | Ikūnum | Šudaya | | 20 | |
| 1853 | 21 | Išmid-ilum | Idida | | 21 | |
| 1852 | 22 | Buzutaya | Išuhum | | 22 | |
| 1851 | 23 | Šu-Ištar | Ammaya | | 23 | |
| 1850 | 24 | Iddin-Aššur | <i>i.e. kumrum</i> | | 24 | |
| 1849 | 25 | Puzur-Aššur | I.NUN | | 25 | |
| 1848 | 26 | Quqādum | Buzu | | 26 | |
| 1847 | 27 | Ibni-Adad | Susaya | | 27 | |
| 1846 | 28 | Erišum | Adad-rabi | | 28 | |
| 1845 | 29 | Minānum | Begaya | | 29 | |
| 1844 | 30 | Iddin-Suen | Šalim-ahum | | 30 | |
| 1843 | 31 | Puzur-Aššur | Idnaya | | 31 | |
| 1842 | 32 | Šūli | Uphakum | | 32 | |
| 1841 | 33 | Lā-qēpum | Zukua | | 33 | |
| 1840 | 34 | Puzur-Ištar | Erisua | | 34 | |
| 1839 | 35 | Agua | Adad-rabi | | 35 | |
| 1838 | 36 | Šu-Suen | Šilliya | | 36 | |
| | 37 | Ennam-Aššur | Begaya | | 37 | |
| 1837 | 38 | Enna-Suen | Puṣṣānum | | 38 | |
| 1836 | 39 | Ennānum | Uphakum | | 39 | |
| 1835 | 40 | Buzu | Adad-rabi | accession of Ikunum (king n°34) | 0 | 40 |
| 1834 | 41 | Iddin-Suen | <i>brother of Šuli</i> | Šuli son of Salim-ahum, year 1 | 1 | 1 |
| 1833 | 42 | Ikūnum | Šudaya | | 2 | 2 |
| 1832 | 43 | Dan-Wēr | Ahuahi | | 3 | 3 |
| 1831 | 44 | Su-Anum | Nērabtim | | 4 | 4 |
| 1830 | 45 | Ilī-massu | Aššur-ṭab | | 5 | 5 |
| 1829 | 46 | Šu-Hubur | Šulī | | 6 | 6 |
| 1828 | 47 | Idua | Šulilī | | 7 | 7 |
| 1827 | 48 | Lā-qēpum | Puzur-Laba | | 8 | 8 |
| 1826 | 49 | Šu-Anum | <i>of hapirum</i> | | 9 | 9 |
| 1825 | 50 | Uku | Bela | | 10 | 10 |
| 1824 | 51 | Aššur-malik | Panaka | | 11 | 11 |
| 1823 | 52 | Dan-Aššur | Puzur-Wēr | | 12 | 12 |
| 1822 | 53 | Šu-Kūbum | Ahuahi | | 13 | 13 |
| 1821 | 54 | Erišum | Iddin-Aššur | accession of Sargon I (king n°35) | 14 | 14 |
| 1820 | 55 | Aššur-malik | Agatum | year 1 | 15 | 1 |
| 1819 | 56 | Aššur-malik | Ennāniya | | 16 | 2 |
| 1818 | 57 | Ibisua | Suen-nādā | | 17 | 3 |
| 1817 | 58 | Baziya | Bal-Tutu | | 18 | 4 |
| 1816 | 59 | Puzur-Ištar | Sabasiya | | 19 | 5 |
| 1815 | 60 | Pišaḥ-Ilī | Adin | | 20 | 6 |
| 1814 | 61 | Asqūdum | Lā-qēpum | | 21 | 7 |

| | | | | | | | |
|------|-----|-----------------------|----------------------------|--------------------------------------|----|----|----|
| 1813 | 62 | Ilī-pilaḥ | Damqum ^{SEP} | | 22 | 8 | |
| 1812 | 63 | Qulali | [-] | | 23 | 9 | |
| 1811 | 64 | Susaya ^{SEP} | [-] | | 24 | 10 | |
| 1810 | 65 | Amaya | <i>the Armourer</i> | | 25 | 11 | |
| 1809 | 66 | Iḫurum | Ilī-ellat | | 26 | 12 | |
| 1808 | 67 | Kudānum | Lā-qēpum | | 27 | 13 | |
| 1807 | 68 | Ilī-bāni | Ikūnum | | 28 | 14 | |
| 1806 | 69 | Šu-Kūbum | Susaya | | 29 | 15 | |
| 1805 | 70 | Quqidi | Amur-Aššur | | 30 | 16 | |
| | 71 | Abiya | Nūr-Suen | | 31 | 17 | |
| 1804 | 72 | Šu-Ištar | Šukkutum | | 32 | 18 | |
| 1803 | 73 | Baziya | Šēp-Alim | | 33 | 19 | |
| 1802 | 74 | Šu-Ištar | Ikūnum, <i>the Star</i> | | 34 | 20 | |
| 1801 | 75 | Abiya | Šu-Dagan | | 35 | 21 | |
| 1800 | 76 | Salliya | Šabakurā(num) | Babylonian king | 36 | 22 | |
| 1799 | 77 | Ibni-Adad | Baqqunum | <i>accession of Sumu-abum</i> | 37 | 23 | 0 |
| 1798 | 78 | Aham-arši | Malkum-išar | | 38 | 24 | 1 |
| 1797 | 79 | Sukkaliya | Minanum | | 39 | 25 | 2 |
| 1796 | 80 | Iddin-Aššur | Kubidi | | 40 | 26 | 3 |
| 1795 | 81 | Šudaya | Ennānum | | 41 | 27 | 4 |
| 1794 | 82 | Al-ṭāb | Pilaḥ-Aššur/haya | | 42 | 28 | 5 |
| 1793 | 83 | Aššur-damiq | Abarsisum | | 43 | 29 | 6 |
| 1792 | 84 | Puzur-Niraḥ | Puzur-Suen | | 44 | 30 | 7 |
| 1791 | 85 | Amur-Aššur | Karriya | | 45 | 31 | 8 |
| 1790 | 86 | Buzuzu | Ibbi-Suen | | 46 | 32 | 9 |
| 1789 | 87 | Šu-Ḫubur | Elāli | | 47 | 33 | 10 |
| 1788 | 88 | Ilšu-rabi | Baziya | | 48 | 34 | 11 |
| 1787 | 89 | Ali-aḫum | Inaḥ-ilī | | 49 | 35 | 12 |
| 1786 | 90 | Ṭāb-Aššur | Suḫarum | | 50 | 36 | 13 |
| 1785 | 91 | Elāli | Ikūnum <i>the sangu</i> | <i>accession of Sumu-a-il</i> | 51 | 37 | 14 |
| 1784 | 92 | Iddin-abum | Narbitum | | 52 | 38 | 1 |
| 1783 | 93 | Adad-bāni | Iddin-Aššur | | 53 | 39 | 2 |
| 1782 | 94 | Aššur-iddin | Šuli | accession of Puzur-Aššur II | 54 | 40 | 3 |
| 1781 | 95 | Aššur-nādā | Puzur-Anna | year 1 | 55 | 1 | 4 |
| 1780 | 96 | Kūbiya | Karriya | | 56 | 2 | 5 |
| 1779 | 97 | Ilī-dan | Elāli | | 57 | 3 | 6 |
| 1778 | 98 | Šilulu | Uku | | 58 | 4 | 7 |
| 1777 | 99 | Aššur-nādā | Ilī-binanni | | 59 | 5 | 8 |
| 1776 | 100 | Ikūn-pī-Ištar | Ikua | | 60 | 6 | 9 |
| 1775 | 101 | Buzutaya | Sulī | | 61 | 7 | 10 |
| 1774 | 102 | Innaya | Amuraya | accession of Naram-Sîn | 62 | 8 | 11 |
| 1773 | 103 | Šu-Suen | Pappilum | year 1 (beginning of the list MEC A) | 63 | 1 | 12 |
| 1772 | 104 | Aššur-malik | Ali-aḫum | | 64 | 2 | 13 |
| | 105 | Aššur-imittī | Ilī-bāni | | 65 | 3 | |
| 1771 | 106 | Enna-Suen | Šu-Aššur <i>the priest</i> | | 66 | 4 | 14 |
| 1770 | 107 | Akutum | Ali-aḫum | | 67 | 5 | 15 |
| 1769 | 108 | Mašī-Ilī | Erišum | | 68 | 6 | 16 |
| 1768 | 109 | Iddin-aḫum | Kudānum | | 69 | 7 | 17 |
| 1767 | 110 | Samaya | Šu-Bēlum | (beginning of the list KEL G) | 70 | 8 | 18 |
| 1766 | 111 | Ilī-ālum | Sukkaliya | | 71 | 9 | 19 |
| 1765 | 112 | Ennam-Anum | Aššur-malik | | 72 | 10 | 20 |
| 1764 | 113 | Ennum-Aššur | Dunni-Ea | | 73 | 11 | 21 |
| 1763 | 114 | Enna-Suen | Šu-Ištar | | 74 | 12 | 22 |
| 1762 | 115 | Hanna-Nārum | [-] | | 75 | 13 | 23 |
| 1761 | 116 | Dādiya | [-] | | 76 | 14 | 24 |
| 1760 | 117 | Kapatiya | [-] | | 77 | 15 | 25 |
| 1759 | 118 | Išme-Aššur | Ea-dan | | 78 | 16 | 26 |
| 1758 | 119 | Aššur-muttabbil | Azizum | | 79 | 17 | 27 |
| 1757 | 120 | Šu-Nirah | Azuzaya | | 80 | 18 | 28 |
| 1756 | 121 | Iddin-Abum | [-] | | 81 | 19 | 29 |
| 1755 | 122 | Ilī-dan | Azua | | 82 | 20 | 30 |
| 1754 | 123 | Aššur-imittī | Iddin-Ištar | | 83 | 21 | 31 |
| 1753 | 124 | Bušiya | Abiya | | 84 | 22 | 32 |
| 1752 | 125 | Dādiya | Šu-Ilabrat | Birth of Šamšī-Adad I | 85 | 23 | 33 |

| | | | | | | | |
|------|-----|--------------------|---------------|---|-----|----|----|
| 1751 | 126 | Puzur-Ištar | Nūr-ilīšu | Darkening of the sun | 86 | 24 | 34 |
| 1750 | 127 | Isaya | Dagan-malkum | | 87 | 25 | 35 |
| 1749 | 128 | Abu-šalim | Ilī-ālum | accession of Sābium | 88 | 26 | 36 |
| 1748 | 129 | Aššur-rē'ī | Ilī-emūqī | (end of the list KEL A) | 89 | 27 | 1 |
| 1747 | 130 | Ṭāb-Aššur | Uzua | | 90 | 28 | 2 |
| 1746 | 131 | Šu-Rama | Uzua | | 91 | 29 | 3 |
| 1745 | 132 | Suen-išmeanni | | (end of the list MEC A) | 92 | 30 | 4 |
| 1744 | 133 | Aššur-malik | Šu-Haniš | (beginning of the list MEC B) | 93 | 31 | 5 |
| 1743 | 134 | Dan-Ea | Abu-waqar | | 94 | 32 | 6 |
| 1742 | 135 | Enna-Suen | Iddin-abum | | 95 | 33 | 7 |
| 1741 | 136 | Aššur-balaṭi | | | 96 | 34 | 8 |
| 1740 | 137 | Enna-Suen | | | 97 | 35 | 9 |
| 1739 | 138 | Iṭūr-Aššur | | | 98 | 36 | 10 |
| | 139 | Šu-Bēlum | | | 99 | 37 | |
| 1738 | 140 | Šarrum-Adad | Buzazu | | 100 | 38 | 11 |
| 1737 | 141 | Šu-Laban | | | 101 | 39 | 12 |
| 1736 | 142 | Aššur-imitti | | | 102 | 40 | 13 |
| 1735 | 143 | Dadaya | | accession of Apil-Sîn | 103 | 41 | 14 |
| 1734 | 144 | Dadaya | | | 104 | 42 | 1 |
| 1733 | 145 | Ah-šalim | | | 105 | 43 | 2 |
| 1732 | 146 | Ušur-ša-Ištar | | | 106 | 44 | 3 |
| 1731 | 147 | Kataya | | | 107 | 45 | 4 |
| 1730 | 148 | Šu-Suen | | | 108 | 46 | 5 |
| 1729 | 149 | Abu-šalim | | | 109 | 47 | 6 |
| 1728 | 150 | Šudaya | | | 110 | 48 | 7 |
| 1727 | 151 | Šu-Dādum | | | 111 | 49 | 8 |
| 1726 | 152 | Aššur-tugultī | | | 112 | 50 | 9 |
| 1725 | 153 | Puzur-Ištar | | | 113 | 51 | 10 |
| 1724 | 154 | Atanah | | Šamšî-Adad I conquered Ekallatum | 114 | 52 | 11 |
| 1723 | 155 | Erišum | | Ekallatum | 115 | 53 | 12 |
| 1722 | 156 | Aššur-ennam | | Ekallatum (accession of Ērišu II) | 116 | 54 | 13 |
| 1721 | 157 | Ibni-Ištar | Sîn-išme'anni | Šamšî-Adad I conquered Aššur (year 1) | 117 | 1 | 14 |
| 1720 | 158 | Aššur-bēl-malkim | Iddin-abum | | 118 | 2 | 15 |
| 1719 | 159 | Bēlānum | | | 119 | 3 | 16 |
| 1718 | 160 | Sukkallum | | Ērišu II | 120 | 4 | 17 |
| 1717 | 161 | Amur-Aššur | | Ērišu II accession of Sîn-muballit | 121 | 5 | 18 |
| 1716 | 162 | Aššur-nīšu | | Ērišu II (end of the list MEC B) | 122 | 6 | 1 |
| 1715 | 163 | Manawwirum | | (beginning of the list C L2) | 123 | 7 | 2 |
| 1714 | 164 | Idnaya | Aššur-imitti | | 124 | 8 | 3 |
| 1713 | 165 | Dadaya | Šarrum-Adad? | (end of the list C L2) | 125 | 9 | 4 |
| 1712 | 166 | Puzur-Nirah | | | 126 | 10 | 5 |
| 1711 | 167 | Abiya | | (Assyrian reign year 1 of Šamšî-Adad I) | 127 | 1 | 6 |
| 1710 | 168 | Edīnum | Bēlu-rabi | | 128 | 2 | 7 |
| 1709 | 169 | Aššur-taklāku | | | 129 | 3 | 8 |
| 1708 | 170 | Išim-Suen | | | 130 | 4 | 9 |
| 1707 | 171 | Adad-bāni | | | 131 | 5 | 10 |
| 1706 | 172 | Abī-šagiš | | | 132 | 6 | 11 |
| | 173 | Ṭab-šilla-Aššur | | | 133 | 7 | |
| 1705 | 174 | Iddin-Aššur | Abu-šalim? | | 134 | 8 | 12 |
| 1704 | 175 | Namiya | Ipid-Adad | | 135 | 9 | 13 |
| 1703 | 176 | Ahu-šarri | Ilī-ālum | | 136 | 10 | 14 |
| 1702 | 177 | Dadaya | | | 137 | 11 | 15 |
| 1701 | 178 | Ennam-[Aššur?] | | (beginning of the list MEC D) | 138 | 12 | 16 |
| 1700 | 179 | [?]-Aššur | | (very uncertain reading) | 139 | 13 | 17 |
| 1699 | 180 | Atānum | | | 140 | 14 | 18 |
| 1698 | 181 | Aššur-taklāku | - | | 141 | 15 | 19 |
| 1697 | 182 | Haya-malik | Dudānum | (end of the list MEC D) Hammurabi | 142 | 16 | 20 |
| 1696 | 183 | Šalim-Aššur | Šalim-Anum | (beginning of the list MEC E) | 143 | 17 | 1 |
| 1695 | 184 | Šalim-Aššur | Ušranum | | 144 | 18 | 2 |
| 1694 | 185 | Ennam-Aššur | | | 145 | 19 | 3 |
| 1693 | 186 | Suen-muballit | Aššur-iddinam | | 146 | 20 | 4 |
| 1692 | 187 | Reš-Šamaš | Anum-piša? | | 147 | 21 | 5 |
| 1691 | 188 | Ibni-Adad | Aššur-tukultī | | 148 | 22 | 6 |
| 1690 | 189 | Aššur-imitti | | | 149 | 23 | 7 |

| | | | | | | | |
|------|-----|------------------------|--------------------|---|-----|----|----|
| 1689 | 190 | Ilī-ellatī | Aššur-nišu | | 150 | 24 | 8 |
| 1688 | 191 | Rigmānum | | | 151 | 25 | 9 |
| 1687 | 192 | Ikūn-pīya | Šalim-Aššur | (Yasmah-Addu becomes vice-roy of Mari) | | 26 | 10 |
| 1686 | 193 | Ašqūdum | | | 153 | 27 | 11 |
| 1685 | 194 | Aššur-malik | | | 154 | 28 | 12 |
| 1684 | 195 | Ahiyaya* | Lā-qēpum | (end of the list MEC E) | 155 | 29 | 13 |
| 1683 | 196 | Awīliya | | | 156 | 30 | 14 |
| 1682 | 197 | Nimar-Suen | Aššur-nišu | | 157 | 31 | 15 |
| 1681 | 198 | Adad-bāni | Puzur-ilī | | 158 | 32 | 16 |
| 1680 | 199 | Tab-šilli-Aššur | | death of Šamšī-Adad I | 159 | 33 | 17 |
| 1679 | 200 | Ennam-Aššur | Aššur-taklāku? | (year 1 of Išme-Dagan I king n°40) | 1 | 1 | 18 |
| 1678 | 201 | Aššur-emūqī | | | 2 | 2 | 19 |
| 1677 | 202 | Abu-šalim | | | 3 | 3 | 20 |
| 1676 | 203 | Puṣṣānum | Adad-rabi | | 4 | 4 | 21 |
| 1675 | 204 | Ikūn-pī-Ištar | Abu-šalim | | 5 | 5 | 22 |
| 1674 | 205 | Ahiyaya | Takiki | | 6 | 6 | 23 |
| 1673 | 206 | Bēliya | Enna-Suen | | 7 | 7 | 24 |
| | 207 | Ilī-bāni | | | 8 | 8 | |
| 1672 | 208 | Aššur-taklāku | | | 9 | 9 | 25 |
| 1671 | 208 | Sassāpum | Aššur-malik | | 10 | 10 | 26 |
| 1670 | 209 | Ahu-waqar | | (accession of Aššur-dugul king n°41) | 11 | 11 | 27 |
| 1669 | 210 | Kizurum | | | 12 | 1 | 28 |
| 1668 | 211 | Dādiya | Iddin-Suen? | | 13 | 2 | 29 |
| 1667 | 212 | Yam-aha? | | | 14 | 3 | 30 |
| 1666 | 213 | Adad-bāni | | | 15 | 4 | 31 |
| 1665 | 214 | Ennam-Aššur | Aššur-taklāku | | 16 | 5 | 32 |
| 1664 | 215 | Attaya | Šamaya | (accession of 6 consecutive Assyrian kings) | 6 | 33 | |
| 1663 | 216 | Ayā | | (year 1 of Bēlu-bāni king n°48) | 18 | 1 | 34 |

This list of eponyms (N°1 to N°216) used for reconstituting Assyrian reigns (n°33 to n°40) contains the following difficulties:

- The Assyrian king list compiled under Šamšī-Adad I states that the eponyms from Sulili (=Zariqum?) to Il-šumma, Kings n°27 to n°32, were lost, suggesting a beginning of Assyrian eponyms only from Sulili (1954-1940) and a compilation from Erišu I (1873-1834).
- After the accession of King Ikunum, some lists give Šuli as eponym before Iddin-Suen brother of Šuli (eponym N°41 in KEL A, the longest list). A canonical eponym replacing a non-canonical eponym (died or removed during the year of his eponymy) is likely, because a comment on Buzu in list KEL A states that he was the eponym during the accession of Ikunum. Therefore, Šuli has to be removed from the list, as dis list KEL A.
- The darkening of the sun mentioned during the Puzur-Ištar eponym (N°126), the year just after the birth of Šamšī-Adad I, has been interpreted by some as a solar eclipse (Michel, Rocher: 1997-2000, 111-126), but there was no total solar eclipse visible in Assyria (between Ashur and Nineveh) over the period 1800-1700 BCE¹⁸. Moreover, the term used *na'duru* “darkened, obscured, eclipsed” means an eclipse in a metaphorical way and is different from the usual *antalū* “eclipse” used in Mari¹⁹. Consequently, for the Assyrian copyist of that time, the birth of Šamšī-Adad I marked the end, or the “eclipse”, of the authentic Assyrian dynasty.
- The alliance with Qatna under the eponymy of Ikun-piya (N°192) coincides with the installation of Yasmah-Addu (1687-1680) as king of Mari, by Šamšī-Adad I (Charpin: 1997, 15-16).

The complete reconstruction of all the Assyrian reigns from Erišu I (king n°33), according to the number of eponyms, and of all the synchronisms with the Babylonian reigns, according to the number of luni-solar years, makes it possible to verify the rigorous accuracy of the Assyrian King List (AKL). The years highlighted in orange indicate a discrepancy between Assyrian lunar years (with an eponymous) and Babylonian lunar-solar years (34 lunar years = 33 solar years).

¹⁸ There were only two partial eclipses slightly visible on 10 October -1736* (mag 0.92) and that on 8 September -1790* (mag 0.92). The two authors of the article retained the hybrid eclipse of 19 November -1794* (mag. 1.01), but this eclipse was not visible in Assyria and by setting the Assyrian chronology on this eclipse the new reign of Šamšī-Adad I (1758-1725) contradicts that obtained by the Middle Chronology (1809-1776)!

¹⁹ As the sentence: “on the 26th day of the month Sivan, in the 7th year [of Simbar-šipak], the day turned to night,” did not describe a solar eclipse, because a solar eclipse always coincides with the last day of the lunar month (29 or 30). Consequently, the two comments have been added later in the list of eponyms, because Šamšī-Adad I was initially an Amorite king who became part of the Assyrian dynasty only at the end of his glorious reign.

TABLE 15

| BCE | Eponym | son of | (C) | (Y) | BABYLONIAN KING | Year |
|------|--------------------------|------------------|-----|-----|-----------------------|------|
| 1681 | Adad-bāni | Puzur-ilī | 32 | 158 | | 16 |
| 1680 | (death of Šamši-Adad I) | Ṭab-šilli-Aššur) | 33 | 159 | Hammurabi | 17 |
| 1679 | Ennam-Aššur | Aššur-taklāku? | 1 | 1 | | 18 |
| 1678 | Aššur-emūqī | | 2 | 2 | | 19 |
| 1677 | Abu-šalim | | 3 | 3 | | 20 |
| 1676 | Puṣṣānum | Adad-rabi | 4 | 4 | | 21 |
| 1675 | Ikūn-pī-Ištar | Abu-šalim | 5 | 5 | | 22 |
| 1674 | Ahiyaya | Takiki | 6 | 6 | | 23 |
| 1673 | Bēliya | Enna-Suen | 7 | 7 | | 24 |
| | Bēliya | Enna-Suen | 8 | 8 | | |
| 1672 | Ilī-bāni | | 9 | 9 | | 25 |
| 1671 | Aššur-taklāku | | 10 | 10 | | 26 |
| 1670 | (death of IŠme-Dagan I) | Sassāpum) | 11 | 11 | | 27 |
| 1669 | Kizurum | | 1 | 12 | | 28 |
| 1668 | Dādiya | Iddin-Suen? | 2 | 13 | | 29 |
| | | | | | | |
| 1271 | (death of Adad-nêrârî I) | (king n°76) | 32 | 422 | [0] Kadašman-Turgu | 11 |
| 1270 | Shalmaneser (I) | (king n°77) | 1 | 423 | [1] | 12 |
| 1269 | Mušabši'ū-Sebettu | | 2 | 424 | [2] | 13 |
| 1268 | Šerrīya | | 3 | 425 | [3] | 14 |
| 1267 | Aššur-kāšid | | 4 | 426 | [4] | 15 |
| 1266 | Aššur-mušabši | Iddin-Mêr | 5 | 427 | [5] | 16 |
| 1265 | Aššur-mušabši | Anu-mušallim | 6 | 428 | [6] | 17 |
| 1264 | Qibi-Aššur | Šamaš-aḡa-iddina | 7 | 429 | [7] Kadašman-Enlil II | 18/0 |
| 1263 | Aššur-nâdin-šumê | Aššur-lê'i | 8 | 430 | [8] | 1 |
| 1262 | Abî-ilī | Aššur-šumu-lêšer | 9 | 431 | [9] | 2 |
| 1261 | Aššur-âlik-pâni | | 10 | 432 | [10] | 3 |
| 1260 | Mušallim-Aššur | Aššur'-mušabši | 11 | 433 | [11] | 4 |
| 1259 | Ilī-qarrad (?) | | 12 | 434 | [12] | 5 |
| 1258 | Qibi-Aššur | Šilli-Marduk | 13 | 1 | [13] | 6 |
| 1257 | Ina-pî-Aššur-lišlim | Bābu-aḡa-iddina | 14 | 2 | [14] | 7 |
| 1256 | Adad-šamši | Adad-šumu-lêšer | 15 | 3 | [15] | 8 |
| 1255 | Kidin-Sîn | Adad-têya | 16 | 4 | [16] Kudur-Enlil | 9/0 |
| 1254 | Bêr-šumu-lêšir | | 17 | 5 | [17] | 1 |
| | Aššur-dammeq | Abî-ilī | 18 | 6 | | |
| 1253 | Ištar-êriš | Salmanu-qarrād | 19 | 7 | [18] | 2 |
| 1252 | Bêr-bêl-lîte | | 20 | 8 | [19] | 3 |
| 1251 | Lullāyu | Adad-šumu-iddina | 21 | 9 | [20] | 4 |
| 1250 | Aššur-da'issunu | Lullāyu | 22 | 10 | [21] | 5 |
| 1249 | Riš-Adad | Nabû-[-]? | 23 | 11 | [22] | 6 |
| 1248 | Aššur-kettî-îde | Abî-ilī | 24 | 12 | [23] | 7 |
| 1247 | Ekaltāyu | Abî-ilī | 25 | 13 | [24] | 8 |
| 1246 | Nabû-bêla-ušur | | 26 | 14 | [25] Šagarakti-šuriaš | 9/0 |
| 1245 | Usât-Marduk | | 27 | 15 | [26] | 1 |
| 1244 | Ellil-ašared | | 28 | 16 | [27] | 2 |
| 1243 | Ittabši-dên-Aššur | | 29 | 17 | [28] | 3 |
| 1242 | Ubru | | 30 | 18 | [29]/[0] | 4 |
| 1241 | Tukultî-Ninurta (I) | (king n°78) | 1 | 19 | [1] | 5 |
| 1240 | Qibi-Aššur | Ibašši-ili | 2 | 20 | [2] | 6 |

| BCE | ASSYRIAN KING | Eponym | (C) | (Y) | BABYLONIAN KING | Year |
|-----|---------------------|-------------------|-----|-----|-----------------|------|
| 682 | Sennacherib (n°111) | Nabû-šarru-ušur | 23 | 579 | 23 Sennacherib | 7 |
| 681 | | Nabû-aḡḡē-êreš | 24 | 580 | 24 | 8 |
| 680 | Esarhaddon (n°112) | Danānu | 1 | 1 | 1 Esarhaddon | 1 |
| 679 | | Issi-Adad-anênu | 2 | 2 | 2 | 2 |
| 678 | | Nergal-šarru-ušur | 3 | 3 | 3 | 3 |
| 677 | | Abî-rāmu | 4 | 4 | 4 | 4 |
| 676 | | Banbâ | 5 | 5 | 5 | 5 |
| 675 | | Nabû-aḡḡē-iddin | 6 | 6 | 6 | 6 |
| 674 | | Šarru-nûrî | 7 | 7 | 7 | 7 |
| 673 | | Atar-ilu | 8 | 8 | 8 | 8 |

| | | | | | | | |
|-----|----------------------|--------------------|----|-----------|----|--------------|----|
| 672 | | Nabû-bêlu-ušur | 9 | 9 | 9 | | 9 |
| 671 | | Kanûnâyu | 10 | 10 | 10 | | 10 |
| 670 | | Šulmu-bêli-lašme | 11 | 11 | 11 | | 11 |
| 669 | | Šamash-kâšid-ayâbi | 12 | 12 | 12 | | 12 |
| 668 | Aššurbanipal (n°113) | Marlarim | 1 | 13 | 1 | Aššurbanipal | 1 |

This reconstruction of the list of eponyms confirms the reliability of the Assyrian king lists²⁰ (Assyrian scribes could easily date a past event by virtue of “1 eponym = 1 Assyrian year”). The parallelization of all the synchronisms between the Assyrian and Babylonian reigns makes it possible to fix the unmentioned duration of some reigns. For example:

- *Duration of reigns with a null value.* The duration between the 41st Assyrian king, Aššur-dugul (1670-1664), and the 48th king, Bêlu-bâni (1664-1654), is only indicated by the expression *bāb tuppi-šu* which literally means “part of his tablet”, which is not clear. However, since the total duration of these six kings (1664-1664) was not considered in the sum of the eponyms, this implies that these kings reigned briefly during the 6th and last year of King Aššur-dugul and that this short duration was included in the last year of this king. This way of counting the years of Assyrian reigns is confirmed by the reigns of Ninurta-tukultî-Aššur (n°84) and Mutakkil-Nusku (n°85), because these two kings reigned respectively 2 months and 1 month at the end of the 46th and last year of Aššur-dân I (1179-1133). Therefore, the expression *bāb tuppi-šu* means that the king reigned but that there is no eponym associated with his reign (*bāb tuppi-šu* = 0 eponym).
- *Duration of reigns can be replaced by an average value.* The durations of the Assyrian reigns n°65 and n°66 are not known, but as the reign n°64 of Aššur-šadûni (1443-1443), just before, and the reign n°67 of Enlil-našir II (1424-1418), just after, are known, it is possible to deduce the total duration of 20 years (= 1443 - 1424 + 1) for these two reigns, which allows the duration of these two reigns to be replaced by an average value of 10 years (figures in italics). The absence of values for these two successive reigns (a unique case in the Assyrian King List) could explain an error in an inscription by Tiglath-pileser I (1115-1076) who claims to have rebuilt in his 6th year of reign, in 1109 BCE, the temple of the gods Anu and Adad that had been built by Šamšî-Adad I, 641 years earlier, but the chronological interpretation of this inscription is controversial (Pruzsinzky: 2009, 138-140). The 641 Assyrian years correspond to 641 eponyms between the first eponym of the reign of Šamšî-Adad I (1712-1680), in 1712 BCE, and the 6th eponym of the reign of Tiglath-pileser I (1115-1076), in 1109 BCE, which corresponds to a total of 623 solar years (= 640 x 33/34). According to this count, the reign of Šamšî-Adad I would have begun in 1732 BCE (= 1109 + 623), 20 years earlier than expected. This discrepancy could be explained by an error of the scribe which would have affected the 20 eponyms between kings n°64 and n°67 to each of kings n°65 and n°66, because the exact total of eponyms is 621 (= 641 - 20), not 641. The synchronism between the 3rd king of Ur III, Amar-Sîn (1954-1945), and the 27th Assyrian king, Sulili (= Zariqum), makes it possible to calculate the average value of Assyrian reigns before Erišu I (1873-1834), the 33rd Assyrian king. This average duration for the 6 Assyrian kings between Sulili and Erišu I is approximately 14 years = (1954 - 1873)/6.
- *Duration of reigns which is rounded out.* Several inscriptions that deal with the building activities of the Ištar temple derive from the time of Tukultî-Ninurta I (1242–1206), who stated that the Ištar temple was founded by Ilušuma (c.1886–1873) 720 years before he restored it at the beginning of his reign. This figure cannot be based on an eponymous list for two reasons: 1) the number of eponyms from the reign of Ilušuma has been lost and therefore could not be used; 2) the total duration of the 45 Assyrian kings between Ilušuma and Tukultî-Ninurta I is exactly 720 years which implies an average duration of exactly 16 years (= 720/45). This same 16-year average was used to date the total duration of 576 years (= 36 x 16) of the 36 Kassite reigns (Pruzsinzky: 2009, 145-147). As there are approximately 660 (= 60 x 11) eponyms between Ilušuma and Tukultî-Ninurta I, it is possible that this number has been replaced by 720 (= 60 x 12) for symbolic reasons.

The synchronisms between the Assyrian and Babylonian reigns over the period from the dynasty of Ur III to Kadašman-Enlil I can be established precisely because all the durations of the Babylonian reigns are known (Pruzsinzky: 2009, 194-199). The durations of the Babylonian reigns, from Kadašman-Enlil I (1375–1360) to Ninurta-nâdin-šumi (1133–1127), are all known (Joannès: 2001, 164).

²⁰ From Year 1 of Išme-Dagan I (1679–1670), in 1679 BCE, to year 12 of Shalmaneser I (1271–1242), in 1259 BCE, there are 421 solar years (= 1679 - 1259 + 1) or **153.767 days** (= 421 x 365.24219), there are also 434 eponyms, which correspond to 434 lunar years or **153.794 days** (= 12 x 29.530588 x 434). Between Year 12 of Shalmaneser I, in 1259 BCE, and year 1 of Esarhaddon (681–669), in 680 BCE, there are 578 solar years (= 1259 - 681) or **211.110 days** (= 578 x 365.24219), there are also 580 eponyms, which correspond to 71 lunar years, until year 1 of Ninurta-apil-Ekur (1192–1179), in 1191 BCE, then 509 solar years (= 580 - 71) to year 1 of Esarhaddon, or a total of **211.068 days** (= 71 x 12 x 29.530588 days + 509 x 365.24219 days).

CHRONOLOGY OF KASSITE, SEALAND I AND HITTITE REIGNS OVER THE PERIOD 1750–1350 BCE

Among the 36 Kassite kings (Grayson: 2000, 156-170), only the duration of 13 reigns, from n°5 (Abi-Rattaš) to n°17 (Kurigalzu I), is missing (Brinkman: 1976, 128). The order of succession of the kings is not completely certain between n°4 and n°17 (Pruzinsky: 2009, 42,99-101), it seems appropriate to delete Ušši (n°4) and replace it with Kaštiliašu II and to insert Ur[...]iaš²¹ (n°11) between Burna-Buriaš I and Kaštiliašu III (Mahieu: 2021, 98). Bieke Mahieu proposed to change the order of succession between n°17 and n°36 based on an unverifiable hypothesis which, moreover, contradicts several synchronisms²², but the reigns of Abi-Rattaš (n°5) and Urzigurumaš (n°6) seem to have been around 20 years and those of Kaštiliašu III (n°12) and Ulam-Buriaš (n°13) around 12 years (Mahieu: 2021, 121-123), instead of the average duration of 16 years of the 36 Kassite reigns (16 = 576/26). For example, there are several synchronisms between the Assyrian and Kassite kingships as well as between the Kassite and Babylonian kingships:

- Alliance between Assyrian king Aššur-bêl-nišešu (1411-1403) and Kassite king Kara-indaš.
- Alliance between Assyrian king Puzur-Aššur III (1491-1467) and Kassite king Burna-Buriaš I. This alliance was likely concluded at the beginning of the reign of Puzur-Aššur III (c. 1490 BCE).
- *Ea-gamil, king of the Sealand, fled to Elam. After he had gone, Ulam-Buriaš, brother of Kaštiliašu (III), mustered his army and marched to the Sealand. He was the master of the land* (Grayson: 2000, 156). However, Kassite King Ulam-Buriaš officially became King of Babylon after the resettlement of Babylon in 1459 BCE (“Year 41 that Babylon was resettled”).
- A Babylonian chronicle mentions an assault by Kassite troops led by the first Kassite king, Gandaš, in Year 9 of Samsu-iluna (1654-1616) (Goetze: 1964, 97).
- A tablet (VAT 1429) describes the Kassite king Agum II as *bukašu* “Duke” of Babylon, who was the first Kassite king of Babylon (Freu, Mazoyer: 2007, 114) after Samsuditana's death in 1499 BCE.
- Evidence of Kaštiliašu's kingship is somewhat circumstantial. He may be the person indicated on line 21' of the SKL and is preceded by a lacuna (Ur[...]iaš ?) and superseded by a poorly preserved name which is not thought to be Ulam-Buriaš. Two passages in the Chronicle of Early Kings mention Kaštiliašu (III): “Ulam-Buriaš, brother of Kaštiliašu, the Kassite” and “Agum, the son of Kaštiliašu”.

Putting all these synchronisms (highlighted in grey) in parallel shows that Abi-Rattaš, the 5th Kassite king, was a contemporary of the 54th Assyrian king, Šû-Ninûa (1582-1568), which makes it possible to calculate the average duration of the 13 Kassite kings between Abi-Rattaš and Kadašman-Enlil I (1375-1360), this average duration being 16 years = (1583 - 1375)/13. This average duration of 16 years is in perfect agreement with that of the 36 Kassite reigns (16 = 576/36).

TABLE 16

| n° | KASSITE KING | reign | # | BABYLONIAN | reign | # | ASSYRIAN | reign |
|----|----------------|---------------|------|----------------------|-------------------|----|---------------------|-------------------|
| | | | | Sâbium | 1749-1735 | 14 | Naram-Sîn | 1774-1722 |
| | | | | Apil-Sîn | 1735-1717 | 18 | Ērišu II | 1722-1712 |
| | | | | Sîn-muballiṭ | 1717-1697 | 20 | Šamšî-Adad I (n°39) | 1712 - |
| | | | | Hammurabi | 1697- 1680 | 17 | | -1680 |
| | | | | | 1680 - | 26 | Išme-Dagan I | 1680-1670 |
| | | | | | -1654 | | Bêlu-bâni | 1664-1654 |
| 1 | Gandaš | 1661 - | 26 | Samsu-iluna | 1654-1645 | 9 | Libbaya | 1654 - |
| | | -1635 | | | 1645 - | 29 | | -1638 |
| 2 | Agum I | 1635 - | 22 | | -1616 | | Šarma-Adad I | 1638-1626 |
| | | -1613 | | | | | Puzur-Sîn | 1626-1615 |
| 3 | Kaštiliašu I | 1613-1591 | 22 | Abi-ešuḥ | 1616-1588 | 28 | Bazaya | 1615-1588 |
| 4 | Kaštiliašu II | 1591-1583 | 8 | Ammiditana | 1588 - | 37 | Lullaya | 1588-1582 |
| 5 | Abi-Rattaš | 1583 - | [20] | | | | Šû-Ninûa (n°54) | 1582 -1568 |
| | | -1563 | | | | | Šarma-Adad II | 1568-1565 |
| 6 | Urzigurumaš | 1563-1543 | [20] | | -1551 | | Ērišu III | 1565-1553 |
| 7 | Ḫurbaḥ | 1543 - | [16] | Ammišaduqa | 1551 - | 21 | Šamšî-Adad II | 1553-1547 |
| | | -1527 | | | -1530 | | Išme-Dagan II | 1547-1531 |
| 8 | Šipta-ulzi | 1527-1511 | [16] | Samsuditana | 1530 - | 31 | Šamšî-Adad III | 1531-1516 |
| 9 | Agum II | 1511-1495 | [16] | | -1499 | | Aššur-nêrârî I | 1516-1491 |
| 10 | Burna-Buriaš I | 1495-1479 | [16] | <i>Resettling of</i> | 1499 - | 41 | Puzur-Aššur III | 1491 - |

²¹ The exact position of King Ur[...]iaš (1479-1463), however, remains hypothetical

²² For example, she places King Nazi-Bugaš (1333-1333) in 18th position, among the 36 reigns (instead of 21st position), with a reign of about 2 years, which contradicts the king lists (Joannès: 2001, 164). Similarly, she attributes a reign of about 30 years to Kadašman-Sah and places him in 15th position, but this king does not appear in the king lists. The only evidence of his existence are tablets that are dated to the reign of 'Agum and Kadašman-Sah', suggesting that he was a king, and that there was some form of co-rulership. It is possible that he was a transitional ruler with only local power (Beaulieu: 2018, 131-132).

| | | | | | | | | | |
|----|------------------|-----------|------|-------------|-----------|--|------------------------|--|-----------|
| 11 | Ur[...]iaš | 1479-1463 | [16] | Babylon | -1462 | | | | -1467 |
| 12 | Kaštiliašu III | 1463-1451 | [12] | Years 38-41 | 1462-1459 | | Enlil-nâšir I (n°62) | | 1467-1455 |
| 13 | Ulam-Buriaš | 1451 - | [12] | | | | Nûr-ili | | 1455-1443 |
| | | -1439 | | | | | Aššur-šadûni | | 1443-1443 |
| | | | | | | | Aššur-rabi I | | 1443-1433 |
| 14 | Agum III | 1439-1423 | [16] | | | | Aššur-nâdin-aḫḫe I | | 1433-1424 |
| 15 | Kadašman-Harbe I | 1423 - | [16] | | | | Enlil-našir II | | 1424-1418 |
| | | -1407 | | | | | Aššur-nêrârî II | | 1418-1411 |
| 16 | Kara-indaš | 1407 - | [16] | | | | Aššur-bêl-nišešu | | 1411-1403 |
| | | -1391 | | | | | Aššur-rê'im-nišešu | | 1403-1395 |
| 17 | Kurigalzu I | 1391 - | [16] | | | | Aššur-nâdin-aḫḫe II | | 1395-1385 |
| | | -1375 | | | | | Erîba-Adad I (n°72) | | 1385 - |
| 18 | Kadašman-Enlil I | 1375-1360 | 15 | | | | | | -1358 |
| 19 | Burna-Buriaš II | 1360-1333 | 27 | | | | Aššur-uballiṭ I (n°73) | | 1358 - |
| 20 | Kara-ḫardaš | 1333-1333 | 0 | | | | | | |
| 21 | Nazi-Bugaš | 1333-1333 | 0 | | | | | | -1323 |
| 22 | Kurigalzu II | 1333-1308 | 25 | | | | Enlil-nêrârî (n°74) | | 1323-1313 |

The synchronism between Year 9 of Samsu-iluna (1654–1616), in 1645 BCE, and Gandaš's reign (1661-1635) is verified. The Kassite chronology is also verified by synchronisms with the Sealand chronology, which is itself anchored on several synchronisms with the Babylonian chronology (Grayson: 2000, 156). The chronology of the 11 kings of Sealand Dynasty has several unresolved issues, but all synchronisms are in accordance with the “Ultra Low” chronology (Boivin: 2018, 72-85). Bieke Mahieu solved all the difficulties of the chronology of the kings of the Sealand by assuming that this dynasty which lasted 368 years was divided into two parallel dynasties of 184 years (= 368/2). The regnal years presented below are those commonly proposed for the Sealand I, except for Damiq-ilišu II, who is given '39' instead of 16, 26, 36, or 46 years, in order to make the total duration of this dynasty 184 years (1648-1464). That Babylon I ends 35 years before the Sealand I does, is suggested by the era of the resettlement of Babylon. This era likely begins at the conquest of Babylon (in 1499 BCE) and is attested from year 36 until year 41 (1463-1459). The first attestation, in year 36, points to a time span of 35 years (from year 1 until year 36), i.e. a period which lasts as long as the 28+7 and 26+9 years of the late Sealand I. If these periods correspond, then the era was applied for the first time at the end of the Sealand I (when the 28+7 = 26+9 years end), and Babylon was conquered 35 years earlier (when the era begins in 1499 BCE = Year 1), i.e. at the end of the reigns of Gulkišar and Pešgaldarameš. In the Epic of Gulkišar, Gulkišar is said to have campaigned against Samsuditana (1530-1499), the last king of Babylon I. This campaign might have brought both Gulkišar's and Samsuditana's reigns to an end: in the present reconstruction, Babylon I ends at the same time as Gulkišar's reign (BM 120960). In addition to this synchronism between Gulkišar and Samsuditana, two more synchronisms exist between the Sealand I and Babylon I: Ili-ma-ilu is contemporary with Samsuiluna (1654-1616) and Abi-ešuh (1616-1588); in his regnal year 37 (1551 BCE), Ammiditana “destroyed the wall of Udinim which (the people/troops of) Damiq-ilišu (II) had built” (Mahieu: 2022, 131-135). Finally, Ea-gamil, the ultimate king of the dynasty, fled to Elam ahead of an invading horde led by Kassite chief Ulam-Buriaš, brother of the king of Babylon Kaštiliašu III, who conquered the Sealand, incorporated it into Babylonia and “made himself master of the land”. Agum III, successor to Ulam-Buriaš, is also described as attacking Sealand and destroying a temple in “Dūr-Enlil” (Grayson: 2000, 156). As the resettlement of Babylon ended in its year 36 (1464 BCE), which corresponds to the beginning of the reign of Kaštiliašu III (1463-1451), it seems logical to attribute to him the end of the short reign of Ea-gamil (1473-1464).

TABLE 17

| BABYLONIAN | reign | # | ISIN I | reign | # | | | |
|------------------------------|-----------|----|----------------|-----------|------|---------------|-----------|----|
| Apil-Sîn | 1735-1717 | 18 | Sîn-māgir | 1731-1720 | 11 | | | |
| Sîn-muballiṭ | 1717-1697 | 20 | Damiq-ilišu I | 1720-1697 | 23 | | | |
| Hammurabi | 1697-1654 | 43 | | | | | | |
| Samsu-iluna | 1654 - | 38 | SEALAND I | reign | # | SEALAND IBIS | reign | # |
| | -1616 | | Ilu-ma-ilu | 1648 - | 60 | Itti-ili-nibi | 1648 - | 55 |
| Abi-ešuh | 1616-1588 | 28 | | -1588 | | | -1593 | |
| Ammiditana | 1588 - | 37 | Damiq-ilišu II | 1588 - | '39' | Iškibal | 1593-1578 | 15 |
| | -1551 | | | -1549 | | Šušši | 1578-1554 | 24 |
| Ammišaduqa | 1551-1530 | 21 | Pešgaldarameš | 1549 - | 50 | Gulkišar | 1554 - | 55 |
| Samsuditana | 1530-1499 | 31 | | -1499 | | | -1499 | |
| <i>Resettling of Babylon</i> | 1499 - | | Ayadaragalama | 1499-1471 | 28 | Akurduana | 1499-1473 | 26 |
| Year 36 | -1464 | | Melamkura | 1471-1464 | 7 | Ea-gamil | 1473-1464 | 9 |
| Years 37-41 | 1463-1459 | | | | | (in Elam) | | |

The synchronisms of the reigns with the Babylonian kings, as well as the number of years of reign (#) that are known (Boivin: 2018, 74-75, 241-250), make it possible to specify the duration of the Kassite reigns (figures in brackets). The chronology of the Isin I dynasty is based on the lengths of the reigns (#) combined with the synchronisms²³ with the Larsa dynasty (Pruzinsky: 2009, 194–198).

TABLE 18

| (GUTIUM) | reign | # | BABYLONIAN | reign | # | | | |
|----------------------|--------------|----------|---------------|------------------|----|----------------|--------------|------|
| (vassal of ELAM) | 2024 - | | Ur-Namma | 2020-2002 | 18 | | | |
| | | | Šulgi | 2002-1954 | 48 | | | |
| | | | Amar-Sîn | 1954-1945 | 9 | | | |
| | | | Šū-Sîn | 1945-1936 | 9 | | | |
| | | | Ibbi-Sîn | 1936 - | 24 | ISIN I | reign | # |
| | -1912 | | | -1912 | | Išbi-Erra | 1923-1890 | 33 |
| | | | | | | Šū-ilīšu | 1890-1880 | 10 |
| | | | | | | Iddin-Dagān | 1880-1859 | 21 |
| | | | | | | Išme-Dagān | 1859-1840 | 19 |
| | | | | | | Lipit-Eštar | 1840-1829 | 11 |
| | | | | | | Ur-Ninurta | 1829-1801 | 28 |
| | | | Sumu-abum | 1799-1785 | 14 | Būr-Sîn | 1801-1779 | 22 |
| | | | Sumu-la-Il | 1785 - | 36 | Lipit-Enlil | 1779-1774 | 5 |
| | | | | -1749 | | Erra-imittī | 1774-1766 | 8 |
| | | | Sābium | 1749 - | 14 | Enlil-Bāni | 1766-1742 | 24 |
| | | | | -1735 | | Zambīya | 1742-1739 | 3 |
| | | | Apil-Sîn | 1735-1717 | 18 | Itēr-pīša | 1739-1735 | 4 |
| | | | Sîn-muballit | 1717-1697 | 20 | Urdukuga | 1735-1731 | 4 |
| | | | | | | Sîn-māgir | 1731-1720 | 11 |
| | | | | | | Damiq-ilišu I | 1720-1697 | 23 |
| KASSITE | reign | # | Hammurabi | 1697 - | 43 | | | |
| 1 Gandaš | 1661 - | 26 | | -1654 | | SEALAND I | reign | # |
| | -1635 | | Samsu-iluna | 1654 - | 38 | Ilu-ma-ilu | 1648 - | 60 |
| 2 Agum I | 1635-1613 | 22 | | -1616 | | | -1588 | |
| 3 Kaštiliašu I | 1613-1591 | 22 | Abi-ešuḥ | 1616-1588 | 28 | | | |
| 4 Kaštiliašu II | 1591-1583 | 8 | Ammiditana | 1588 - | 37 | Damiq-ilišu II | 1588 - | [39] |
| 5 Abi-Rattaš | 1583-1563 | [20] | | | | | -1549 | |
| 6 Urzigurumaš | 1563 - | [20] | | -1551 | | | | |
| | -1543 | | Ammišaduqa | 1551 - | 21 | Pešgaldarameš | 1549 - | 50 |
| 7 Hurbaḥ | 1543-1527 | [16] | | -1530 | | | | |
| 8 Šipta-ulzi | 1527-1511 | [16] | Samsuditana | 1530 - | 31 | SEALAND IBIS | -1499 | |
| 9 Agum II | 1511-1495 | [16] | | -1499 | | | | |
| 10 Burna-Buriaš I | 1495-1479 | [16] | Resettling of | 1499 - | | Akurduana | 1499-1473 | 26 |
| 11 Ur[...]jaš | 1479 - | [16] | Babylon | | | Ea-gamil | 1473 - | 9 |
| | -1463 | | Year 36 | -1464 | | | -1464 | |
| 12 Kaštiliašu III | 1463-1451 | [12] | Years 37-41 | 1463-1459 | | | | |
| 13 Ulam-Buriaš | 1451-1439 | [12] | | | | | | |
| 14 Agum III | 1439-1423 | [16] | | | | | | |
| 15 Kadašman-Harbe I | 1423-1407 | [16] | | | | | | |
| 16 Kara-indaš | 1407-1391 | [16] | | | | | | |
| 17 Kurigalzu I | 1391-1375 | [16] | | | | | | |
| 18 Kadašman-Enlil I | 1375-1360 | 15 | | | | | | |
| 19 Burna-Buriaš II | 1360-1333 | 27 | | | | | | |
| 20 Kara-ḥardaš | 1333-1333 | 0 | | | | | | |
| 21 Nazi-Bugaš | 1333-1333 | 0 | | | | | | |
| 22 Kurigalzu II | 1333-1308 | 25 | | | | | | |
| 23 Nazi-Maruttaš | 1308-1282 | 26 | | | | | | |
| 24 Kadašman-Turgu | 1282-1264 | 18 | | | | | | |
| 25 Kadašman-Enlil II | 1264-1255 | 9 | | | | | | |

However, most Hittitologists reject this chronology because they consider it to be about a century too short compared to their own (Freu: 2008, 5-8) and because there would have been “too many” kings of Hana during the period 1600-1500 BCE called « Dark Ages » (Freu, Mazoyer: 2007, 111-117). The traditional chronology of the 29 Hittite kings is divided into three periods: Old Kingdom (n°1 to n°9); Middle Kingdom

²³ Only 18 year-names are attested for Išme-Dagān and only 3 year-names are known for Itēr-pīša from the Ur-Isin King List. However the following synchronisms, between the Isin I Dynasty and the Larsa Dynasty, confirm the number of years of reign: Išbi-Erra Y. 1 = Naplānum Y. 9; Lipit-Eštar Y. 11 = Gungunum Y. 9 = Ur-Ninurta Y. 0; Zambīya Y. 1 = Sîn-iqīšam Y. 5.

(n°10 to n°20); New Kingdom (n°21 to n°29), which are preceded by the Hattian kings (pre-Hittites). It is interesting to note that the carbon-14 dating of the strata corresponding to the period of the Old Hittite Kingdom gives a date of 1600-1500 BCE (Gorny: 2006-2007, 18-33) instead of 1670-1530 proposed by Freu. All specialists agree that the origins of Hittite history are still full of darkness and many uncertainties remain (Margueron, Pfrisch: 2012, 212). According to a well-known tradition, Naram-Sîn of Akkad (2163-2126) marched against a coalition of 17 kings including Pamba king of Hatti, and Zipani king of Kanesh. The triple synchronism between kings Agum II (Kassite), Kirta (Mitannian) and Ammuna (Hittite) requires the setting of the reign of those kings over a period covering the reign of Agum II (1503-1487). Contrary to what Freu, an eminent Hittitologist, believed, recent archaeological discoveries have shown that the synchronisms with the Kassite kings fit only with the Ultra-Low chronology (Podany: 2014, 51-73). The oldest Hattian king²⁴, Ḫurmeli, who appears in the Assyrian documents of Mari was, therefore, a contemporary of the oldest list of eponyms MEC A (1775-1745). Several synchronisms with the Babylonian kings make it possible to fix the Hittite chronology:

- Anitta's reign was interrupted by an attack in the 23rd year of Samsu-iluna (Veenhof, Eidem: 2008, 143-146), which is dated 1631 BCE.
- Yadiḫ-Abu I, overseer of Hana (*ugula Ḫana*), had fought Samsu-iluna in the latter's 27th year of Samsu-iluna's reign (Charpin: 2011, 41-59), in 1627 BCE. Afterwards the kingdom of Hana was under the influence of Kassites since the following king of Terqa was Kaštiliaš I (1613-1591).
- Given that there was a period of about 120 years between the beginning of Ḫurmeli's reign c. 1750 BCE and the end of Anitta's reign c. 1630 BCE, the average duration of the reigns must have been around 20 years (= 120/6).
- The Hurrians were enemies of the Hittite kings Ḫattušili I (1534-1519) and Muršili I (1519-1499), and their strength is shown by records of their conquest of much of the Hittite kingdom in the time of Ḫattušili I who seems to have retaliated late in his career, attacking Aleppo (Halab). However, Kuwari, a king of Hana, managed to defeat an attack led by the warriors of Hatti (Ḫatte). Conceivably, the Hittite expedition of Muršili I arose from an alliance between the Hittites and the Kassites, the incentive for the Hittites being the rich spoils of Babylon, and for the Kassites the prospect of creating a new ruling dynasty in Babylonia (Bryce: 2005, 99-100).
- The average duration of the Hittite reigns over the period 1500-1450 (kings n°5 to n°10) must have been low because this period was very troubled (wars and murders).
- The Hittite kings had relations with the Assyrian and Babylonian kings, but also with the Hanaean and Mitannian kings, consequently it is interesting to add the few additional synchronisms with these reigns. Among Mitannian kings, Šutarna I's father was Kirta (Freu: 2003, 37) and the king before Šutarna I was Sausadatra (Podany: 2014, 56-57). The final attack on Mitanni, in 1264 BCE, coincided with the disappearance of the Hanaean kingdom (Freu: 2003, 177-198).
- Hittites from the period 2000-1700 BCE are known mainly through letters of Assyrian merchants (written in Paleo-Assyrian). These merchants lived temporarily in towns near the road linking Kanesh to Assyria but traded with the inhabitants in the south of Anatolia (Joannès: 2001, 440-441) where there were major Hittite commercial counters such as those in Mama, Zalpa and Urshum, three cities near Carchemish. The two most important city-states of this time in the Land of Hatti were Kaniš (former Nesa) and Mama (Michel: 2001, 105, 117-130). The Hattians were an ancient people who inhabited the land of Hatti (Bryce: 2005, 11-20). Consequently, the use of the word "Proto-Hittite" to refer to Hattians is inaccurate (Freu, Mazoyer, Klock-Fontanille: 2007, 15-16). According to later Hittite documents, Sargon of Akkad (2243-2187) had fought with the Luwian king Nurdaggal of Burushanda.

²⁴ The existence of the Hittite homeland is thus very old, but this Hittite kingdom of Pamba is doubly paradoxical: it only covered a small part of Hatti (a region around the city of Hattusa) and the Hittite language was not used. They spoke Nesite (or Neseli). The group was documented at least as early as the empire of Sargon of Akkad (2243-2187), until it was gradually absorbed c. 2000-1700 BCE by the Indo-European Hittites, who became identified with the "land of Hatti". The oldest name for central Anatolia, "land of Hatti", was found on Mesopotamian cuneiform tablets from the period of Sargon the Great of Akkad: on those tablets Assyrian-Akkadian traders implored King Sargon for help. This appellation continued to exist for about 1500 years until 630 BCE, as stated in Assyrian chronicles. The Hattians spoke Hattic, a non-Indo-European language of uncertain affiliation. The few texts that have survived are predominantly religious or cultic in character. Hittite, also called Nesite because it was spoken in Nesa/Kanesh, is an Indo-European language, linguistically distinct from the Hattians. The Hittites continued to use the term Land of Hatti for their new kingdom and they always called themselves "people of the land of Hatti (Heth)". The Hattians eventually merged with people who spoke Indo-European languages such as Hittite, Luwian and Palaic and were organized in feudal city-states and small kingdoms or principalities (perhaps up to six). These cities were well organized and ruled as theocratic principalities. Nesite was the official language of the Hittite kingdom and was mainly spoken by its ruling class. Primarily for this reason Nesite (Hittite) continued to be used as the official chancellery language in Hattusa when the Hittite kingdom was established, and as the language of written communications between the royal court and the various peoples of Anatolia, particularly in the west. Those who occupied the throne frequently proclaimed their genealogical links with their earliest known predecessors (as in Genesis 23:2-10). These links helped substantiate their claims to the throne.

TABLE 19

| n° | HATTI | reign | # | HANA (MARI) | reign | # | ASSYRIA | reign | # |
|----|----------------|-----------|------|---------------------|-----------|------|-----------------|-----------|----|
| 1 | Ḫurmeli | 1750-1730 | [20] | ? | | | (MEC A) | 1775-1745 | |
| 2 | Ḫarpatiwa | 1730-1710 | [20] | Yaggid-Lîm | 1738-1716 | 22 | Ērišu II (n°38) | 1722-1712 | 10 |
| 3 | Ḫinar | 1710 - | [20] | Yahdun-Lîm | 1716-1699 | 17 | Šamšî-Adad I | 1712 - | 33 |
| | | -1690 | | Sumu-Yamam | 1699-1697 | 2 | | | |
| | | | | Samsî-Addu | 1697-1687 | 10 | | | |
| 4 | Waršama | 1690 - | [20] | Yasmah-Addu | 1687-1680 | 7 | | -1680 | |
| | | -1670 | | Zimrî-Lîm I | 1680-1667 | 13 | Išme-Dagan I | 1680-1670 | 10 |
| 5 | Pithana | 1670-1650 | [20] | Yâpaḫ-Šumu-Abu | 1667-1654 | 13 | BABYLONIA | reign | |
| 6 | Anitta | 1650 - | [20] | Iši-Šumu-Abu | 1654-1641 | 13 | Samsu-iluna | 1654 - | 38 |
| | | -1630 | | Yadiḫ-Abu | 1641-1626 | 15 | | | |
| 7 | Zûzu | 1630-1610 | [20] | Muti-Huršana ? | 1626 - | 13 | | | |
| | HITTITE | reign | # | | -1613 | | | -1616 | |
| 1 | Ḫuzziya I | 1605-1585 | [20] | Kaštiliašu (I) | 1613-1591 | 22 | Abi-ešuḫ | 1616-1588 | 28 |
| | Tudḫaliya? | 1585-1565 | [20] | Sunuḫru-Ammu | 1591-1575 | [16] | Ammiditana | 1588 - | 37 |
| | PU-Šarruma? | 1565-1550 | [15] | Ammi-madar | 1575-1559 | [16] | | -1551 | |
| 2 | Labarna | 1550 - | [16] | Idi-Abu | 1559-1543 | [16] | Ammišaduqa | 1551 - | 21 |
| | | -1534 | | Zimri-Lim II | 1543-1527 | [16] | | -1530 | |
| 3 | Ḫattušili I | 1534-1519 | [15] | Kasapan | 1527-1511 | [16] | Samsuditana | 1530 - | 31 |
| 4 | Muršili I | 1519-1499 | [20] | Kuari | 1511 - | [16] | | -1499 | |
| 5 | Ḫantili I | 1499-1494 | [5] | | -1495 | | Agum II | 1511-1495 | 16 |
| 6 | Zidanta I | 1494-1494 | <1 | Hanaya / Ya'usa | 1495 - | [15] | Burna-Buriaš I | 1495 - | 16 |
| 7 | Ammuna | 1494-1484 | [10] | MITANNIAN | -1485 | | | | |
| 8 | Ḫuzziya II | 1484-1484 | <1 | Sinia/ Šutarna I | 1485 - | | | | |
| | | | | (Sa'itarna) | -1480 | | | -1479 | |
| 9 | Telipinu | 1484-1479 | [5] | Qiš-Addu / | 1480 - | [25] | Ur[...]iaš | 1479 - | 16 |
| 10 | Alluwamna | 1479-1474 | [5] | Barattarna I | -1475 | | | | |
| 11 | Ḫantili II | 1474-1469 | [5] | | | | | | |
| 12 | Taḫurwaili I | 1469-1469 | <1 | | | | | | |
| 13 | Zidanza (II) | 1469-1462 | [7] | | | | | -1463 | |
| 14 | Ḫuzziya III | 1462-1455 | [7] | | | | Kaštiliašu III | 1463 - | 12 |
| 15 | Muwatalli I | 1455-1448 | [7] | | -1455 | | | -1451 | |
| 16 | Tudḫaliya I | 1448-1428 | [20] | Iddin-Kakka | 1455-1430 | [25] | Ulam-Buriaš | 1451-1439 | 12 |
| 17 | Ḫattušili II | 1428-1413 | [15] | Išar-Lim | 1430 - | [25] | Agum III | 1439-1423 | 16 |
| 18 | Tudḫaliya II | 1413-1383 | [30] | | -1405 | | Kadašman- | 1423-1407 | 16 |
| 19 | Arnuwanda I | 1393-1368 | [25] | Iggid-Lim | 1405-1380 | [25] | Harbe I | | |
| 20 | Tudḫaliya III | 1368-1353 | [15] | Išiḫ-Dagan | 1380-1355 | [25] | | | |
| 21 | Šuppiluliuma I | 1353-1322 | 31 | Ahuni | 1355-1330 | [25] | | | |
| 22 | Arnuwanda II | 1322-1322 | <1 | Hammurapi | 1330 - | [25] | | | |
| 23 | Muršili II | 1322-1295 | 27 | | -1305 | | | | |
| 24 | Muwatalli II | 1295-1275 | 20 | Pagiru | 1305-1280 | [25] | Adad-nêrârî I | 1302 - | 31 |
| 25 | Urhi-Teshub | 1275-1268 | 7 | Mitanni attacked | 1280 - | 15 | | -1271 | |
| 26 | Ḫattušili III | 1268-1241 | 27 | Collapse of Mitanni | -1265 | | Shalmaneser I | 1271-1242 | 29 |
| 27 | Tudḫaliya IV | 1241-1209 | 32 | Tukultî-Ninurta I | | | | 1242-1206 | 36 |

REIGN OF HAMMURABI ACCORDING TO ASSYRIAN KING LIST (AKL)

The Assyrian King List (AKL) allows dating the reign of Šamšî-Adad I (1712-1680). The synchronism with Hammurabi (1697-1654) allows dating the reigns of Šulgi, Ibbi-Sîn and Ammišaduqa, three reigns (highlighted in sky blue) which are based on astronomical phenomena. According to the Babylonian King List C (BKL C), Marduk-kabit-aḫḫešu, the first king of the Second Dynasty of Isin had a reign of 18 years (1159-1141), as he started to rule from Zababa-šuma-iddina (Chen: 2020, 76,202-206).

TABLE 20

| n° | ASSYRIAN KING | # | # | Reign | n° | BABYLONIAN KING | # | Reign |
|----|--------------------|---|----|-----------|----|--------------------|----|-----------|
| 23 | Yakmeni | | 14 | 2010-1996 | 1 | Ur-Namma (UR III) | 18 | 2020-2002 |
| 24 | Yazkur-El | | 14 | 1996-1982 | 2 | Sulgi | 48 | 2002 - |
| 25 | Ila-kakkabû | | 14 | 1982-1968 | | | | -1954 |
| 26 | Aminum | | 14 | 1968-1954 | | | | |
| 27 | Sulili (= Zariqum) | | 14 | 1954-1940 | 3 | Amar-Sîn | 9 | 1954-1945 |
| 28 | Kikkia | | 14 | 1940-1927 | 4 | Šu-Sîn | 9 | 1945-1936 |
| 29 | Akia | | 14 | 1927-1913 | 1 | 5 Ibbi-Sîn | 24 | 1936-1912 |
| 30 | Puzur-Aššur I | | 14 | 1913-1900 | | Išbi-Erra (ISIN I) | 33 | 1923 - |
| 31 | Šalim-ahum | | 14 | 1900-1886 | | | | -1890 |

| | | | | | | | | | |
|----|---------------------|-----|----|-----------------|----|----|------------------------|----|-----------|
| 32 | Ilu-šumma | | 14 | 1886-1873 | 2 | | Šû-ilîšu | 10 | 1890-1880 |
| 33 | Erišu I | 40 | 40 | 1873 - -1834 | 3 | | Iddin-Dagân | 21 | 1880-1859 |
| | | | | | 4 | | Išme-Dagân | 19 | 1859-1840 |
| 34 | Ikunum | 159 | 14 | 1834-1821 | 5 | | Lipit-Eštar | 11 | 1840-1829 |
| 35 | Sargon I | | 40 | 1821 - -1782 | 6 | | Ur-Ninurta | 28 | 1829-1801 |
| | | | | | 7 | 1 | Sumu-abum | 14 | 1799-1785 |
| 36 | Puzur-Aššur II | | 8 | 1782-1774 | 8 | 2 | Sumu-la-II | 36 | 1785 - |
| 37 | Naram-Sîn | | 54 | 1774 - | 9 | | | | |
| | | | | | 10 | | | | -1749 |
| | | | | | 11 | 3 | Sâbium | 14 | 1749 - |
| | | | | | 12 | | | | |
| | | | | | 13 | | | | -1735 |
| 38 | Erišu II | | 10 | 1722-1712 | 14 | 4 | Apil-Sîn | 18 | 1735-1717 |
| 39 | Šamšî-Adad I | | 33 | 1712 - -1680 | 15 | 5 | Sîn-muballiṭ | 20 | 1717-1697 |
| | | | | | 6 | | Hammurabi | 17 | 1697-1680 |
| 40 | Išme-Dagan I | 434 | 11 | 1680-1670 | | | | 26 | 1680 - |
| 41 | Aššur-dugul | | 6 | 1670-1664 | | | | | |
| 42 | Aššur-apla-idi | | 0 | 1664-1664 | | | | | |
| 43 | Nâšir-Sîn | | 0 | 1664-1664 | | | | | |
| 44 | Sîn-namir | | 0 | 1664-1664 | | | | | |
| 45 | Ipqi-Ištar | | 0 | 1664-1664 | | | | | |
| 46 | Adad-šalûlu | | 0 | 1664-1664 | | | | | |
| 47 | Adasi | | 0 | 1664-1664 | | | | | |
| 48 | Bêlu-bâni | | 10 | 1664-1654 | | | | | -1654 |
| 49 | Libbaya | | 17 | 1654-1638 | 1 | 7 | Samsu-iluna | 38 | 1654 - |
| 50 | Šarma-Adad I | | 12 | 1638-1626 | 2 | | | | |
| 51 | Puzur-Sîn | | 12 | 1626-1615 | | | | | -1616 |
| 52 | Bazaya | | 28 | 1615-1588 | 3 | 8 | Abi-ešuḥ | 28 | 1616-1588 |
| 53 | Lullaya | | 6 | 1588-1582 | 4 | 9 | Ammiditana | 37 | 1588 - |
| 54 | Šû-Ninûa | | 14 | 1582-1568 | 5 | | | | |
| 55 | Šarma-Adad II | | 3 | 1568-1565 | 6 | | | | |
| 56 | Erišu III | | 13 | 1565-1553 | | | | | -1551 |
| 57 | Šamšî-Adad II | | 6 | 1553-1547 | 7 | 10 | Ammišaduqa | 21 | 1551 - |
| 58 | Išme-Dagan II | | 16 | 1547-1531 | | | | | -1530 |
| 59 | Šamšî-Adad III | | 16 | 1531-1516 | 8 | 11 | Samsuditana | 31 | 1530 - |
| 60 | Aššur-nêrârî I | | 26 | 1516-1491 | 9 | | <i>Fall of Babylon</i> | | -1499 |
| 61 | Puzur-Aššur III | | 24 | 1491 - -1467 | | | Agum II (KASSITE) | 16 | 1511-1495 |
| | | | | | 10 | | Burna-Buriaš I | 16 | 1495-1479 |
| 62 | Enlil-nâšir I | | 13 | 1467-1455 | 11 | | Ur[...]iaš | 16 | 1479-1463 |
| 63 | Nûr-ili | | 12 | 1455-1443 | 12 | | Kaštiliašu III | 12 | 1463-1451 |
| 64 | Aššur-šadûni | | 0 | 1443-1443 | 13 | | Ulam-Buriaš | 12 | 1451-1439 |
| 65 | Aššur-rabi I | | 10 | 1443-1433 | 14 | | Agum III | 16 | 1439 - |
| 66 | Aššur-nâdin-aḥḥe I | | 10 | 1433-1424 | | | | | -1423 |
| 67 | Enlil-našir II | | 6 | 1424-1418 | 15 | | Kadašman-Harbe I | 16 | 1423 - |
| 68 | Aššur-nêrârî II | | 7 | 1418-1411 | | | | | -1407 |
| 69 | Aššur-bêl-nišešu | | 9 | 1411-1403 | 16 | | Kara-indaš | 16 | 1407 - |
| 70 | Aššur-rê'im-nišešu | | 8 | 1403-1395 | | | | | -1391 |
| 71 | Aššur-nâdin-aḥḥe II | | 10 | 1395-1385 | 17 | | Kurigalzu I | 16 | 1391 - |
| 72 | Erîba-Adad I | | 27 | 1385 - -1358 | | | | | -1375 |
| | | | | | 18 | | Kadašman-Enlil I | 15 | 1375-1360 |
| 73 | Aššur-uballiṭ I | | 36 | 1358 - | 19 | | Burna-Buriaš II | 27 | 1360-1333 |
| | | | | | 20 | | Kara-ḥardaš | 0 | 1333-1333 |
| | | | | | 21 | | Nazi-Bugaš | 0 | 1333-1333 |
| 74 | Enlil-nêrârî | | 10 | 1323-1313 | 22 | | Kurigalzu II | 25 | 1333 - |
| 75 | Arik-dên-ili | | 12 | 1313-1302 | | | | | -1308 |
| 76 | Adad-nêrârî I | | 32 | 1302-1271 | 23 | | Nazi-Maruttaš | 26 | 1308-1282 |
| 77 | Šalmaneser I | | 12 | 1271-1259 | 24 | | Kadašman-Turgu | 18 | 1282-1264 |
| | | 580 | 18 | 1259 - -1242 | 25 | | Kadašman-Enlil II | 9 | 1264-1255 |
| | | | | | 26 | | Kudur-Enlil | 9 | 1255-1246 |
| 78 | Tukultî-Ninurta I | | 37 | 1242 - | 27 | | Šagarakti-šuriaš | 13 | 1246-1233 |
| | | | | | 28 | | Kaštiliašu IV | 8 | 1233-1225 |
| | | | | | 29 | | Enlil-nâdin-šumi | 1 | 1225-1224 |
| | | | | | 30 | | Kadašman-Harbe II | 1 | 1224-1223 |
| | | | | | 31 | | Adad-šuma-iddina | 6 | 1223-1217 |
| | | | | -1206 | | | | | |

| | | | | | | | | | |
|-----|-----------------------|----|-----------|---------|--|---------------------------------|----------------------------|-----------|-----------|
| 79 | Aššur-nâdin-apli | 4 | 1206-1203 | 32 | | Adad-šuma-ušur | 30 | 1217 | - |
| 80 | Aššur-nêrârî III | 6 | 1203-1197 | | | | | | |
| 81 | Enlil-kudurri-ušur | 5 | 1197-1192 | | | | | | -1187 |
| 82 | Ninurta-apil-Ekur | 13 | 1192-1179 | 33 | | Meli-Šipak | 15 | 1187 | - |
| 83 | Aššur-dân I | 46 | 1179 | | | | | | -1172 |
| | | | | 34 | | Marduk-apla-iddina | 13 | 1172-1159 | |
| | | | | 35 | | Zababa-šuma-iddina | 1 | 1159-1158 | |
| | | | | 36 | | Enlil-nâdin-aḫi | 3 | 1158-1155 | |
| | | | | 37 | | Marduk-kabit-aḫḫešu | 18 | 1159-1141 | |
| | | | | 38 | | Itti-Marduk-balaṭu (ISIN II) | 8 | 1141 | - |
| 84 | Ninurta-tukultî-Aššur | 0 | 1133-1133 | | | | | | -1133 |
| 85 | Mutakkil-Nusku | 0 | 1133-1133 | | | | | | -1133 |
| 86 | Aššur-rêš-iši I | 18 | 1133-1115 | 39 | | Ninurta-nâdin-šumi | 6 | 1133-1127 | |
| 87 | Tiglath-pileser I | 39 | 1115 | | | 40 | Nebuchadnezzar I | 22 | 1127-1105 |
| | | | | | | 41 | Enlil-nâdin-apli | 4 | 1105-1101 |
| | | | | | | 42 | Marduk-nâdin-aḫḫê | 18 | 1101-1083 |
| 88 | Ašared-apil-Ekur | 2 | 1076-1074 | | | 43 | Marduk-šapik-zêri | 13 | 1083-1070 |
| 89 | Aššur-bêl-kala | 18 | 1074-1056 | | | 44 | Adad-apla-iddina | 22 | 1070-1048 |
| 90 | Eriša-Adad II | 2 | 1056-1054 | | | 45 | Marduk-aḫḫê-eriba | 1 | 1048-1047 |
| 91 | Šamšî-Adad IV | 4 | 1054-1050 | | | 46 | Marduk-zêr-[...] | 12 | 1047-1035 |
| 92 | Aššurnaširpal I | 19 | 1050-1031 | | | 47 | Nabû-šum-libur | 8 | 1035-1027 |
| 93 | Šalmaneser II | 12 | 1031-1019 | | | 48 | Simbar-šipak | 18 | 1027-1009 |
| 94 | Aššur-nêrârî IV | 6 | 1019-1013 | | | 49 | Ea-mukîn-zêri | 1 | 1009-1008 |
| 95 | Aššur-rabi II | 41 | 1013 | | | 50 | Kaššu-nâdin-ahi | 2 | 1008-1006 |
| | | | | | | 51 | Eulmaš-šakin-šumi | 17 | 1006-989 |
| | | | | | | 52 | Ninurta-kudurri-ušur I | 3 | 989-986 |
| | | | | | | 53 | Širiki-šuqamuna | 1 | 986-985 |
| | | | | | | 54 | Mâr-bîti-apla-ušur | 5 | 985-980 |
| | | | | | | 55 | Nabû-mukîn-apli | 36 | 980 |
| 96 | Aššur-rêš-iši II | 5 | 972-967 | | | | | | -944 |
| 97 | Tiglath-pileser II | 32 | 967 | | | 56 | Ninurta-kudurri-ušur II | 3 | 944-941 |
| | | | | | | 57 | Mâr-bîti-aḫḫê-iddin | 20 | 941-921 |
| | | | | | | 58 | Šamaš-mudammiq | 21 | 921 |
| 98 | Aššur-dân II | 23 | 935-912 | | | | | | -900 |
| 99 | Adad-nêrârî II | 21 | 912-891 | | | | | | -900 |
| 100 | Tukultî-Ninurta II | 7 | 891-884 | | | 59 | Nabû-šum-ukîn I | 12 | 900-888 |
| 101 | Aššurnaširpal II | 25 | 884-859 | | | 60 | Nabû-apla-iddina | 33 | 888-855 |
| 102 | Šalmaneser III | 35 | 859-824 | | | 61 | Marduk-zâkir-šumi I | 36 | 855-819 |
| 103 | Šamšî-Adad V | 13 | 824 | | | 62 | Marduk-balâssu-iqbi | 6 | 819-813 |
| | | | | | | 63 | Bâba-ah-iddina | - | 813-812 |
| 104 | Adad-nêrârî III | 28 | 811 | | | - | no kings | - | 812-801 |
| | | | | 64-68 | | 5 unknown kings | - | | 801-800 |
| | | | | 69 | | Ninurta-apla-[...] | 10 | | 800-790 |
| | | | | 70 | | Marduk-bêl-zêri | 10 | | 790-780 |
| 105 | Šalmaneser IV | 10 | 783-773 | | | 71 | Marduk-apla-ušur | 10 | 780-770 |
| 106 | Aššur-dân III | 18 | 773-755 | | | 72 | Eriša-Marduk | 9 | 770-761 |
| 107 | Aššur-nêrârî V | 10 | 755-745 | | | 73 | Nabû-šum-iškun | 13 | 761-748 |
| 108 | Tiglath-pileser III | 18 | 745 | | | 74 | Nabû-našir | 14 | 748-734 |
| | | | | | | 75 | Nabû-nâdin-zêri | 2 | 734-732 |
| | | | | | | 76 | Nabû-šum-ukîn II | 0 | 732-732 |
| | | | | | | 77 | Nabû-mukîn-zêri | 3 | 732-729 |
| | | | | | | 78 | Pûlu (Tiglath-pileser III) | 2 | 729-727 |
| 109 | Šalmaneser V | 5 | 727-722 | | | 79 | Ulûlaiu (Šalmaneser V) | 5 | 727-722 |
| 110 | Sargon II | 17 | 722 | | | 80 | Merodachbaladan II | 12 | 722-710 |
| | | | | | | 81 | Sargon II | 5 | 710-705 |
| 111 | Sennacherib | 24 | 705 | | | 82 | Sennacherib | 2 | 705-703 |
| | | | | | | 83 | Marduk-zâkir-šumi II | 0 | 703-703 |
| | | | | | | 84 | Bêl-ibni | 3 | 703-700 |
| | | | | | | 85 | Aššur-nâdin-šumi | 6 | 700-694 |
| | | | | | | 86 | Nergal-ušeziḫ | 1 | 694-693 |
| | | | | | | 87 | Mušeziḫ-Marduk | 4 | 693-689 |
| | | | | | | 88 | Sennacherib | 8 | 689-681 |
| | | | | | | | | | -681 |
| 112 | Esarhaddon | 72 | 12 | 681-669 | | 89 | Esarhaddon | 12 | 681-669 |
| 113 | Aššurbanipal | 42 | 669-627 | | | 90 | Šamaš-šum-ukîn | 20 | 668-648 |
| 114 | Aššur-etel-ilâni | 1 | 627-626 | | | 91 | Kandalanu | 22 | 648-626 |

| | | | | | | | |
|------------|------------------|----|----------------|-----------|-------------------|----|----------------|
| 115 | Sin-šar-iškun | 14 | 626-612 | 92 | Nabopolassar | 21 | 626 - |
| 116 | Aššur-uballiṭ II | 3 | 612-609 | | | | -605 |
| | | | | 93 | Nebuchadnezzar II | 43 | 605-562 |
| | | | | 94 | Amel-Marduk | 2 | 562-560 |
| | | | | 95 | Neriglissar | 4 | 560-556 |
| | | | | 96 | Nabonidus | 17 | 556-539 |

The paleo-Assyrian (or Amorite) calendar was lunar while the calendar of Mari was lunisolar like the calendar of Babylon. The day 30 could be 29 or 1 (Sasson: 1984, 246-252). Synchronization among various calendars of the past is made difficult by these changing paradigms (unreported). For instance, on the death of Šamšî-Adad I it is possible to get the following synchronisms among months of several different calendars (Charpin, Ziegler: 2003, 134-176, 260-262): the end of Šamšî-Adad I's reign is dated²⁵ 20 February 1679 BCE because this king died on 14/xii°/33. Consequently, the month VI in Mari coincides with the Assyrian month i* (because months VI to XII are dated “after the eponym Ṭab-šilla-Aššur”)²⁶.

TABLE 21

| | BABYLONIAN | | JULIAN | | MARIOTE | | AMORRITE | PALEO-ASSYRIAN |
|------|------------|----|---------------------------|-------|-----------------------|-------|-----------------|----------------------------|
| X | Tebētu | 1 | January (<i>winter</i>) | xi° | <i>Abum (IV)</i> | xi* | <i>Abum</i> | <i>Ab šarrâni (v*)</i> |
| XI | Šabātu | 2 | February | xii° | <i>Hîbirtum (V)</i> | xii* | <i>Tîrum</i> | <i>Hûbur (vi*)</i> |
| XII | Addâru | 3 | March | i° | <i>Hûbur (Hîlib)</i> | i* | <i>Niqmum</i> | <i>Šip'im (vii*)</i> |
| I | Nisannu | 4 | April (<i>spring</i>) | ii° | <i>Kinûnum (VII)</i> | ii* | <i>Kinûnum</i> | <i>Qarrâtîm (viii*)</i> |
| II | Ayyaru | 5 | May | iii° | <i>Dagan (VIII)</i> | iii* | <i>Tamhîrum</i> | <i>Kanwarta (ix*)</i> |
| III | Simanu | 6 | June | iv° | <i>Lîliatum (IX)</i> | iv* | <i>Nabrûm</i> | <i>Te'inâtîm (x*)</i> |
| IV | Du'ûzu | 7 | July (<i>summer</i>) | v° | <i>Bêlet-bîrî (X)</i> | v* | <i>Mammîtum</i> | <i>Kuzallu (xi*)</i> |
| V | Abu | 8 | August | vi° | <i>Kiskissum (XI)</i> | vi* | <i>Mana</i> | <i>Allanâtîm (xii*)</i> |
| VI | Ulûlû | 9 | September | vii° | <i>Ebûrum (XII)</i> | vii* | <i>Ayyarum</i> | <i>Bêltî-ekallîm (i*)</i> |
| VII | Tašrîtu | 10 | October (<i>autumn</i>) | viii° | <i>Urâḥum (I)</i> | viii* | <i>Niggalum</i> | <i>Ša sarratîm (ii*)</i> |
| VIII | Araḥsamna | 11 | November | ix° | <i>Malkânûm (II)</i> | ix* | <i>Maqrânûm</i> | <i>Narmak Aššur (iii*)</i> |
| IX | Kisilîmu | 12 | December | x° | <i>Laḥḥum (III)</i> | x* | <i>Du'uzum</i> | <i>Maḥḥurîli (iv*)</i> |

The table (above) shows that: 1) the year of the Babylonian calendar was luni-solar and began on the 1st Nisannu; 2) the year of the Mariote calendar was also luni-solar but began on the 1st Urâḥum; 3) the year of the Amorrite calendar was lunar and began on the 1st Niqumum; 4) the year of the paleo-Assyrian calendar was also lunar but began on the 1st Šip'im. The presence or the absence of intercalation further complicates synchronizations among calendars²⁷. Mesopotamian chronologies are anchored by numerous synchronisms (highlighted and framed) and dated by astronomical phenomena. Despite some uncertainties, Hammurabi's reign can be anchored precisely in Šamšî-Adad I's reign (1712–1680). Before King Ninurta-apil-Ekur (1192–1179), Assyrian eponyms started on 1st Šippu and from Ninurta-apil-Ekur they started on 1st Nisannu²⁸.

Δ = year (BCE) – 1088 (for example in 1679 BCE: Δ = 1679 – 1088 = 591)

Julian day = $\Delta \times 365.2422 - [[\Delta \times 1.0307]] \times 354.36 + 13 + \text{Assyrian day}$

[[figure]] = figure without its decimal value. For example [[3.17]] = 3

1 solar year = 365.24219 days; 1 lunar year = 354.36706 (=12 x 29.530588) days

1.0307 = (1 solar year)/(1 lunar year)

Julian day = day ranked inside the Julian year. For example: 3 March = (31) + (28) + 3 = 62

Assyrian day = day ranked inside the Assyrian year: 1 Kalmartu = (29.5) + (29.5) + 1 = 60

For example, if we want to know which day was the 1st Šippu in the year 1679 BCE:

Δ = 1679 – 1088 = 591; $\Delta \times 1.0307$ = 609.14; $[[\Delta \times 1.0307]]$ = 609; Assyrian day = 1.

Julian day = $\Delta \times 365.2422 - [[\Delta \times 1.0307]] \times 354.36 + 13 + \text{Assyrian day}$

Julian day = 52.9 + 13 + 1 = 67 = (31) + (28) + 8 = 8 March (3rd month).

Consequently: 1 Šippu = 8 March in 1679 BCE (-1678*), or 7 March according to astronomy²⁹.

²⁵ An exorcist priest (*wašipum*) is consulted on 11/xii°/33 and the oil for the offering king's burial came on 16/xii°/33. In 1679 BCE, 1st Nisan is dated April 5, 1st Tishri on September 30 and 1st Šip'im March 7. It is interesting to note that the year 33 of Šamšî-Adad I started with a total lunar eclipse (bad omen).

²⁶ The fall of Larsa is dated [1-6]/XII/30 of Hammurabi and matches the [1-6]/VII/60 of Rim-Sîn I, because Zimrî-Lîm congratulated Hammurabi for his having taken Larsa in his letter dated 7/VII/12 (*ARM* XXV 9).

²⁷ For instance, the year 1 of Zimrî-Lîm has an intercalary month (*xii°b*) but other years are strangely irregular: 2:*xii°b*; 5:*ii°b*, *iii°b*, *v°b*; 8:*i°b*; 10:*v°b*; 11:*v°b* (Heimpel: 2003, 54-56). On the other hand, the feast of Ištar seems to be celebrated without intercalation because it is celebrated month *xi* in year 1 of Zimrî-Lîm, month *ix* in years 6-8 and month *viii* in year 12, which implies a lag of about 3 months on 12 years, indicating a lack of intercalation (at least in one of the two calendars).

²⁸ In 1192 BCE the 1st Šippu corresponded exactly to the 1st Nisannu, which prompted King Ninurta-apil-Ekur to start the eponyms on the 1st Nisannu (like the Babylonians) after his coming from Babylon and his conquest of Assyria (Grayson: 2000, 162).

²⁹ <https://promenade.imcce.fr/fr/pages4/441.html> (first astronomical lunar crescent = first day after the new moon).

TABLE 22

| BCE | month | | | Assyrian | [A] | [B] | [C] | [D] | King / eponym | | | | | | | | | |
|------|-------|------|-------|----------|---------------|-----|-----|-----|---------------|---|----|----|----|--------------------------------|---|----|----|---|
| 1680 | 1 | IV | xi° | X | Ab šarrâni | 6 | 32 | 16 | 46 | <i>Adad-bāni</i> | | | | | | | | |
| | 2 | V | xii° | XI | Hubur | | | | | | | | | | | | | |
| | 3 | VI | i° | XII | Šip'im | | | | | | 33 | 17 | 47 | <i>Tab-šilli-Aššur</i> (N°199) | | | | |
| | 4 | VII | ii° | I | Qarrâtîm | | | | | | | | | | | | | |
| | 5 | VIII | iii° | II | Kanwarta | | | | | | | | | | | | | |
| | 6 | IX | iv° | III | Te'inâtîm | | | | | | | | | | | | | |
| | 7 | X | v° | IV | Kuzallu | | | | | | | | | | | | | |
| | 8 | XI | vi° | V | Allanâtîm | | | | | | | | | | | | | |
| | 9 | XII | vii° | VI | Bêltî-ekallim | | | | | | | | | | | | | |
| | 10 | I | viii° | VII | Ša sarratîm | | | | | | | | | | 7 | 18 | 48 | [A] Yasmah-Addu king of Mari [B] Šamšî-Adad I king of Assyria (n°39) [C] Hammurabi king of Babylon [D] Rîm-Sîn I king of Larsa |
| | 11 | II | ix° | VIII | Narmak Aššur | | | | | | | | | | | | | |
| | 12 | III | x° | IX | Maḥḥurili | | | | | | | | | | | | | |
| 1679 | 1 | IV | xi° | X | Ab šarrâni | 0 | 1 | 18 | 48 | <i>after Tab-šilli-Aššur</i> | | | | | | | | |
| | 2 | V | xii° | XI | Hubur | | | | | | | | | | | | | |
| | 3 | VI | i° | XII | Šip'im | | | | | | 0 | 1 | 18 | 48 | | | | |
| | 4 | VII | ii° | I | Qarrâtîm | | | | | | | | | | | | | |
| | 5 | VIII | iii° | II | Kanwarta | | | | | | | | | | | | | |
| | 6 | IX | iv° | III | Te'inâtîm | | | | | | | | | | | | | |
| | 7 | X | v° | IV | Kuzallu | | | | | | | | | | | | | |
| | 8 | XI | vi° | V | Allanâtîm | | | | | | | | | | | | | |
| | 9 | XII | vii° | VI | Bêltî-ekallim | | | | | | | | | | | | | |
| | 10 | I | viii° | VII | Ša sarratîm | | | | | | | | | | 1 | 18 | 48 | [A] Zimrî-Lîm king of Mari [B] Išme-Dagan I king of Assyria (n°40) |
| | 11 | II | ix° | VIII | Narmak Aššur | | | | | | | | | | | | | |
| | 12 | III | x° | IX | Maḥḥurili | | | | | | | | | | | | | |
| 1678 | 1 | IV | xi° | X | Ab šarrâni | 1 | 2 | 19 | 49 | <i>Ennam-Aššur</i> (N°200) <i>(Feast of Ištar in month xi° Ab Šarrani)</i> <i>Aššur-emūqî</i> (N°201) | | | | | | | | |
| | 2 | V | xii° | XI | Hubur | | | | | | | | | | | | | |
| | 3 | VI | i° | XII | Šip'im | | | | | | | | | | | | | |
| | 4 | VII | ii° | I | Qarrâtîm | | | | | | | | | | | | | |
| | 5 | VIII | iii° | II | Kanwarta | | | | | | | | | | | | | |

If we compare the reign of Šamšî-Adad I (1712-1680), obtained from the Assyrian King List, with that calculated from the reign of Ammisaduqa, and compare the difference (#) between the value given by the four chronologies in accordance with the Venus cycle, we see (below) that the agreement is perfect with the Ultra-Low Chronology, but there is a 96-year disagreement with the Middle Chronology.

| Chronology (BCE): | AKL | Ultra-Low | # | Low | # | Middle | # | High | # |
|-----------------------|------------------|------------------|----------|-----------|-----------|-----------|-----------|-----------|------------|
| Fall of Ur | | 1912 | | 1944 | | 2008 | | 2064 | |
| Reign of Šamšî-Adad I | 1712-1680 | 1712-1680 | 0 | 1745-1712 | 32 | 1809-1776 | 96 | 1865-1832 | 152 |
| Reign of Hammurabi | | 1697-1654 | | 1729-1686 | | 1793-1750 | | 1849-1806 | |
| Reign of Ammisaduqa | | 1551-1530 | | 1583-1562 | | 1647-1626 | | 1703-1682 | |
| Fall of Babylon | | 1499 | | 1531 | | 1595 | | 1651 | |

HOW TO ASTRONOMICALLY DATE THE FIRST FALL OF BABYLON: 1595 OR 1499 BCE?

The astronomical tablet: *Enuma Anu Enlil 63* (Reiner, Pingree: 1975, 17-62), copied in 7th century BCE, describes the setting and rising of Venus during the 21-year reign of Ammisaduqa:

| |
|--|
| Year 1 inferior Venus sets on Šabatu 15 and after 3 days rises on Šabatu 18 |
| Year 2 superior Venus vanishes E. on Arahsamnu 21 and after 1 month 25 days appears W. on Tebetu 16 |
| Year 3 inferior Venus sets on Ululu 29 and after 16 days rises on Tashritu 15 |
| Year 4 superior Venus vanishes E. on Dumuzi 3 and after 2 months 6 days appears W. on Ululu 9 |
| Year 5 inferior Venus sets on Nisan 29 and after 12 days rises on Ayar 11 |
| Year 5 superior Venus vanishes E. on Kislimu 27 and after 2 months 3 days appears W. on Šabatu 30 |
| Year 6 inferior Venus sets on Arahsamnu 28 and after 3 days rises on Kislimu 1 |
| Year 7 superior Venus vanishes E. on Abu 30 and after 2 months appears W. on Tashritu 30 |
| Year 8 inferior Venus sets on Dumuzi 9 and after 17 days rises on Dumuzi 26 |
| Year 8 superior Venus vanishes E. on Adar 27 and after 2 months 16 days appears W. on Simanu 13 |
| Year 9 inferior Venus sets on Adar 12 and after 2 days rises on Adar 14 |
| Year 10 superior Venus vanishes E. on Arahsamnu 17 and after 1 month 25 days appears W. on Tebetu 12 |
| Year 11 inferior Venus sets on Ululu 25 and after 16 days rises on II Ululu 11 |
| Year 12 superior Venus vanishes E. on Ayar 29 and after 2 months 6 days appears W. on Abu 5 |
| Year 13 inferior Venus sets on Nisan 25 and after 12 days rises on Ayar 7 |
| Year 13 superior Venus vanishes E. on Tebetu 23 and after 2 months 3 days appears W. on Adar 26 |
| Year 14 inferior Venus sets on Arahsamnu 24 and after 3 days rises on Arahsamnu 27 |
| Year 15 superior Venus vanishes E. on Abu 26 and after 2 months appears W. on Tashritu 26 |
| Year 16 inferior Venus sets on Dumuzi 5 and after 16 days rises on Dumuzi 21 |

| |
|---|
| Year 16 superior Venus vanishes E. on Adar 24 and after 2 months 15 days appears W. on Simanu 9 |
| Year 17 inferior Venus sets on Adar 8 and after 3 days rises on Adar 11 |
| Year 18 superior Venus vanishes E. on Arahsammu 13 and after 1 month 25 days appears W. on Tebetu 8 |
| Year 19 inferior Venus sets on II Ululu 20 and after 17 days rises on Tashritu 8 |
| Year 20 superior Venus vanishes E. on Simanu 25 and after 2 months 6 days appears W. on Ululu 1 |
| Year 21 inferior Venus sets on Nisan 22 and after 11 days rises on Ayar 3 |
| Year 21 superior Venus vanishes E. on Tebetu 19 and after 2 months 3 days appears W. on Adar 22 |

Although the interpretation of this astronomical tablet is difficult (Gurzadyan: 2003, 13-17), because much data appears to have been poorly copied, the fall of Babylon can be dated to the period 1500-1700 BCE only according to four possibilities (Gurzadyan: 2000, 175-184). If we compare the observation date of the rising of Venus in Year 1 of Ammisaduqa (18 Shabatu) with the value given by astronomy, there is a difference of several days, from 13 days (ULC) to 3 days (HC), but the observed date is after the calculated date only for the Ultra-Low Chronology (the observed date cannot be before the calculated date).

| Chronology (BCE): | ULC | # | LC | # | MC | # | HC | # |
|--|------------------|-----|-------------|----|-------------|----|-------------|----|
| Fall of Ur | 1912 | | 1944 | | 2008 | | 2064 | |
| Reign of Hammurabi | 1697-1654 | | 1729-1686 | | 1793-1750 | | 1849-1806 | |
| Reign of Ammisaduqa | 1551-1530 | | 1583-1562 | | 1647-1626 | | 1703-1682 | |
| Venus rises Year 1 (<i>calculated</i>) | 14-Feb 1549 | 0 | 24-Feb 1581 | 0 | 14-Mar 1645 | 0 | 31-Mar 1701 | 0 |
| Shabatu 18 Year 1 (<i>observed</i>) | 27-Feb 1549 | +13 | 19-Feb 1581 | -5 | 9-Mar 1645 | -6 | 28-Mar 1701 | -3 |
| Fall of Babylon | 1499 | | 1531 | | 1595 | | 1651 | |

Despite the excellent agreement (18 Shabatu is to be replaced by 8 Shabatu) with the fall of Babylon in 1499 BCE (Gasche: 2003, 205-221) the ULC chronology was rejected. It is possible to reconstruct the 25 months of the astronomical tablet and to compare them with those of the inscription. Unfortunately, no solution, depending on the selected year, gives a perfect fit. Consequently, the dating method based on the Venus cycle is used. Indeed, we can see that years 5, 13 and 21 (with a periodicity of 8 years) give the same values with a 4-day shift, which comes from the cycles of the moon and Venus. If an astronomical phenomenon occurs at the same time each year it will be noted with an advance of 2 days³⁰ at the end of an 8-year cycle. The same pattern repeats a 1-day shift every 8 years because 8 sidereal orbital periods of the Earth (365.25636 days - slightly longer than the tropical year) is 2922.06 days, and 13 sidereal orbital periods of Venus (224.701 days) is 2921.11 days. Thus, after this period both Venus and Earth have returned to very nearly the same point (1 day) in each of their respective orbits. If the Sun and Venus are perfectly aligned (Transit of Venus), the heliacal rising and setting of Venus occur on the same dates shifted by 2 or 3 days every 8 years. A transit of Venus³¹ across the Sun takes place when this planet passes directly between the Sun and Earth (or another planet), becoming visible against (and hence obscuring a small portion of) the solar disk. During a transit, Venus can be seen from Earth as a small black disk moving across the face of the Sun. The duration of such transits is usually measured in hours (the transit of 2012 lasted 6 hours and 40 minutes). A transit is like a solar eclipse by the Moon. While the diameter of Venus is more than 3 times that of the Moon, Venus appears smaller, and travels more slowly across the face of the Sun, because it is much farther away from Earth. Transits of Venus are among the rarest of predictable astronomical phenomena. They occur in a pattern that repeats itself every 243 years, with pairs of transits 8 years apart separated by long gaps of 121.5 years and 105.5 years³². Given that the astronomical data during Ammisaduqa's 21-year reign over the period of 8 years are shifted 4 days, instead of 2 or 3 when the transit of Venus exactly occurs, it means that it was close to this transit. Transits of Venus are as follows³³ (1550-1529* = 1551-1530 BCE):

| Date* | greatest (UT) | Ammisaduqa | Date* | greatest (UT) | Ammisaduqa |
|----------------------|---------------|------------------------|----------------------|---------------|------------------|
| -1892* May 21 | 19:26 | | -1528* Nov 23 | 12:51 | 1550-1529* (ULC) |
| -1884* May 19 | 12:30 | | -1520* Nov 20 | 23:44 | |
| -1763* Nov 20 | 22:56 | | -1512* Nov 18 | 12:51 | |
| -1755* Nov 18 | 12:18 | | -1406* May 23 | 05:57 | |
| -1649* May 23 | 00:45 | | -1398* May 20 | 23:03 | |
| -1641* May 20 | 18:02 | 1646-1625* (MC) | -1277* Nov 22 | 00:09 | |

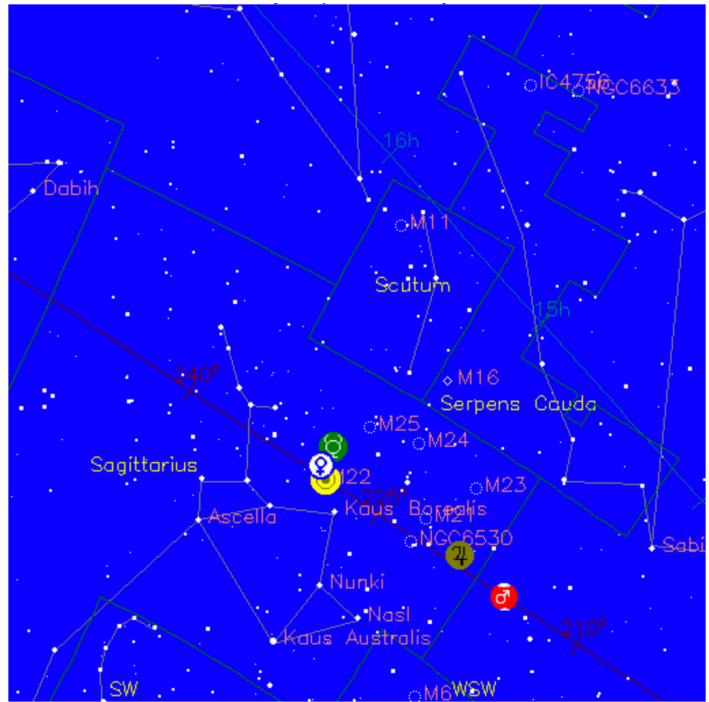
³⁰ 2 days = 8 x 365.24519 days - (8 x 12 + 3) x 29.530588 days (= -1.6 days)

³¹ http://en.wikipedia.org/wiki/Transit_of_Venus

³² Venus, with an orbit inclined by 3.4° relative to the Earth's, usually appears to pass under (or over) the Sun at inferior conjunction. A transit occurs when Venus reaches conjunction with the Sun at or near one of its nodes—the longitude where Venus passes through the Earth's orbital plane (the ecliptic)—and appears to pass directly across the Sun. Although the inclination between these two orbital planes is only 3.4°, Venus can be as far as 9.6° from the Sun when viewed from the Earth at inferior conjunction. Since the angular diameter of the Sun is about 0.5° degree, Venus may appear to pass above or below the Sun by more than 18 solar diameters during an ordinary conjunction.

³³ <http://eclipse.gsfc.nasa.gov/transit/catalog/VenusCatalog.html>

The best fit is with the Middle chronology, but it contradicts the chronology obtained from the Assyrian King List. The fit with the Ultra-Low Chronology is good because there is only a shift of an 8-year cycle (-1528* Nov 23 instead of -1520* Nov 20). We can check the deviation of alignment between Venus and the sun with respect to its position during the transit of Venus in 1529 BCE (= -1528*), when this planet “crossed through the sun” (see image opposite). The observations were performed in Babylon³⁴. Teije de Jong regards Šamši-Adad I's death (dated 1776 BCE +/- 10 indirectly by carbon-14), instead of 1680 BCE, as an absolute date (De Jong: 2012-2013, 147-163) but carbon-14 dating is not absolute. In addition, dendrochronological dating of the Acmehöyüke palace requires locating the death of Šamši-Adad I after 1752 BCE (Michel, Rocher: 1997-2000, 111-126) eliminating the Middle Chronology which dates this reign 1809-1776 BCE, at least 24 years too early (in 1776 BCE). Actually, the best way for dating the fall of Babylon is to use a couple of well identified lunar eclipses (Banjević: 2006, 251-257).



A tablet of astronomical omens (Enuma Anu Enlil 20) mentions a lunar eclipse, dated 14 Simanu (month III), at the end of the reign of Šulgi³⁵ (14/III/48) and another (Enuma Anu Enlil 21) mentions a (total) lunar eclipse³⁶, dated 14 Addaru (month XII), at the end of the Ur III dynasty which ended with the reign of Ibbi-Sîn (14/XII/24). These two lunar eclipses were separated by 42 years of reign (= 9 years of Amar-Sîn + 9 years of Šu-Sîn + 24 years of Ibbi-Sîn) and 9 months (= month XII – month III). Over the period 2200-1850 there was only one pair of eclipses³⁷, spaced by 42 years and 9 months, matching the description of astronomical omens (Huber: 2000, 159-176).

TABLE 23

| BCE | month | | King |
|------|-------|------|--|
| 1954 | 1 | X | 47 Šulgi (Ur III n°2) (1/I/48 = 7 April) |
| | 2 | XI | |
| | 3 | XII | |
| | 4 | I | 48 <i>Total lunar eclipse dated</i> 14/III/48 (28 June) |
| | 5 | II | |
| | 6 | III | |
| | 7 | IV | 0 Amar-Sîn (Ur III n°3) |
| | 8 | V | |
| | 9 | VI | |
| | 10 | VII | |
| | 11 | VIII | |
| | 12 | IX | |
| 1953 | 1 | X | 1 |
| | 2 | XI | |
| | 3 | XII | |
| | 4 | I | |
| | 5 | II | |
| | 6 | III | |
| | 7 | IV | |
| | 8 | V | |

| BCE | month | | King |
|------|-------|------|---------------------------|
| 1912 | 1 | X | 23 Ibbi-Sîn (Ur III n°5) |
| | 2 | XI | |
| | 3 | XII | |
| | 4 | I | 24 (1/I/24 = 2 April) |
| | 5 | II | |
| | 6 | III | |
| | 7 | IV | |
| | 8 | V | |
| | 9 | VI | |
| | 10 | VII | |
| | 11 | VIII | |
| | 12 | IX | |
| 1911 | 1 | X | 12 Išbi-Erra (Isin I n°1) |
| | 2 | XI | |
| | 3 | XII | |
| | 4 | I | |
| | 5 | II | |
| | 6 | III | |
| | 7 | IV | |
| | 8 | V | |

³⁴ <http://www.fourmilab.ch/cgi-bin/Yourhorizon>

latitude 32°33' North; longitude 44°26' East; Universal Time (UT): -1528-11-23 12:51; Azimuth: 240°; Field of view: 45°. We notice that on 23 November 1529 BCE the planets Venus and Mars were aligned.

³⁵ The name of this king of Ur does not appear in the tablet (Rochberg-Halton: 1988, 189,248) but the description of the lunar eclipse allows to identify Šulgi (Banjević: 2006, 253).

³⁶ The series was probably compiled in its canonical form during the Kassite period but there was certainly some form of prototype in the Old Babylonian period. Only total eclipses of the moon were perceived as bad omens for 2 reasons: total darkness and dark red color were symbols of death. Total sun eclipses at a given location are rare (on average 1 per century).

³⁷ http://xjubier.free.fr/en/site_pages/lunar_eclipses/5MCLE/xLE_Five_Millennium_Canon.html

Before 2000 BCE: <http://www.eclipsewise.com/lunar/LEcatalog/LEcatalog.html>

Duration (LT) = TD of greatest eclipse (UT) +/- (Total duration)/2 + 2:04 (= [24:00/360]x30.97)

The statistician Peter J. Huber, who carried out an in-depth study of these two lunar eclipses, refused the identification proposed by Gasche *et al* (1998) who had fixed these two lunar eclipses in 1954 BCE and 1912 BCE (-1911*). According to Huber, the two lunar eclipses in 2160 BCE and 2053 BCE confirmed (*sic*) Sollberger's relative chronology of the Ur III dynasty. He wrote (Huber: 1999/2000, 59-70):

Only two omens permit a relatively certain identification with specific historical events: EAE 20-III is generally taken to refer to the death of Šulgi (cf. Sollberger 1954-56, p. 22), and EAE 21-XII refers to the end of the dynasty. These two eclipses were already discussed in Huber (1987a).

Tablet 20, Month III.

(1) If an eclipse occurs on the 14th day of Simānu, and the god in his eclipse becomes dark on the side east above and clears on the side west below.(The eclipse) “pulls out” (*issuh*) the first watch and touches the middle watch (so Recension A; B has: “equals” (*imšul*) the first watch. The king of Ur, his son will wrong him, and the son who wronged his father, Šamaš will catch him. He will die in the mourning place of his father. The son of the king who was not named for kingship will seize the throne. -2094JUL25: mismatch day (...)

Tablet 21, Month XII.

(2) If an eclipse occurs on the 14th day of Addaru, and it begins in the south and clears in the north; it begins in the evening watch and clears in the morning watch. You observe his eclipse and bear in mind the south. The prediction is given for the king of the world: The destruction of Ur. [. will be] destroyed, variant: an order to destroy its city walls will be given. While the barley is being heaped up, the devastation of the city and its environs (will occur).

-2052APR13: mismatch day, end (0.4 watches), exit (10°).

This eclipse (2) must have occurred in the last month of Ibbi-Sîn's second-but-last year (year 23). In any case, it follows from the date of Šulgi's death and the regnal year counts that the distance between the two eclipses (1) and (2) must be 42 years. There is a single pair of eclipses having this distance and matching the dates required by the month-lengths: (-2094JUL25 and -2052APR13). There is one other pair having the required distance of 42 years: (-2018JUN26 and -1976MAR15), but it disagrees with the month-length data. According to calculation for -2052, the eclipse ends in the second rather than in the third watch, as stated in the omen. In fact, the calculated duration of the eclipse (3.08h) is less than the duration of a watch (3.88h).

The nearest compatible eclipses lasting a watch of the night or more are -2062MAY4 and -2015APR24. I conjecture that either the description of the end of the eclipse is in error or perhaps more likely that the estimated timing of the eclipse is inaccurate. The eclipse is one of the few among our identifications that is not total (magnitude 0.63). This does not necessarily speak against the identification (cf. the comments near the beginning of Section 4) but perhaps one might argue that an eclipse predicting the downfall of the “king of the world”, and hence supposedly affecting all lands, ought to be total. Gasche *et al.* (1998, p. 75) claim to have found a pair of eclipses (-1953JUN27 and -1911MAR16) that “fit the ancient descriptions at a higher confidence level” than the (-2093, -2052) pair. My computer search for eclipses matching the Simanu and Addaru omens had missed their pair. I was therefore puzzled and re-checked. The problem with the -1953 eclipse is that it begins too early: according to calculation the moon rises totally eclipsed at 19.00 local time (a few minutes before sunset). The Babylonian first watch of the night begins at sunset not at a fixed 18.00, as the authors intimate; 18.00-22.00 is valid at the equinox is only.

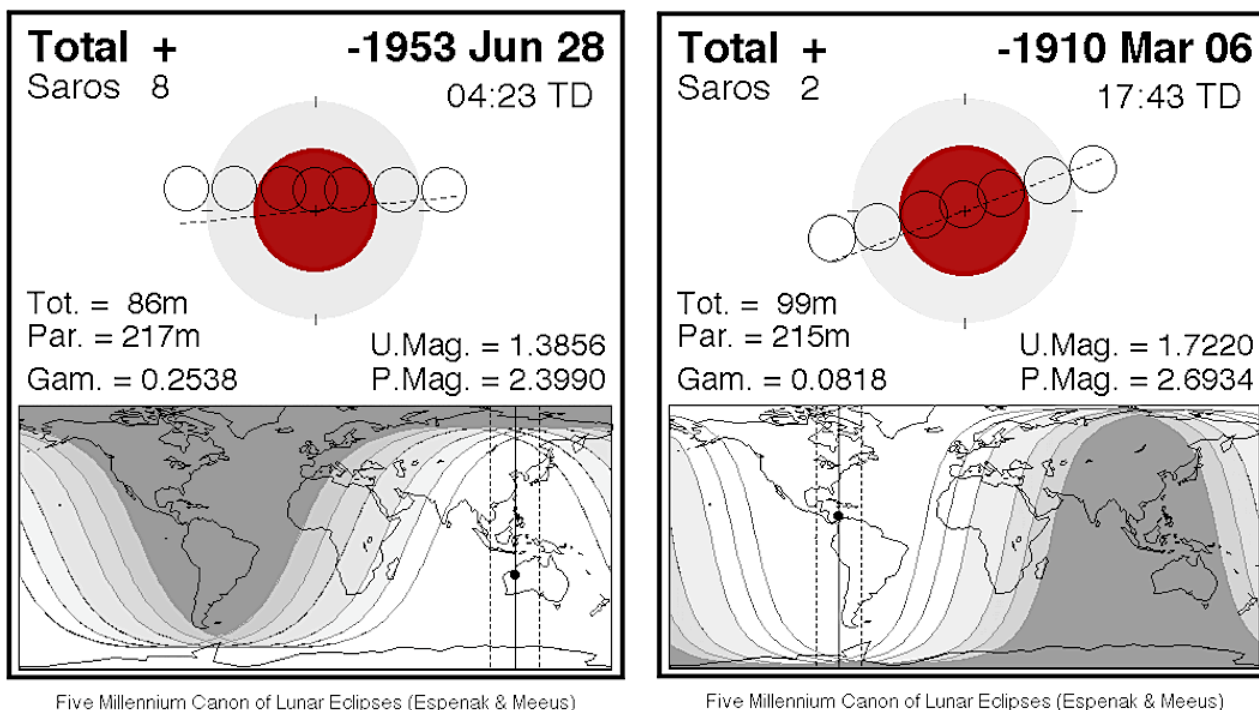
Huber's technical comments are impressive, yet they contain errors that are easy to detect. For example, the two eclipses proposed (the eclipse of 25 July -2094* [month IV year 48 of Šulgi] and the eclipse of 13 April -2052* [month I year 24 of Ibbi-Sîn]) are separated by 41 years and 9 months, not by 42 years and 9 months as required by the chronology of the Sumerian King list. This delay of 1 year comes from the change of the date marking the end of the reign of Ibbi-Sîn, because Huber replaced Year 24 month XII from the text by a hypothetical Year 23 month I, to justify his calculation. Moreover, the lunar eclipse of 25 July -2052* was partial, as Huber himself acknowledges, which prevents it from being considered as a bad omen concerning the death of the king. The explanations for rejecting the lunar eclipse of 28 June -1953* are not serious: 1) Huber's computer first failed to find the pair of eclipses proposed by Gasche *et al.* (this excuse is amusing), 2) then when it found it, Huber notes that the first watch of the night (18:00-22:00) starts rigorously at 18:00 (LT) only at the equinoxes, which would disqualify the eclipse of 28 June -1953*. Again, this explanation is not serious, because according to an astronomy software³⁸ the sunrise on 28 June -1953* started around 4:54 (LT) and the sunset started around 18:09 (LT). This eclipse lasted approximately from 16:03 to 19:41³⁹ (LT), which covered part of the first watch of the night (from 19:09 to 22:48). Huber's

³⁸ <https://promenade.imcce.fr/fr/pages5/585.html>

latitude 32°33' North; longitude 44°26' East; LT (Local Time) = UT (Universal Time) + 2:04.

³⁹ http://xjubier.free.fr/en/site_pages/lunar_eclipses/5MCLE/xLE_Five_Millennium_Canon.html

rejection of the total lunar eclipse of 28 June -1953* (1954 BCE) is therefore not justified, as he himself admits, his translation of the text of this eclipse is hypothetical. The date of 6 March (in 1911 BCE) of the second lunar eclipse corresponds exactly to the month of Simanu (month XII). Moreover, this eclipse was total which corresponds to a bad omen of death.



The translation of the text for the second eclipse poses no problem since it says: *If an eclipse occurs on the 14th day of Addaru, and it begins in the south and clears in the north; it begins in the evening watch and clears in the morning watch.* The total lunar eclipse of 6 March -1910* (1911 BCE) fits exactly with this description. The penumbra of this eclipse started around 5:27 (LT), before sunrise around 5:52 (LT), and ended around 10:11 (LT). The beginning of the eclipse (penumbra) therefore started during the 3rd and last evening watch and ended during the morning watch (first watch).

The result is irrefutable. There is no total lunar eclipse according to the Low, Middle, and High chronology, neither at the end of Šulgi's reign, nor at the end of Ibbi-Sîn's reign. In contrast, with the Ultra-Low chronology there was a total lunar eclipse (bad omen) at the end of each of these two reigns, the first one on 28 June 1954 BCE (27/06/-1953*) and the second eclipse on 6 March 1911 BCE (06/03/-1910*).

TABLE 24

| Fall of Babylon (Venus Tablet) | Chronology | Date (BCE) | Lunar eclipse | Date (BCE) | Lunar eclipse |
|--------------------------------|------------|------------|--------------------|------------|-------------------|
| | | 14/III/48 | Last year of Šulgi | 14/XII/24 | Fall of Ur III |
| 1651 BCE | High | 28/06/2106 | (27/08/2106) | 06/03/2063 | - |
| 1595 BCE | Middle | 08/07/2050 | - | 08/03/2007 | - |
| 1531 BCE | Low | 22/06/1986 | - | 28/02/1943 | - |
| 1499 BCE | Ultra-Low | 28/06/1954 | 28/06/1954 | 06/03/1911 | 06/03/1911 |

Of all the eclipses dated according to the EAE 20 and EAE 21 tablets, only the Ultra-Low chronology perfectly matches the astronomical data. Even the first lunar eclipse dated 27/08/2106 BCE (High Chronology) does not correspond to the date on the tablet, since there is a gap of two months. More seriously, this eclipse could not be observed in Babylon because the maximum of the eclipse occurred at 10:21 (Local Time) whereas lunar eclipses can only be seen during the night (between 18:00 and 6:00 in local time). For example, the total lunar eclipse dated 06/27/1954 had a magnitude of 1.39 and was seen in the morning in Babylon from 5:43 to 7:09 (LT), and the total lunar eclipse dated 06/03/1911 had a magnitude of 1.72 and was seen in the evening in Babylon from 18:57 to 20:35 (LT). Therefore, the confirmation by astronomy of the two lunar eclipses, dated at the end of the reign of Šulgi and at the end of the reign of Ibbi-Sîn (marking the fall of Babylon), definitively eliminates the other three chronologies (High, Middle and Low). Despite the excellent agreement with the reign of Šamši-Adad I (1712-1680) the Ultra-Low chronology is considered too low compared to Kassite and Hittite chronologies. This criticism is unfounded (Gasche: 2003, 205-221) because these chronologies are very approximate: most durations of reigns are

unknown, and they have no link with any astronomical events. The lunar eclipse dated: *Year 38 that Babylon was resettled (...) Month of Abu (July-August), Day 10*, mentioned in the economic texts from Tell Muhammad (Gasche, Armstrong, Cole: 1998, 86) confirms definitively the Ultra-Low Chronology (the lunar eclipse dated 16/09/1614 is not suitable because there is a difference of two months with the date, month V, mentioned in the text). In addition, the lunar eclipse was total since it is an economic text (Day 10 is a mistake because eclipses always take place on the 14th-15th of the month).

TABLE 25

| Chronology (BCE): | Year | Ultra-Low | | Low | | Middle | | High | |
|-------------------|-----------|-------------------|----------|------------|--|------------|--|--------------|----------|
| Fall of Babylon | 1 | 1499 | | 1531 | | 1595 | | 1651 | |
| Date 14/V/38 | 38 | 19/07/1462 | | 11/07/1494 | | 29/07/1558 | | 18/07/1614 | |
| Lunar eclipse | 38 | 19/07/1462 | T | - | | - | | (16/09/1614) | T |

Total lunar eclipses have played a major role in Babylonian astrology because they were often associated with a bad omen such as the death of the king, an epidemic or a war that broke out in the country. These eclipses can be used to establish absolute dates, when they are well referenced, which is unfortunately rarely the case. For example, a tablet of Mari written by Ašqūdum (eponym N°193 in 1686 BCE) mentions a total lunar eclipse (Heimpel: 2003, 176-177,209-210):

To my lord (Yasmah-Addu) speak! Your servant La'um (says), "The diviner Ašqūdum came from before the king (Šamši-Adad I). Where he talked, he told many things. [So] they said to me. He denounced me, Sin-Iddinam [and] Šamaš-Tillasu before the king. Nobody is safe in his hands. Once I arrive before my lord, I will place a full report before my lord."

To my lord speak! Your servant Ašqūdum (says), "An eclipse of Sin (the moon) occurred on the 14th day (month?). And the occurrence of that eclipse bodes ill. I made extispicies for the well-being of my lord and the well-being of the upper district, and the extispicies were sound. Now my lord [must] have (extispicies) done there for [his] well-being and the well-being of the city of Mari, and the heart of my lord need not be concerned. My lord must send [me] a response to my tablet, [and my heart] will calm!"

All the letters written by Ašqūdum show that he had been a diviner in Šamši-Adad's service and that he pursued his career during the reign of Yasmah-Addu. During the first 8 years of Zimrî-Lîm. Ašqūdum must have played an important role in Yasmah-Addu's career since Šamši-Adad I appointed him as eponym (N°193) at the beginning of his reign in 1686 BCE. Šamši-Adad I became king of Mari and reigned for 10 years, after the death of Sumu-Yamam, under the name of Samsî-Addu. He then named his son Yasmah-Addu as his successor (Ziegler/Charpin: 2001, 496-501).

TABLE 26

| KING OF MARI | reign | KING OF ASSYRIA | reign | KING OF BABYLON | reign |
|--------------------------|-------------------|---------------------|---------------|-----------------|---------------|
| Yaggid-Lîm ⁴⁰ | 1738-1716 | Ērišu II (n°38) | 1722-1712 | Apil-Sîn | 1735-1717 |
| Yahdun-Lîm | 1716-1699 | Šamši-Adad I (n°39) | 1712 - | Sîn-muballit | 1717 - |
| Sumu-Yamam | 1699-1697 | | | | -1697 |
| Samsî-Addu | 1697 -1687 | | | Hammurabi | 1697 - |
| Yasmah-Addu | 1687- 1680 | | -1680 | | |
| Zimrî-Lîm | 1680-1667 | Išme-Dagan I (n°40) | 1680-1670 | | -1654 |

The total eclipse of the moon mentioned by Ašqūdum, which could have been a bad omen for the king and the city of Mari, must be located at the beginning of the reign of Yasmah-Addu for two reasons: 1) Šamši-Adad having died in 1680 BCE the king concerned must have been Yasmah-Addu (at the beginning of his reign) or Šamši-Adad himself; 2) the total visible eclipses⁴¹ of the moon occurring on average at least once every 3 years, only those that seemed "harmful" (bad omen) were mentioned.

| BCE | Date (1st eclipse) | Mag. max | duration (LT) visible in Mari | Date (2nd eclipse) | Mag. max | duration (LT) visible in Mari |
|-------------|--------------------|----------|-------------------------------|--------------------|----------|-------------------------------|
| 1691 | 27/10/-1690* | 1.59 | 3:58-5:28 | | | |
| 1687 | 19/02/-1686* | 1.72 | 5:25-7:03 | 14/08/-1686* | 1.48 | (not visible) |
| 1680 | 01/04/-1679* | 1.42 | 6:02-6:09 | 25/09/-1679* | 1.39 | (not visible) |

The year 1687 BCE was marked by two total lunar eclipses (but only one was visible in Mari), which could have been a very bad omen for the King of Mari. However, this was not the case because of the good

⁴⁰ The reign of Yaggid-Lîm began with the eponym N°139: Šu-Bēlum (Anbar: 1991, 31-40).

⁴¹ <https://eclipse.gsfc.nasa.gov/LEcat5/LE-1699--1600.html> Some total lunar eclipses, which occurred during the day, were not visible in Mari (latitude 40°53' E, longitude 34°33' N), <https://promenade.imcce.fr/fr/pages5/585.html>

omens taken from the liver. A comparison of all of the reigns of the time shows that Šamšī-Adad I was replaced by his son, Yasmah-Addu, on Mari's throne at the end of year 1687 BCE and then named Ašqūdum as eponym in the beginning of the year 1686 BCE.

TABLE 27

| BCE | month | | | | [A] | [B] | [C] | [D] | King / eponym | | | | | | | | |
|------|-------|-------|-------|------|-----|------------------------------|---------------------|-----|---------------|----|--|--|--|--|----|----|--|
| 1688 | 10 | I | x° | VII | 9 | 25 | 9 | 39 | | | | | | | | | |
| | 11 | II | xi° | VIII | | | | | | | | | | | | | |
| | 12 | III | xii° | IX | | | | | | | | | | | | | |
| 1687 | 1 | IV | i° | X | | | | | | 26 | | | | <i>Ikūn-pīya son of Šalim-Aššur (N°192)</i> <i>Total lunar eclipse dated 19/02/-1686*</i> | | | |
| | 2 | V | ii° | XI | | | | | | | | | | | | | |
| | 3 | VI | iii° | XII | | | | | | | | | | | | | |
| | 4 | VII | iv° | I | | | | | | | | | | | 10 | 40 | [A] Šamšī-Adad king of Mari [B] Šamšī-Adad I king of Assyria (n°39) [C] Hammurabi king of Babylon [D] Rīm-Sîn I king of Larsa |
| | 5 | VIII | v° | II | | | | | | | | | | | | | |
| | 6 | IX | vi° | III | | | | | | | | | | | | | |
| | 7 | X | vii° | IV | | | | | | | | | | | | | |
| | 8 | XI | viii° | V | | | | | | | | | | | | | |
| | 9 | XII | ix° | VI | | | | | | | | | | | | | |
| | 10 | I | x° | VII | 10 | | | | | | | | | | | | |
| | 11 | II | xi° | VIII | 0 | [A] Yasmah-Addu king of Mari | | | | | | | | | | | |
| 12 | III | xii° | IX | | | | | | | | | | | | | | |
| 1 | IV | i° | X | 27 | | | [D] Ašqūdum (N°193) | | | | | | | | | | |
| 2 | V | ii° | XI | | | | | | | | | | | | | | |
| 3 | VI | iii° | XII | | | | | | | | | | | | | | |
| 4 | VII | iv° | I | | 11 | 41 | | | | | | | | | | | |
| 5 | VIII | v° | II | | | | | | | | | | | | | | |
| 6 | IX | vi° | III | | | | | | | | | | | | | | |
| 7 | X | vii° | IV | | | | | | | | | | | | | | |
| 8 | XI | viii° | V | | | | | | | | | | | | | | |
| 9 | XII | ix° | VI | | | | | | | | | | | | | | |
| 10 | I | x° | VII | | | | | 1 | | | | | | | | | |
| 11 | II | xi° | VIII | | | | | | | | | | | | | | |

CHRONOLOGY OF MESOPOTAMIAN REIGNS OVER THE PERIOD 2340–1912 BCE

The period 2243-1912 BCE has only one reign dated by astronomy, the one of Šulgi (2002–1954). The chronology of the Sumerian kings starting from Sargon of Akkad (2243–2187) can be reconstructed exactly because the durations of their reigns are all known through several King Lists and Chronicles (Pruzsinsky: 2009, 111–124). The different versions of the Sumerian King List (SKL) have many variants (below), but the SKL WB list is (almost) complete and its reign durations are correct and reliable (durations in square brackets come from the other lists and are consistent with the total duration of 181 years), except for Utu-ḫegal's reign, which has a duration of 420½ years! (Mahieu: 2019, 1–25; 2020, 219-221):

TABLE 28

| Sumerian King List | SKL WB | USKL | SKL TL | SKL L ₁ +N ₁ | SKL IB | SKL BT | SKL | Reign |
|---------------------------|------------|------|-----------------|------------------------------------|--------------------|-----------------------|------------|-----------|
| Sargon (Akkad) | 56 | 40 | 54 | 55 | 53+x | | 56 | 2243-2187 |
| Rimuš | 9 | 8 | 7 | 15 | 7 | | 9 | 2187-2178 |
| Maništuš | 15 | 15 | | 7 | [x] | | 15 | 2178-2163 |
| Narām-Sîn | [37] | 54½ | | 56 | 37 | | 37 | 2163-2126 |
| Šar-kali-šarri | [25] | 21+x | | 25 | 23+x | | 25 | 2126-2101 |
| Irgigi/ Imi/ Nanum/ Ilulu | [3] | [x] | | | [3] | 3 | 3 | 2101-2098 |
| Dudu | 21 | | | | [x] | | 21 | 2098-2077 |
| Šu-Turul | 15 | | | | 18 | | 15 | 2077-2062 |
| Total (11 kings): | 181 | | | | 181 | | 181 | |
| Ur-nigina (Uruk IV) | 7 | | | | 3 | 7? | 7 | 2062-2055 |
| Ur-gigira | 6 | | | | 7 | | 6 | 2055-2049 |
| Kuda | 6 | 5 | | | 6 | | 6 | 2049-2043 |
| Puzur-ilî | 5 | | | | 20 | | 5 | 2043-2038 |
| Ur-Utu | 6 | | | | 6 | | 6 | 2038-2032 |
| Total (5 kings): | 30 | | | | 43* | | 30 | |
| Utu-ḫegal (Uruk V) | 7x60 | 7 | 7½ | | 26½ | | * | 2032-2020 |
| Sumerian King List | SKL WB | USKL | SKL TL | UIKL | SKL P ₅ | SKL Su ₃₋₄ | | |
| Ur-Namma (Ur III) | 18 | 18 | 10[+x] | 18 | 18 | 18 | 18 | 2020-2002 |
| Šulgi | 48 | | 48 | 48 | 58 | 48 | 48 | 2002-1954 |
| Amar-Sîn | 9 | | 9 | 9 | 9 | 25 | 9 | 1954-1945 |
| Šu-Sîn | 9 | | 9 | 9 | 7 | 16 | 9 | 1945-1936 |
| Ibbi-Sîn | 24 | | 23 ⁷ | 24 | 25 | 15 | 24 | 1936-1912 |
| Total (5 kings): | 108 | | | | 117 | 123 | 108 | |

The Utu-ḫegal reign of 7x60 years and 7 days in the SKL WB list is obviously an error. It should probably be 7 years and 7 days, as this reign corresponds to the 7 years, 6 months and 5 days of the SKL TL list. However, the 26 years, x+2 months and 15 days in the SKL IB list prove that there is an anomaly in this reign. Moreover, reign durations are always whole values. There are never durations of less than 1 year. For example, the four kings: Irgigi/ Imi/ Nanum/ Ilulu, reigned for 3 years which implies that the reign of two or three kings was less than 1 year and was therefore included in the months of accession (before the 1st Nisan) of the following king (or kings). A duration of the reign in months and days probably indicates a co-regency between Utu-ḫegal and Ur-Namma of x years, 7 months and a few days. The contemporaneity of Ur-Namma and Utu-ḫegal is indicated by several data, for instance “Ur-[Namma], military go[vernor] of Ur,” recognises Utu-ḫegal as his overlord (RIME 2.13.6.2001). Two inscriptions of Utu-ḫegal mention “the man of Ur” in a conflict with Lagaš (RIME 2.13.6.1, 3) and might concern Ur-Namma of Ur. It is still unclear at which moment during or after Utu-ḫegal’s reign, Ur-Namma assumes power. The only way to check the accuracy of this chronology is to use the synchronisms (highlighted in grey) with the chronology of the kings of Ebla and Mari, which can be reconstructed exactly using the durations of the reigns, which are all known. The Mesopotamian chronology can therefore be reconstructed until 2340 BCE. The chronology of this period confirms that Sargon destroyed the city of Mari (Durand: 2012, 117-132).

TABLE 29

| n° | KING OF MARI | # | Reign | KING OF EBLA | # | Reign | LAGASH I | # | Reign |
|----|----------------|----|-----------------|----------------|----|-----------------|------------------------------|-----|-----------------|
| | Ikun-Šamaš | 22 | 2340-2318 | Abur-Lîm | 22 | 2340-2318 | Ur-Nanše | 18 | 2340-2322 |
| | Ikun-Šamagan | 12 | 2318 - -2306 | Agur-Lîm | 6 | 2318-2312 | Akurgal | 4 | 2322-2318 |
| | Iški-Mari | 12 | 2306-2294 | Ibbi-Damu | 6 | 2312-2306 | E-anatum | 30 | 2318 - -2288 |
| | Anubu | 12 | 2294-2282 | Baga-Damu | 12 | 2306-2294 | En-anatum I | [6] | 2288-2282 |
| | Sa’umu | 6 | 2282-2276 | Enar-Damu | 12 | 2294-2282 | En-metena | 30 | 2282 - |
| | Itup-Išar | 4 | 2276-2272 | Iš’ar-Malik | 6 | 2282-2276 | | | |
| | Iblul-II | 20 | 2272 - -2252 | Kun-Damu | 6 | 2276-2270 | | | |
| | Nizi | 3 | 2252-2249 | Adub-Damu | 6 | 2270-2264 | | | |
| | Enna-Dagan | 4 | 2249-2245 | Igriš-Halab | 12 | 2264-2252 | | | |
| | | | | Irkab-Damu/Tir | 5 | 2252-2247 | En-anatum II | 7 | 2252 - -2245 |
| | | | | /Arrukun | 2 | 2247-2245 | | | |
| | | | | Iš’ar-Damu | 17 | 2245 - | En-entarzi | 5 | 2245-2240 |
| | | | | /Ibrium | | | Sargon (AKKAD) | 56 | 2243 - |
| | ASSYRIAN KING | | | /Ibbi-zikir | 15 | -2228 -2213 | | | |
| 1 | Tudiya | 9 | 2235-2226 | | | | | | |
| 2 | Adamu | 9 | 2226-2217 | | | | | | |
| 3 | Yangi | 9 | 2217-2208 | | | | | | |
| 4 | Lillâmu | 9 | 2208-2199 | | | | | | |
| 5 | Harharu | 9 | 2199-2190 | | | | | | |
| 6 | Mandaru | 9 | 2190-2181 | | | | | | |
| 7 | Imšu | 9 | 2181-2172 | | | | Rimuš | 9 | 2187-2178 |
| 8 | Haršu | 9 | 2172-2163 | | | | Maništusu | 15 | 2178 - -2163 |
| 9 | Didânu | 9 | 2163-2154 | KING OF MARI | # | Reign | | | |
| 10 | Hanû | 9 | 2154-2145 | Ididiš | 60 | 2164 - | Narâm-Sîn | 37 | 2163 - |
| 11 | Zuabu | 9 | 2145-2136 | | | | | | |
| 12 | Nuabu | 9 | 2136-2127 | | | | | | |
| 13 | Abazu | 9 | 2127-2118 | | | | | | |
| 14 | Belû | 9 | 2118-2109 | | | | Šar-kali-šarri | 25 | 2126 - |
| 15 | Azarah | 9 | 2109-2100 | | | | | | |
| 16 | Ušpia | 9 | 2100 - -2091 | Šu-Dagan | 5 | 2104 - | | | |
| 17 | Apišaš | 9 | 2091-2082 | | | | Irgigi/ Imi/ Nanum/ Ilulu | 3 | 2101 - -2098 |
| 18 | Halê | 14 | 2082-2068 | Išmah-Dagan | 45 | 2099 - | Dudu | 21 | 2098-2077 |
| 19 | Samânu | 14 | 2068-2054 | | | | Šu-Turul | 15 | 2077-2062 |
| 20 | Hayâni | 14 | 2054 - -2040 | | | | Ur-nigina (URUK) | 7 | 2062-2055 |
| | | | | Nûr-Mêr | 5 | 2054-2049 | Ur-gigira | 6 | 2055-2049 |
| | | | | Išdub-El | 11 | 2049 - -2038 | Kuda | 6 | 2049-2043 |
| 21 | Ilu-Mer | 14 | 2040-2026 | | | | Puzur-ilî | 5 | 2043-2038 |
| 22 | Yakmesi | 14 | 2026-2012 | Iškun-Addu | 8 | 2038-2030 | Ur-Utu | 6 | 2038-2032 |
| 23 | Yakmeni | 14 | 2010-1996 | Apil-Kîn | 35 | 2030 - -1995 | Utu-ḫegal (V) | | 2032-2020 |
| 24 | Yazkur-El | 14 | 1996-1982 | | | | Ur-Namma (UR) | 18 | 2020-2002 |
| 25 | Ila-kabkabû | 14 | 1982-1968 | Iddin-Ilum | 5 | 1995-1990 | Šulgi | 48 | 2002 - |
| 26 | Amînum | 14 | 1968 - -1954 | Ilum-Iš’ar | 12 | 1990-1978 | | | |
| | | | | Turâm-Dagan | 20 | 1978-1958 | | | |
| 27 | Sulili/Zariqum | 14 | 1954-1940 | Puzur-Eštar | 25 | 1958 - | | | |
| | | | | | | | Amar-Sîn | 9 | 1954-1945 |

| | | | | | | | | | |
|----|---------------|----|-----------------|-------------|---|--------------------|--------------------|----|-----------------|
| 28 | Kikkia | 14 | 1940 - -1927 | Hitlal-Erra | 7 | -1933 1933-1926 | Šu-Sîn | 9 | 1945-1936 |
| 29 | Akia | 14 | 1927 - -1913 | Hanun-Dagan | 8 | 1926-1918 | Ibbi-Sîn | 24 | 1936 - -1912 |
| 30 | Puzur-Aššur I | 14 | 1913 - -1899 | Iši-Dagan | 6 | 1918-1912 | | | |
| | | | | Itûr ?[-] | 6 | 1912-1906 | Išbi-Erra (ISIN I) | 33 | 1923 - |
| | | | | Amer-Nunnu | 6 | 1906-1900 | | | |
| 31 | Šalim-ahum | 14 | 1899 - -1885 | Têr-Dagan | 8 | 1900-1892 | | | -1890 |
| | | | | Dagan[-] | 6 | 1892-1886 | Šû-ilīšu | | 1890-1880 |

According to this chronological reconstruction Utu-ḫegal must have been king of Uruk IV for 12 years (2032-2020), then king of Uruk V for 8 (7½) years (2020-2012). The first duration of 12 years was therefore not recorded in the King List and the second duration of 8 (7½) years was recorded as a co-regency. The present analysis proposes that both reigns (Ur III and Uruk V) begin at the same time and that the second phase of Ur-Namma's reign begins at Utu-ḫegal's death. The contemporaneity lasts for 8 (7½) years. During these 8 years, Ur-Namma assumes the titles of "military governor of Ur" and "king of Ur". During the 10 years that follow Utu-ḫegal's death (2012-2002), he uses the title "king of Sumer and Akkad". The 18 years in the USKL, UIKL, and SKL represent Ur-Namma's entire period of government (Mahieu: 2020, 220). The durations of reigns of the kings of Gutium mentioned in the SKL WB list (Mahieu: 2019, 4-6) allow us to verify that the reign of Utu-ḫegal began in 2032 BCE because this king put an end to the dynasty of Gutium by killing Tirigan whose reign lasted 40 days. The second synchronism (highlighted in brown) is mentioned during the 11th year of Šar-kalli-šarri⁴² (in 2114 BCE) who took King Sarlagab prisoner.

| AKKAD | reign | LAGASH II | reign | GUTIUM | reign | ELAM | AWAN I/II |
|----------------------------|-----------------|---|--|---|---|------------------------|--|
| Šar-kalli-šarri | 2126 - -2114 | Lugal-ušumgal Puzur-Mama | 2130-2120 2120 - -2110 | Nibia Inkišuš Sarlagab | 2123-2120 2120-2114 2114-2108 | 3 6 6 ? | Epir-mupi 2140 - -2015 2115 - |
| | -2101 | Ur-Ningirsu I | 2110 - -2100 | Šulme | 2108-2102 | 6 | |
| Irgigi, Imi Nuhum Ilulu | 2101 - -2098 | Pirig-me | 2100-2090 | Silulumeš | 2102-2096 | 6 | |
| Dudu | 2098-2077 | Lu-Ba'u | 2090-2080 | Inimabakeš | 2096-2091 | 5 | -2090 |
| Su-Turul | 2077 - -2062 | Lu-Gula Inim-kug | 2080-2070 2070 - -2060 | Igeša'uš Jarlabag Ibate Jarla Kurum | 2091-2085 2085-2070 2070-2067 2067-2064 2064-2063 | 6 15 3 3 1 | Hielu 2090 - -2065 |
| URUK IV | | | | Ḫabil-kîn | 2063-2060 | 3 | Hita 2065 - |
| Ur-nigina | 2062 - -2055 | Ur-Ba'u | 2060 - -2048 | Lā'arābum Irarum Ibranum | 2060-2058 2058-2056 2056-2055 | 2 2 1 | |
| Ur-gigira | 2055 - -2049 | | | Ḫablum | 2055-2053 | 2 | |
| Kuda | 2049-2043 | Gudea | 2048 - -2039 | Puzur-Sîn | 2053-2046 | 7 | |
| Puzur-ilī | 2043-2038 | | | Jarlaganda | 2046 - -2039 | 7 | -2040 |
| Ur-Utu | 2038-2032 | | | Si'um | 2039-2032 | 7 | Puzur- Inšušinak |
| Utu-ḫegal (V) | 2032 - -2020 | | -2028 2028-2023 2023-2022 2022-2021 | Tirigan (vassal of Awan) | 2032-2032 2032 - | 0 | 2040 - |
| UR III | | Ur-Mama | 2021-2020 | | | | |
| Ur-Namma | 2020 - -2002 | Nam-mahazi (Ur's vassal) | 2020-2017 | ELAM [unammed] | SIMAŠKI 2020 - | | -2005 |
| Šulgi | 2002 - -1954 | Ur-Ninsuna Ur-Ninkimara Lu-kirilaza | 1996-1986 1986-1976 1976-1954 | | | | [-]-lu 2005-1990 1990 - -1954 |
| Amar-Sîn | 1954-1945 | Ir-Nanna | 1954 - -1933 | Girnamme | 1990-1955 | | Tazitta I 1955-1940 |
| Šu-Sîn | 1945-1936 | | | | | | Ebarat I 1955-1935 |
| Ibbi-Sîn | 1936 - -1912 | Ur-Ningirsu Ur-Nanše ISIN I | 1933-1928 1928-1923 | | | | Tazitta II 1935-1925 1925 - -1915 |
| | | Išbi-Erra | 1923 - -1890 | | | | Kindadu 1915-1905 Idadu I 1905-1890 |

⁴² https://cdli.ox.ac.uk/wiki/doku.php?id=sharkalisharri_year_names (year j) In the year in which Szarkalisharri laid the foundations of the temples of the goddess Annunitum and of the god Aba in Babylon and took prisoner Szarlag(ab) the king of Gutium.

This chronological agreement proves that the SKL WB list is reliable, the main difficulty is to place the parallel dynasties. The only way to do this is to use synchronisms (highlighted in grey). For example, the Elamite dynasty Awan I, which ruled over Akkad (2020-1954), is recorded in parallel with the Sumerian dynasty Ur III (2020-1912). The 12 kings of Awan II (2390-2032) with the 3 kings of Awan I had a duration of 356 years (SKL WB) and reigned before the 12 kings of Shimashki (Sallaberger, Schrakamp: 2015, 23-25). Consequently, Puzur-Inšušinak⁴³, the 12th and last king of Awan II, reigned first over Elam (2040-2020), then also over Akkad (2020-2005) as first king of Awan I (Sallaberger, Schrakamp: 2015, 122-126).

| SUMER | | AKKAD | | ELAM | | |
|-----------|-----------------|-------------------------|------------------------|-----------------|-------------------|---|
| URUK IV | | | | AWAN II | | |
| Ur-nigina | | | 2062-2055 | Ḫita | 2065 - | 11th |
| Ur-gigira | | | 2055-2049 | | | |
| Kuda | | | 2049-2043 | | | |
| Puzur-ilī | | | 2043-2038 | | -2040 | |
| Ur-Utu | | | 2038-2032 | Puzur-Inšušinak | 2040 - | 12th |
| Utu-hegal | URUK V | | 2032-2021 | | | |
| UR III | | AWAN I | | | -2020 | SIMĀŠKI |
| Ur-Namma | 2020 - -2002 | | 2020 - -2005 | 1st | | [unammed] 2020 - |
| Šulgi | 2002 - -1954 | [-]-lu Kudu[r-Laga.] | 2005-1990 1990-1954 | 2nd 3rd | | -1990 1st Girmamme 1990-1955 |
| Amar-Sîn | 1954-1945 | | | | 2nd | Tazitta I 1955-1940 |
| Su-Sîn | 1945-1936 | | | | 3rd | Ebarat I 1955-1935 |
| Ibbi-Sîn | 1936 - -1912 | ISIN I Išbi-Erra | 1923 - -1890 | | 4th 5th 6th | Tazitta II 1935-1925 Lurrakluḫḫan 1925-1915 Kindadu 1915-1905 |
| | | | | | 7th | Idadu I 1905-1890 |
| | | Šû-ilišu | 1890-1880 | | 8th | Tan.Ruḫuratir 1890-1875 |

The chronology of the first 17 Assyrian kings is hypothetical for the following reason:

- According to the Assyrian King List the first 17 rulers were “kings under tents”, which means that these tribal kings were established not according to a royal lineage but according to their wisdom. Consequently, the duration of their reign must have been shorter since they began to rule at an advanced age. The average duration of 9 years was chosen because of the synchronism of Tudiya (2235-2226) with Ibrum (2245-2228), which can be deduced from the trade treaty between Ibrum, king of Ebla (in fact vizier of Iš’ar-Damu) and an anonymous king of Abarsal. According to Enna-Dagan, king of Mari: *Iblul-Il, king of Mari, took possession of Gallab’i, [of ...] and the Ganum (of Ebla) and conquered Abarsal (unknown city) at Zahiran* (Liverani: 2013, 119-126). Zahiran, also known as Sahiri (*Sa-hi-ri*), was an iron age city of the ancient near east. During the Mari-Ebla war, Zahiran was the site of a battle between Igrīš-Halab, King of Ebla (2264-2252), and Iblul-il, King of Mari (2272-2252). About a decade later it would have been absorbed into the empire of Sargon of Akkad. The town was sacked in the Battle of Nineveh (612 BCE). The chronicle of Aššur-uballit II states of this battle between Babylonian and Assyrian armies that: *in the month Ābu the king of Akkad and his army went upstream to Mane, Sahiri (Zahiran) and Bali-hu*. As the city of Abarsal had a king, it must have been an important city, so at that time (c. 2270 BCE) and in the Zahiran region there were two cities, Ashur and Nineveh. However, the name Ashur did not refer to a city but to the “region of the god Ashur”. In his report on the conquest of Abarsal, Enna-Dagan (2249-2245) does not mention any king of Abarsal, but Ibrum (2245-2228) does, which could, therefore, correspond to the first Assyrian king, Tudiya (2235-2226).

⁴³ An overlap of all available documents leads to the following conclusion (De Graef/Tavernier: 2012, 293-303): Puzur-Inšušinak was the first Elamite king (Awan I) who was able to dominate a major chunk of Babylonia by means of alliances to control main trade routes to Syria. That chunk was not insignificant, since included in it were northern Babylonia and the adjoining Diyala region, therefore more than half of the traditional Babylonian territories. Puzur-Inšušinak's dominion in the east were equally (if not even more) impressive, since, apart from the Susiana and the state of Awan, he put under his (military) rule the Zagros territories as far as the Hamadan plain (Kimash and Hurti). If he also controlled Anshan, Puzur-Inšušinak probably was the first Elamite ever both to establish commercial hegemony over the entire western section of the Iranian plateau and to integrate the Susiana with Elam in a vast conglomerate or "commercial empire". This control of trade routes in Akkadian cities in the north sparked rivalries and opposition from Sumerian cities in the south. The king of Elam Puzur-Inšušinak founded his very brief empire (Awan I) by allying with the military aristocracy of kings of Gutium and joining the kings of Akkad to control the trade route towards Syria. Taxation (and plunder) of this important trade route severely disadvantaged Sumerian cities causing their resentment. On the other hand, the growing prosperity of this region attracted massively nomadic Amorites living in Syria. The relationship between the “emperor” of Elam, the Mesopotamian kings and the Amorites was complex because it wavered between vassalage and rebellion, which complicates a bit more the reading of documents. For example, Utu-hegal who put an end to the Gutium dynasty (in 2032 BCE), was king of Uruk, king of the four quarters of the world (Sumer and Akkad), but also vassal of Awan.

The synchronisms obtained by a prosopographical study of the kings of Lagash, Mari and Ebla (Archi: 1996, 11-28) allow a chronological rebuilding (Joannès: 2001, XVI-XVII). Since there are 12 intervals between the first king of Lagash Ur-Nanše (2340-2322) and the 5th, En-metena (2282-2252), each interval should have an average duration of 6 years = (2322-2252)/12.

TABLE 30

| LAGASH I | MARI | EBLA | (Vizier) | UR I | N° | period |
|--------------------------------|-----------------|------------------|------------|--------------------|-----------|-----------|
| Ur-Nanše (18) | Ikun-Šamaš | Abur-Lîm | | Mesannepada (20) | | 2340-2320 |
| Akurgal (5<) | | | | Aannepada | 1 | 2320-2318 |
| E-anatum (30) | Ikun-Šamagan | Agur-Lîm | | Meski'agnuna (36?) | 2 | 2318-2312 |
| | | Ibbi-Damu | | | 3 | 2312-2306 |
| | Iški-Mari | Baga-Damu | | 4 | 2306-2300 | |
| | Anubu | Enar-Damu | | Elulu (25) | 5 | 2300-2294 |
| En-anatum I (6?) | | | | 6 | 2294-2288 | |
| En-metena (30) | Sa'umu | Iš'ar-Malik | | | 7 | 2288-2282 |
| | Itup-Išar | Kun-Damu | | | 8 | 2282-2276 |
| | Iblul-II (20?) | Adub-Damu | | Balulu (36) | 9 | 2276-2270 |
| | | Igriš-Halab (12) | Darmia | | 10 | 2270-2264 |
| | | | | 11 | 2264-2258 | |
| | | | | 12 | 2258-2252 | |
| En-anatum II (7) | Nizi (3) | Irkab-Damu (7) | Tir | | | |
| En-entarzi (5) | Enna-Dagan (4?) | | Arrukum | | | |
| Lugal-Anda (7) | Ikun-Išar (-) | | | AKKAD | | |
| Urukagina (11) | Hida'ar (35) | Iš'ar-Damu (32) | Ibrium | Sargon | | 2243 - |
| Lugalzagesi ⁴⁴ (25) | Išqi-Mari (9) | | Ibbi-zikir | | | -2213 |

Iš'ar-Damu (2245-2213), king of Ebla, reigned 32 years through his two viziers: 17 years with Ibrum (2245-2228) then 15 years with Ibbi-zikir (2228-2213), that is 17 + 15 = 32 years (Pomponio: 2013, 71-83). This chronology can be improved by the following synchronisms (Charpin: 2008, 222-233):

- Year 1 of Irkab-damu king of Ebla (2252-2245) corresponds to year 1 of Nizi king of Mari (2252-2249) and his Year 7 corresponds to year 1 of Iš'ar-Damu king of Ebla (2245-2213);
- Year 1 of Hida'ar king of Mari (2245-2210) corresponds to year 1 of Iš'ar-Damu king of Ebla;
- The destruction of Ebla by Sargon is dated to year 32 of Iš'ar-Damu (2245-2213);
- The destruction of Mari in year [42] Sargon (2243-2187) is dated to year 9 of Išqi-Mari (2210-2201) king of Mari (Gordon, Rendsburg: 2002, 62-72);
- Year 1 of Puzur-Estar, king of Mari (1958-1933) corresponds to year 44 of Šulgi king of Ur (2002-1954);
- Ur-Namma's reign, king of Ur (2020-2002), is included in Apil-Kîn's reign (2030-1995), king of Mari.

TABLE 31

| LAGAŠH I | | Reign | MARI | Reign | | EBLA | Reign | |
|----------------|----|-------------------------------|--------------------------|---------------|------|---------------------|-----------|-----|
| Ur-Nanše | 18 | 2340-2322 | Ikun-Šamaš | 2340-2318 | [18] | Abur-Lîm | 2340-2318 | |
| Akurgal | 4 | 2322-2318 | Ikun-Šamagan | 2318 - | | Agur-Lîm | 2318-2312 | [6] |
| E-anatum | 30 | 2318 - -2288 | Ibbi-Damu | -2306 | | Ibbi-Damu | 2312-2306 | [6] |
| | | | Iški-Mari | 2306-2294 | | Baga-Damu | 2306-2294 | [6] |
| En-anatum I | 6? | 2288-2282 | Anubu (Ianupu) | 2294-2282 | | Enar-Damu | 2294-2282 | [6] |
| En-metena | 30 | 2282 - -2252 | Sa'umu | 2282-2276 | | Iš'ar-Malik | 2282-2276 | [6] |
| | | | Itup-Išar | 2276-2270 | | Kun-Damu | 2276-2270 | [6] |
| | | | Iblul-II | 2270 - | 20? | Adub-Damu | 2270-2264 | [6] |
| | | | | -2252 | | Igriš-Halab | 2264-2252 | 12 |
| En-anatum II | 7 | 2252 - -2245 | Nizi | 2252-2249 | 3 | Irkab-Damu | 2252 - | 7 |
| | | | Enna-Dagan | 2249-2245 | 4? | | | |
| AKKAD | | | Ikun-Išar | 2245-2245 | - | | -2245 | |
| Sargon | 56 | 2243 - -2187 | Hida'ar | 2245-2210 | 35 | Iš'ar-Damu | 2245-2213 | 32 |
| | | | Išqi-Mari | 2210-2201 | 9 | <i>Fall of Ebla</i> | | |
| | | | <i>Fall of Mari</i> | 2201 - | | | | |
| Rimuš | 9 | 2187-2178 | | | | | | |
| Maništusu | 15 | 2178- 2163 | <i>military governor</i> | -2164 | | | | |
| Narâm-Sîn | 37 | 2163-2126 | Ididiš | 2164 - | 60 | | | |
| Šar-kali-šarri | 25 | 2126-2101 | | -2104 | | | | |

⁴⁴ Lugalzagesi's reign is approximate (2240-2215). We only know that it encompasses Urukagina's reign.

| | | | | |
|-----------|-----------|-------------|-----------|----|
| LAGASH II | | Šu-Dagan | 2104-2099 | 5 |
| Pirig-me | 2100-2090 | Išmah-Dagan | 2099 - | 45 |
| Lu-Ba'u | 2090-2080 | | -2054 | |

Mesopotamian chronology can, therefore, be established by synchronisms from the reign of Ur-Nanše (2340–2322) to the reign of Nabonidus (556–539) and can be anchored on an absolute date from the reign of Ur-Namma (2020–2002). The Assyrian chronology can be established by synchronisms reliably only from the reign of Sulili (1954–1940) to the reign of Aššur-uballit II (612–609) and can be anchored on an absolute date from the reign of Erišu I (1873–1834). Since Elamite chronology has no year of reign or absolute date, it can only be established by synchronisms with Mesopotamian chronology (Vallat: 1999, 109–117; 2000, 7–17; 2001, 272–276; 2006, 123–135; 2007, 73–83).

CHRONOLOGY OF ELAMITE REIGNS OVER THE PERIOD 2390–1050 BCE

TABLE 32

| ASSYRIA | Reign | BABYLON | Reign | ELAM | Reign |
|----------------------------|--------------|------------------------|---------------|-------------------|-----------|
| Šamšî-Adad I (n°39) | 1712 - | Sîn-muballiṭ | 1717-1697 | Širuk-tuḥ | 1715-1695 |
| | -1680 | Hammurabi | 1697 - | Siwe-palar-ḥuppak | 1695 - |
| Išme-Dagan I | 1680-1670 | | | | -1670 |
| Aššur-dugul | 1670-1664 | | | Kudu-zuluš I | 1670 - |
| Bêlu-bâni | 1664-1654 | | -1654 | | |
| Libbaya | 1654 - | Samsu-iluna | 1654 - | | -1645 |
| | -1638 | | | Kutir-Naḥḥunte I | 1645 - |
| Šarma-Adad I | 1638-1626 | | | | |
| Puzur-Sîn | 1626-1615 | | -1616 | | -1620 |
| Bazaya | 1615-1588 | Abi-ešuḥ | 1616-1588 | Temti-Agun II | 1620-1595 |
| Lullaya | 1588-1582 | Ammiditana | 1588 - | Kutir-Silḥaḥa | 1595 - |
| Šû-Ninûa | 1582-1568 | | | | |
| Šarma-Adad II | 1568-1565 | | | | -1570 |
| Ērišu III | 1565-1553 | | -1551 | Kuk-Našur II | 1570 - |
| Šamšî-Adad II | 1553-1547 | Ammišaduqa | 1551 - | | -1545 |
| Išme-Dagan II | 1547-1531 | | -1530 | Kudu-zuluš II | 1545-1525 |
| Šamšî-Adad III | 1531-1516 | Samsuditana | 1530 - | Tan-Uli | 1525-1505 |
| Aššur-nêrârî I | 1516-1491 | <i>Fall of Babylon</i> | -1499 | Temti-ḥalki | 1505 - |
| Puzur-Aššur III | 1491 - | Burna-Buriaš I | 1495-1479 | | -1485 |
| | -1467 | Ur[...]iaš | 1479-1463 | Kuk-Našur III | 1485-1465 |
| Enlil-nâšir I | 1467-1455 | Kaštiliašu III | 1463-1451 | Kidinu | 1465-1450 |
| Nûr-ilî | 1455-1443 | Ulam-Buriaš | 1451 - | Inšušinak-sunkir- | 1450 - |
| Aššur-šadûni | 1443-1443 | | -1439 | nappipir | -1440 |
| Aššur-rabi I | 1443-1433 | Agum III | 1439 - | Tan-Ruḥuratir II | 1440-1435 |
| Aššur-nâdin-aḥḥe I | 1433-1424 | | -1423 | Šalla | 1435-1425 |
| Enlil-nâšir II | 1424-1418 | Kadašman-Harbe I | 1423 - | Tepti-aḥar | 1425 - |
| Aššur-nêrârî II | 1418-1411 | | -1407 | | |
| Aššur-bêl-nišešu | 1411-1403 | Kara-indaš | 1407 - | | -1405 |
| Aššur-rê'im-nišešu | 1403-1395 | | -1391 | Igi-halki | 1405 - |
| Aššur-nâdin-aḥḥe II | 1395-1385 | Kurigalzu I | 1391 - | | -1385 |
| Eriša-Adad I | 1385 - | | -1375 | Pahir-iššan | 1385-1375 |
| | -1358 | Kadašman-Enlil I | 1375 - | Attar-Kittaḥ | 1375-1365 |
| | | | -1360 | Unpaḥaš-Napiriša | 1365-1360 |
| Aššur-uballiṭ I | 1358 - | Burna-Buriaš II | 1360 - | Kidin-Ḥutran I | 1360-1355 |
| | | | -1333 | Ḥumban-numena I | 1355-1345 |
| | | Kara-ḥardaš | 1333-1333 | Untaš-Napiriša | 1345 - |
| | | Nazi-Bugaš | 1333-1333 | | |
| | -1323 | Kurigalzu II | 1333 - | | |
| Enlil-nêrârî | 1323-1313 | | -1308 | | |
| Arik-dên-ilî | 1313-1302 | Nazi-Maruttaš | 1308 - | | -1305 |
| Adad-nêrârî I | 1302 - | | -1282 | Kidin-Ḥutran II | 1305 - |
| | -1271 | Kadašman-Turgu | 1282 - | | -1275 |
| Shalmaneser I | 1271 - | | -1264 | Napiriša-untaš | 1275 - |
| | | Kadašman-Enlil II | 1264-1255 | | |
| | -1242 | Kudur-Enlil | 1255-1246 | | -1245 |
| Tukultî-Ninurta I | 1242 - | Šagarakti-šuriaš | 1246-1233 | Kidin-Ḥutran III | 1245 - |
| | | Kaštiliašu IV | 1233-1225 | | |

| | | | | | |
|-----------------------|-----------|---------------------|-----------|-----------------------|-----------|
| | | Enlil-nâdin-šumi | 1225-1224 | | |
| | | Kadašman-Harbe II | 1224-1223 | | |
| | | Adad-šuma-iddina | 1223-1217 | | -1215 |
| | -1206 | Adad-šuma-ušur | 1217 - | Ḫallutaš-Inšušinak | 1215 - |
| Aššur-nâdin-apli | 1206-1203 | | | | |
| Aššur-nêrârî III | 1203-1197 | | | | |
| Enlil-kudurri-ušur | 1197-1192 | | -1187 | | -1190 |
| Ninurta-apil-Ekur | 1192-1179 | Meli-Sipak | 1187-1172 | Sutruk-Naḫḫunte I | 1190 - |
| Aššur-dân I | 1179 - | Marduk-apla-iddina | 1172-1159 | | |
| | | Zababa-šuma-iddina | 1159-1158 | | -1160 |
| | | Enlil-nâdin-aḫi | 1158-1155 | Kutir-Naḫḫunte II | 1160-1155 |
| | | Marduk-kabit-aḫḫešu | 1159-1141 | Šilhak-Inšušinak | 1155 - |
| | -1133 | Itti-Marduk-balaṭu | 1141 - | | |
| Ninurta-tukultî-Aššur | 1333-1333 | | | | |
| Mutakkil-Nusku | 1333-1333 | | -1133 | | |
| Aššur-rêš-iši I | 1133-1115 | Ninurta-nâdin-šumi | 1133-1127 | | -1125 |
| Tiglath-pileser I | 1115 - | Nebuchadnezzar I | 1127-1105 | Ḫutelutuš-Inšušinak | 1125-1105 |
| | | Enlil-nâdin-apli | 1105-1101 | Šilhina-hamru-Lagamar | 1105 - |
| | -1076 | Marduk-nâdin-aḫḫê | 1101-1083 | | -? |
| Ašared-apil-Ekur | 1076-1074 | Marduk-šapik-zêri | 1083-1070 | | |
| Aššur-bêl-kala | 1074-1056 | Adad-apla-iddina | 1070-1048 | | |

The Elamite chronology before the reign of Širuk-tuḫ (1715-1695) is more difficult to establish because of the presence of parallel dynasties. We can note that between En-anatum I (2288-2282) and Šulgi (2002-1954) the reigns of the 14 Elamite kings lasted on average about 25 years (= [2288 - 1954]/14).

TABLE 33

| ELAM (AWAN) | reign | | | LAGASH I (SUMER) | reign |
|--|-----------|----------------------|-----------|------------------------------|------------------|
| Pieli | 2390-2365 | | | En-ḫegal | 2370-2355 |
| Tari | 2365-2340 | | | Lugal-ša-engur ⁴⁵ | 2355-2340 |
| Ukku-taḫiš | 2340 - | | | Ur-Nanše | 2340-2322 |
| | -2315 | | | Akurgal | 2322-2318 |
| Ḫišur | 2315-2290 | ELAM (SUSA) | reign | E-anatum | 2318-2288 |
| Šušun-tarana | 2290-2265 | [unnamed] | | En-anatum I | 2288-2282 |
| Napil-ḫuš | 2265-2240 | | | AKKAD | |
| Kikku-sime-temti | 2240-2215 | | | Sargon of Akkad | 2243 - |
| Luhḫi-iššan | 2215-2190 | | | | -2187 |
| Hišep-ratep | 2190-2175 | | | Rimuš | 2187-2178 |
| Ešpum (<i>governor</i>) | 2175-2165 | | | Maništusu | 2178-2163 |
| Ili-išmani (<i>vassal</i>) | 2165-2140 | | | Narâm-Sîn | 2163 - |
| Epir-mupi (<i>vassal</i>) | 2140-2115 | | | | -2126 |
| ? | 2115-2090 | | | Šar-kali-šarri | 2126-2101 |
| Ḫielu | 2090-2065 | | | | |
| Ḫita | 2065-2040 | | | URUK IV | |
| Puzur-Inšušinak | 2040 - | | | Utu-ḫegal | 2032-2021 |
| | | SIMAŠKI | | UR III | |
| | -2005 | [unnamed] | 2020 - | Ur-Namma | 2020-2002 |
| [Ḫie?]-lu | 2005-1990 | | -1990 | Šulgi | 2002 - |
| Kudu ₇ [ur-Lagamar] ⁴⁶ | 1990-1954 | Girnamme | 1990-1955 | | -1954 |
| | | Tazitta I / Ebarat I | 1955-1940 | Amar-Sîn | 1954-1945 |
| | | Ebarat I | 1940-1935 | Šu-Sîn | 1945-1936 |
| | | Tazitta II | 1935-1925 | Ibbi-Sîn | 1936 - |
| | | Lurrak-luhḫan | 1925-1915 | | |
| | | Kindadu | 1915-1905 | (Collapse of Ur) | -1912 |
| | | Idadu I | 1905-1890 | LARSA | |
| EPARTIDS | | Tan-Ruḫuratir I | 1890-1875 | Iemšium | 1910-1882 |
| Ebarti II | 1875-1855 | Ebarat II | 1875-1855 | Samium | 1882-1847 |
| Šilhaha | 1855-1835 | Idadu II | 1855-1825 | Zabâia | 1847-1838 |
| Temti-Agun I | 1835-1815 | Idadu-napir | 1825 - | Gungunum | 1838-1811 |
| Pala-iššan | 1815-1795 | | -1795 | Abi-sarê | 1811-1800 |
| Kuk-Kirmaš | 1795-1775 | Idadu-temti | 1795 - | Sumu-El | 1800-1771 |
| Kuk-Naḫudi | 1775-1755 | | -1765 | Nûr-Adad | 1771-1755 |

⁴⁵ Governor (ENSI) Lugal-ša-engur and King (LUGAL) En-ḫegal do not appear in King Lists but only in inscriptions.

⁴⁶ The name of the last king of the Awan dynasty, who reigned 36 years, is *ku-du₇-[ur-la-ga-mar]*, in line 13 of the WB444 prism (Langdon: 1923, 11-14, Plate II). This name is read *ku-ul[-]* despite the absence of Elamite names beginning with *kul*.

| | | | | | |
|-------------------|-----------------|--------------|-----------|---------------------|-----------|
| Kuk-Našur I | 1755-1735 | | | | |
| Atta-ḥušu | 1735-1715 | BABYLON | | ASSYRIA | |
| Širuk-tuḥ | 1715-1695 | Sin-muballit | 1717-1697 | Šamši-Adad I (n°39) | 1712 - |
| Siwe-palar-ḥuppak | 1695 - -1670 | Hammurabi | 1697 - | | -1680 |
| Kudu-zuluš I | 1670 - | | | Išme-Dagan I (n°40) | 1680-1670 |
| | | | | Aššur-dugul (n°41) | 1670-1664 |
| | | | -1654 | Bêlu-bâni (n°48) | 1664-1654 |
| | -1645 | Samsu-iluna | 1654 - | Libbaya (n°49) | 1654 - |

All synchronisms between the Elamite chronology and the “Ultra-Low” Mesopotamian chronology are perfectly respected. For a long time, the Mesopotamian chronology could not be evaluated by carbon-14 dating, but the site of Hazor which could be dated by carbon-14 allowed indirectly, through a precise synchronism with Hammurabi, the confirming of the Ultra-Low Chronology. For example, the “Greater Hazor” that corresponded with Mari (Stratum XVI), which began in MB IIA-B, in 1700 +/- 20 BCE, reached its peak around 1680 BCE at the earliest (Ben-Tor: 2004, 45-67). It was this Hazor, with its King Ibni-Addu, that maintained correspondence with Mari for a period of no less than 20 years. Given that Mari was destroyed by Hammurabi (1697-1654) in the 32nd year of his reign, in 1665 BCE according to the Ultra-Low Chronology, the beginning of the correspondence with Mari was in 1685 BCE, or in 1700 BCE +/- 20, according to the stratigraphy of the “Greater Hazor” (Ben-Tor: 2016, 76-77) calibrated by carbon-14 dating. This confirmation has recently been questioned by radiocarbonists who now claim that the dating of the Waršama Palace would confirm the Middle Chronology!

COMPARISON OF ABSOLUTE DATES FROM ASTRONOMY AND ¹⁴C DATES

An absolute date is a date known exactly and with no error percentage, even a small one. For example, since the Egyptian reign of Psamtik I is known to the nearest month (02/663–01/609) it is an absolute chronology because Year 1 of his reign = 663 BCE +/- 0. Since the 2000s radiocarbonists consider that their dating method allows one to obtain an absolute chronology and propose to archaeologists to calibrate the historical chronologies, Babylonian and Egyptian, with their ¹⁴C dates. Contrary to what they claim, ¹⁴C dates are neither absolute nor historical for the following reasons: ¹⁴C dates are known to have a percentage of error and the transformation of these ¹⁴C dates into historical dates is based on hypothetical historical interpretations that are often debatable (Wiener: 2012, 423–434). Moreover, radiocarbonists naively believe that conventional chronologies are accurate.

- Even with an accuracy of 1% the measurements of ¹⁴C rates are unusable in their raw state to provide a dating. They must be calibrated by dendrochronology, but correspondence between the uncalibrated years BP (Before Present) and calibrated years BCE is complex. In addition, some parts of the calibration curve are unusable, such as the period 800–400 BCE called 'plateau of Hallstatt' because the value remains constant in years BP. For example, the reign of Psamtik I (663-609), which is situated in this period, is not measurable. As a result, the reading of the BP dates calibration curve is equivocal, resulting in a significant inaccuracy of plus or minus X years (X is sometimes greater than 100 years!) despite the accuracy of the radiocarbon measurements (1%).
- A second factor of imprecision comes from the nature of the carbonaceous samples, because whereas the climate in Egypt allowed the conservation of many documents, inscriptions on papyrus or wooden objects, the Mesopotamian climate did not allow it. The only inscriptions exhumed in Mesopotamia appear on clay tablets and stone stelae, which are not datable because they are carbonless. The only objects that can be dated are pieces of charred wood from a fire, which can be dated historically, or which can be precisely located in a geological stratum. In these two cases the dating supposes a hypothesis: 1) either the piece of wood was cut a few years before its use (which is not verifiable because cedar being a precious wood, the beams of buildings have often been used for several decades and often reused during the construction of a new building, which artificially ages the final date of the material at the time of the fire), or 2) the object was buried (to get rid of it) in a layer which is therefore older than the object. Despite this imprecision of radiocarbon dating due to the method, and not to the precision of measurements, since the date of the charred wood corresponds to the manufacture of the object and not to its destruction, which generally took place several decades after its manufacture, or even more than a century later, radiocarbonists consider their dating to be absolute.
- A third factor of imprecision comes from the assumptions used by radiocarbonists to transform ¹⁴C dates into historical dates. Indeed, this transformation assumes the use of a conventional chronology to identify historical events to be dated (for example the destruction of a city due to a war among kings). This method induces a circular reasoning since the conventional chronology used to identify a historical

event is then precisely dated by ^{14}C , which indirectly validates the conventional chronology. This self-validation is difficult to detect because when a conventional chronology is validated by ^{14}C it is then used to evaluate the other conventional chronologies, which harmonizes all the dates among themselves and therefore prevents the detection of initial dating errors⁴⁷.

Radiocarbonists completely minimize the interpretation bias of their radiocarbon dating and believe that the accuracy due to calibration by dendrochronology is sufficient, but they are unaware that conventional chronologies used as a reference are sometimes erroneous. This conviction leads radiocarbonists to interfere in the debate on the absolute chronology of the Mesopotamian chronology of the 2nd millennium BCE, as can be seen in the article: *Integrated Tree-Ring-Radiocarbon High-Resolution Timeframe to Resolve Earlier Second Millennium BCE Mesopotamian Chronology*:

500 years of ancient Near Eastern history from the earlier second millennium BCE, including such pivotal figures as Hammurabi of Babylon, Šamši-Adad I (who conquered Aššur) and Zimrilim of Mari, has long floated in calendar time subject to rival chronological schemes up to 150+ years apart (...) To address, we have integrated secure dendrochronological sequences directly with radiocarbon (^{14}C) measurements to achieve tightly resolved absolute (calendar) chronological associations and identify the secure links of this tree-ring chronology with the archaeological-historical evidence. The revised tree-ring-sequenced ^{14}C time-series for Kültepe and Acemhöyük is compatible only with the so-called Middle Chronology and not with the rival High, Low or New Chronologies. This finding provides a robust resolution to a century of uncertainty in Mesopotamian chronology and scholarship, and a secure basis for construction of a coherent timeframe and history across the Near East and East Mediterranean in the earlier second millennium BCE (Manning, Griggs, Lorentzen, Barjamovic, Bronk Ramsey, Kromer, Wild: 2016, 1-27).

Is this statement scientifically robust as the authors of this article assert? An examination of the arguments used leads to the conclusion that it is not, because while the accuracy of carbon-14 measurements is extremely rigorous from a scientific point of view, the interpretation of the dates obtained is extremely fanciful from a historical point of view. Here are the main arguments used in the article (statements that are hypotheses, or approximations, have been underlined):

Alongside our knowledge of the Babylonian dynastic succession and the well-established synchronism of Šamši-Adad I's death in Hammurabi's 18th regnal year, this allows us to establish a relative chronological sequence of some 380 years between the ascent of the Assyrian ruler Erišum I and the destruction of Babylon during the Hittite invasion of Muršili I (...) At approximately the same time a new palace—the so called Waršama Palace of Mound Level 7 —was constructed on the citadel at the site of its burnt-down predecessor, the so-called Old Palace of Mound Level 8, and is contemporary with Kültepe Lower Town Level Ib. There is wood (Juniperus spp.) from the construction of the Waršama Palace with bark preserved, which allows dating of the exact year that the tree was felled, thereby offering a potential date for the palace's construction within a year or so, and a potential tie point with the REL. However, there is a critical gap in the evidence: the documentary record comes from the lower town area, which is entirely discrete from and with no stratigraphic or decisive documentary relationship to the Waršama Palace. A simultaneous destruction and transition from (i) Lower Town Level II to Ib, and (ii) the destruction and transition from the Old Palace to the Waršama Palace has hitherto been maintained as the most likely scenario and employed as a premise. But this assumption cannot itself form a fundamental link in the evidence chain and needs to be tested. A second site offers an independent starting point for doing so. A large number of bullae (sealed clay lumps) bearing e.g. the sealings of Šamši-Adad I, king of Upper Mesopotamia, and ruler of Aššur between

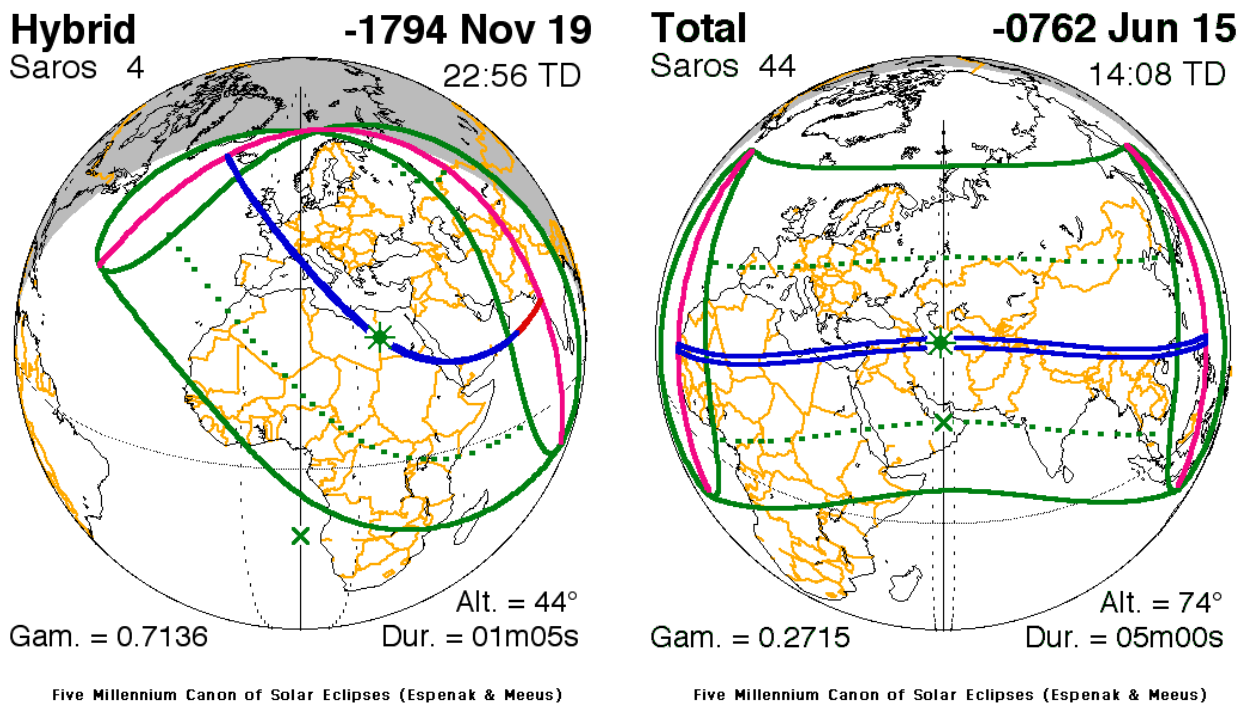
⁴⁷ The dating of the United Monarchy illustrates this bias in the ^{14}C dating method. The United Monarchy is the name given to the Israelite kingdom of Israel and Judah, during the reigns of Saul, David and Solomon, as depicted in the Hebrew Bible. However, as the Kingdom of Saul left no archaeological traces, this archaeological period of the United Monarchy, named Iron IIA, actually covers only the reigns of David and Solomon. The kingdoms of these two famous kings are located in a period dated 1200-800 BCE called the "Dark Ages" which has left no documents, except for the stele of Tel Dan which mentions the "House of David" (BYTDWD). Consequently, some archaeologists have even denied their existence. The only way to date the reign of David is to use the traditional chronology calculated from the biblical text and then check whether this dating is in accordance with the Assyrian chronology (the only absolute chronology during this period). Dating the reign of David (1057-1017) by ^{14}C makes it possible to verify that this method does not give absolute dates but indirectly validates the conventional chronology (1010-970). Indeed, ^{14}C dates are obtained according to the following process: radiocarbon dates are first calibrated by dendrochronology and then associated with historical dates from conventional chronologies. Consequently, this dating method indirectly validates conventional chronologies. Consequently, there is a problem of method with ^{14}C dating because archaeologists proceed in the opposite manner to historians: their method requires first of all to have a hypothesis from which they derive a chronology that is then confirmed by ^{14}C measurements of archaeological remains (Finkelstein, Piasezky: 2011, 50-54). There are two ways to prevent this radiocarbon dating method from being biased, 1) using a conventional chronology that is anchored on absolute dates obtained by astronomy, such as the Assyrian chronology over the period 1050-600 BCE, or 2) using a chronology that is anchored on synchronisms with another chronology that is anchored on absolute dates obtained by astronomy over the period of the measurements.

REL 165 and his death in REL 197 (a reign lasting 33 or 34 years), were found at the Sarıkaya Palace at Acemhöyük in Anatolia (...) We may compare the placement of the MBA tree-ring series against the date ranges previously estimated for Mesopotamian chronology based on textual, astronomical and archaeological information as they intersect together in the construction date and assemblage of the Sarıkaya Palace at Acemhöyük. It is evident that only some variation of the Middle Chronology is compatible with the tightly constrained data. Under the High Chronology Šamši-Adad would have died four decades before the Sarıkaya Palace was even constructed, which is incompatible with his numerous documentary links with the building (...) The ~13–16 years older shift from our results critically resolves a problem with the (now withdrawn) previous dendrochronological dating. Although this previous date favored the Middle Chronology, it was problematic as it left the construction of the Sarıkaya Palace at Acemhöyük (then given as 1774 +4/-7 BCE) occurring more or less when Šamši-Adad I died (REL 197 = 1776 BCE on the Middle Chronology—and not long before Šamši-Adad I's death on the Low Middle Chronology). And yet there are numerous sealings of Šamši-Adad I in the Sarıkaya Palace suggesting, first, that they are unlikely to have been all heirlooms (or a secondary deposit), and, second, that the palace must have existed for at least several years if not a decade or few decades before his death (...) Importantly this questions the long-held but unsubstantiated assumption that the destruction/transition between Lower Town Levels II and Ib equates with the destruction of the Old Palace and building of the new Waršama Palace (...) If we consider, the notable coincidence of consonant scenarios based on the integrated dendrochronological and ¹⁴C analysis of multiple timbers from monumental constructions at two sites (over 200 km apart) demonstrates that the chronology identified reflects the correct historical timeframe and that our findings are not some accident caused by one or two re-used timbers or some other unusual situation affecting one context or even one site. The Middle Chronology offers the best fit between the Old Palace/Lower Town Level II evidence and the construction of the subsequent Waršama Palace, whereas the Low-Middle Chronology only just fits. The Middle Chronology also minimizes the gap between the start of Lower Town Level Ib and the Earliest Use of the Waršama Palace to likely as little as ~8–24 years, whereas it is likely ~16–33 years with the Low-Middle Chronology. This is not decisive, but the Middle Chronology allows the best compromise of all the pre-existing archaeological-textual assumptions with the new dendro-¹⁴C dating framework (...) More importantly, by separating the two fires, we retain the tie between the REL sequence and the astronomical data (eclipses, Venus tablets), intercalations and even potentially the suggested link between a major volcanic dust veil and several northern hemisphere tree-ring growth anomalies 1628–1627 BCE and poor atmospheric observation conditions as evident in Mesopotamian records. Finally, by dissociating the two conflagrations, we gain the necessary time for the deposit of the numerous Šamši-Adad I bullae at Sarıkaya (previously something of a problem), but not enough time to render any of the later chronologies (Low Chronology, New Chronology) plausible (...) Conveniently, the sound new dates we report for the MBA chronology are only ~16 years different (older) than those previously suggested. Hence, although previous arguments using the now replaced tree-ring-based dates are inherently invalid in this strict respect, it turns out that the new, robust, evidence nonetheless finds the same Middle or Low-Middle Mesopotamian Chronology solutions are most likely but on a more rigorous basis. Thus, in line with recent text discoveries and analysis and astronomical study, we find that only the Middle Chronology or the Low-Middle Chronology (or a chronology very close to these) fits with the new dendro-¹⁴C dated constraints from the site of Acemhöyük, and also simultaneously creates a plausible historical linkage for the approximately associated dendrochronological-¹⁴C and text evidence from Kültepe. Contrary to claims that it should be dismissed, the Middle or Low-Middle Chronology can henceforth be regarded in approximate terms—with a robust dendro-¹⁴C anchor—as the accurate timeframe for Mesopotamian history. To express this new resolution in calendar years, the death of Šamši-Adad I (REL 197) may be placed ~1776 BCE or ~1768 BCE, removing previous uncertainty levels of +56/64 calendar years (to the High Chronology) and -64/88 calendar years (to the Low or New Chronologies). A decision between the Middle and Low-Middle Chronology largely hinges on the astronomical evidence, especially the record in the Mari Eponym Chronicle of what is interpreted as a solar eclipse placed about REL 127, the year after the birth of Šamši-Adad I – though there is some room for debate as the relevant text is not complete (...) The new dendro-¹⁴C dates require rethinking of recent analyses, which made assumptions based on the now incorrect previous dendrochronological dates. However, in sum, the situation remains similar—assuming we retain the approximate (within about 0–1 year) link between the birth of Šamši-Adad I in REL 126 and an eclipse in REL 127. There is a partial eclipse in 1845 BCE at sunset (hence likely visible), which is within 1 year of the Middle Chronology date for REL 127, and a slightly more conspicuous partial eclipse in 1838 BCE which matches exactly with the Low-Middle chronology date for REL 127 –whereas the total eclipse of 1833 BCE appears too late unless there are substantial unknown errors in the REL sequence. Earlier eclipses, such as in 1859 BCE, are too early, unless substantial reconsideration of the standard textual interpretation is considered. Thus, both the Middle

and Low-Middle Chronology have suitable eclipse candidates within the approximate precision of the available textual evidence, but the 1838 BCE eclipse offers a slightly better (more conspicuous) case.

Contrary to what the authors of the article assert, the dating of the Middle Chronology depends on several hypothetical and approximate synchronisms (underlined parts). Worse, the defence of the Middle Chronology, which would be the most “robust” according to carbon-14 measurements, is contradicted by their own dating: *Although this previous date favored the Middle Chronology, it was problematic as it left the construction of the Sarikaya Palace at Acemhöyük (then given as 1774 +4/-7 BCE) occurring more or less when Šamši-Adad I died (REL 197 = 1776 BCE on the Middle Chronology)*. The explanation for this paradox is simple: the timbers of this palace were reused, which artificially aged the building, and Šamši-Adad I died decades after the palace was built. Therefore, the radiocarbon measurements are not in question, but only the synchronicity of Šamši-Adad I's death with the dating of the buildings of his time. The second part of the article defending the Middle Chronology is based on the dating of a solar eclipse dated during the eponym N°127. The only problem in this astronomical analysis is that this solar eclipse never existed. The darkening of the sun mentioned during the Puzur-Ištar eponym (N°126), the year just after the birth of Šamši-Adad I, has been interpreted by some Assyriologists as a solar eclipse, which could presumably be dated 19/11/-1794* (Michel, Rocher: 1997-2000, 111-126). Although this article was written to defend the Middle Chronology, it gives all the arguments to show that it is false.

- First, the selected solar eclipse in 1795 BCE was only visible outside Assyria (and Babylonia) over a very small portion of the Earth's surface (left image). It is interesting to compare this eclipse with the total solar eclipse that occurred during the Bur-Sagale eponym (the only eclipse mentioned in Assyrian Eponym lists), dated in 763 BCE (-762*), and which took place over the city of Nineveh (image right). Consequently, there was no visible solar eclipse in Assyria in -1794*.



- The 1795 BCE eclipse contradicts the dating of the reign of Šamši-Adad I (1809-1776) according to the Middle Chronology. Indeed, since Šamši-Adad died in 1776 BCE during eponym N°199 (Ṭab-šilli-Aššur) and the eclipse occurred during eponym N°126 (Puzur-Ištar) this eclipse should be dated in 1849 BCE (= 1776 + 199 - 126). If the equation: 1849 = 1795 +/- 55 makes sense for radiocarbonists it is absurd for astronomers because eclipses are always dated to the day.
- The solar eclipse during the Puzur-Ištar eponym (N°126) is impossible to find because there was not a single total solar eclipse, which was visible in an Assyrian city, like Aššur or Nineveh, during the period 1850-1700 BCE. The conclusion is therefore obvious: this eclipse never existed. How can one explain this incredible paradox since this solar eclipse is cited by radiocarbonists to justify their defence of the Middle Chronology. The explanation is simple, the term *na'duru* “darkened, obscured, eclipsed” used in the commentary does not mean “eclipse” but “darkening”. It means an eclipse in a metaphorical way and is different from the usual *antalù* “eclipse” used in Mari⁴⁸. Consequently, for the Assyrian copyist

⁴⁸ The sentence: “on the 26th day of the month Sivan, in the 7th year [of Simbar-šipak], the day turned to night,” did not describe a solar eclipse, because a solar eclipse always coincides with the last day of the lunar month (29 or 30).

of that time, the birth of Šamšî-Adad I, from an Amorite dynasty, actually marked the end (or the eclipse) of the authentic Assyrian dynasty.

Contrary to what radiocarbonists claim, the “Ultra-Low” Chronology (below) is based on perfectly dated lunar eclipses (highlighted in sky blue) and is consistent with radiocarbon dating. Hammurabi's reign is rich in synchronisms (dates framed by a big black line) and historical events, which allows us to compare all the chronologies with each other. Since the chronologies of the Egyptian kings and Hazor can be determined by radiocarbon, this allows the chronology of Hammurabi to be determined indirectly through the synchronisms with Neferhotep I and Ibni-Addu.

TABLE 34

| BCE | N° | Assyrian eponym | [A] | [B] | [C] | [D] | [E] | [F] | [G] | |
|------|-----|-----------------|-----|-----|-----|-----|-----|-----|-----|---|
| 1706 | 172 | Abî-šagiš | 10 | 6 | 11 | 21 | | 15 | 3 | [A] Yahdun-Lîm king of Mari |
| | 173 | Tab-šilla-Aššur | | 7 | | | | | | [B] Šamšî-Adad I king of Assyria n°39 |
| 1705 | 174 | Iddin-Aššur | 11 | 8 | 12 | 22 | | 16 | 4 | [C] Sîn-muballiṭ king of Babylon |
| 1704 | 175 | Namiya | 12 | 9 | 13 | 23 | | 17 | 1 | [D] Rîm-Sîn I king of Larsa |
| 1703 | 176 | Ahu-šarri | 13 | 10 | 14 | 24 | | 18 | 2 | [F] Yakin-[îlu II?] king of Byblos |
| 1702 | 177 | Dadaya | 14 | 11 | 15 | 25 | | 19 | 3 | |
| 1701 | 178 | Ennam-[Aššur?] | 15 | 12 | 16 | 26 | | 20 | 4 | [G] Sobekhotep III king of Egypt |
| 1700 | 179 | [?]-Aššur | 16 | 13 | 17 | 27 | | 21 | 1 | [G] Neferhotep I king of Egypt |
| 1699 | 180 | Atānum | 17 | 14 | 18 | 28 | | 22 | 2 | |
| 1698 | 181 | Aššur-taklāku | 1 | 15 | 19 | 29 | | 23 | 3 | [A] Sumu-Yamam king of Mari |
| 1697 | 182 | Haya-malik | 2 | 16 | 20 | 30 | | 24 | 4 | [C] Accession of Hammurabi (Year 0) |
| 1696 | 183 | Šalim-Aššur | 1 | 17 | 1 | 31 | | 25 | 5 | [A] Samsî-Addu king of Mari |
| 1695 | 184 | Šalim-Aššur | 2 | 18 | 2 | 32 | | 26 | 6 | [C] Hammurabi king of Babylon |
| 1694 | 185 | Ennam-Aššur | 3 | 19 | 3 | 33 | | 1 | 7 | [F] Yantin-Ammu king of Byblos |
| 1693 | 186 | Suen-muballiṭ | 4 | 20 | 4 | 34 | | 2 | 8 | |
| 1692 | 187 | Rēš-Šamaš | 5 | 21 | 5 | 35 | | 3 | 9 | |
| 1691 | 188 | Ibni-Adad | 6 | 22 | 6 | 36 | | 4 | 10 | |
| 1690 | 189 | Aššur-imittî | 7 | 23 | 7 | 37 | | 5 | 11 | |
| 1689 | 190 | Îlî-ellatî | 8 | 24 | 8 | 38 | | 6 | 1 | [G] Sobekhotep IV king of Egypt |
| 1688 | 191 | Rigmānum | 9 | 25 | 9 | 39 | | 7 | 2 | |
| 1687 | 192 | Îkūn-pīya | 10 | 26 | 10 | 40 | | 8 | 3 | |
| 1686 | 193 | Ašqūdum | 1 | 27 | 11 | 41 | | 9 | 4 | [A] Yasmah-Addu king of Mari |
| 1685 | 194 | Aššur-malik | 2 | 28 | 12 | 42 | | 10 | 5 | [E] Ibni-Addu king of Hazor |
| 1684 | 195 | Aḫiyaya* | 3 | 29 | 13 | 43 | 1 | 11 | 6 | |
| 1683 | 196 | Awīliya | 4 | 30 | 14 | 44 | 2 | 12 | 7 | |
| 1682 | 197 | Nimar-Suen | 5 | 31 | 15 | 45 | 3 | 13 | 8 | |
| 1681 | 198 | Adad-bāni | 6 | 32 | 16 | 46 | 4 | 14 | 9 | |
| 1680 | 199 | Tab-šilli-Aššur | 7 | 33 | 17 | 47 | 5 | 15 | 1 | [B] Death of Šamšî-Adad I |
| 1679 | 200 | Ennam-Aššur | 1 | 1 | 18 | 48 | 6 | 16 | 2 | [B] Išme-Dagan I king of Assyria n°40 |
| 1678 | 201 | Aššur-emūqī | 2 | 2 | 19 | 49 | 7 | 17 | 1 | [G] Sobekhotep V king of Egypt |
| 1677 | 202 | Abu-šalim | 3 | 3 | 20 | 50 | 8 | 18 | 2 | [A] Zimrî-Lîm king of Mari |
| 1676 | 203 | Puṣṣānum | 4 | 4 | 21 | 51 | 9 | 19 | 3 | |
| 1675 | 204 | Îkūn-pî-Îštar | 5 | 5 | 22 | 52 | 10 | 20 | 1 | [G] Ibiaw king of Egypt |
| 1674 | 205 | Aḫiyaya | 6 | 6 | 23 | 53 | 11 | 21 | 2 | |
| 1673 | 206 | Bēliya | 7 | 7 | 24 | 54 | 12 | 22 | 3 | |
| | 207 | Îlî-bāni | | 8 | | | | | | (34 Assyrian years = 33 Babylonian years) |
| 1672 | 208 | Aššur-taklāku | 8 | 9 | 25 | 55 | 13 | 23 | 4 | |
| 1671 | 208 | Sassāpum | 9 | 10 | 26 | 56 | 14 | 24 | 5 | |
| 1670 | 209 | Ahu-waqar | 10 | 11 | 27 | 57 | 15 | 25 | 6 | |
| 1669 | 210 | Kizurum | 11 | 1 | 28 | 58 | 16 | 1 | 7 | [B] Aššur-dugul king of Assyria n°41 |
| 1668 | 211 | Dādiya | 12 | 2 | 29 | 59 | 17 | 2 | 8 | |
| 1667 | 212 | Yam-aha? | 13 | 3 | 30 | 60 | 18 | 3 | 9 | Larsa is annexed by Hammurabi |
| 1666 | 213 | Adad-bāni | 1 | 4 | 31 | [1] | 19 | 4 | 10 | [A] Yâpaḫ-Šumu-Abu king of Mari |
| 1665 | 214 | Ennam-Aššur | 2 | 5 | 32 | [2] | 20 | 5 | 11 | [E] Mari is destroyed by Hammurabi |
| 1664 | 215 | Attaya | 3 | 6 | 33 | [3] | | 6 | 1 | [B] accession of 6 Assyrian kings n°42-47 |
| 1663 | 216 | Ayā | 4 | 1 | 34 | [4] | | 7 | 2 | [B] Bēlu-bāni king of Assyria n°48 |

The king of Hazor Ibni-Addu reigned for at least 20 years, from 1685 to 1665 BCE, but probably his reign had begun several years before (around 1700 BCE?). The kings of Byblos, like Yantin-Ammu, reigned for an average of 25 years, but the variations of these reigns are not known. Egyptian reigns are based on several absolute dates fixed by astronomy (see hereafter).

Radiocarbon dating can be accurate to within plus or minus 20 years if the synchronism between the historical event to be dated and the wooden object that was associated with that event occurred over a short period of less than 20 years. For example, the construction of the Sarikaya Palace (1774 +4/-7 BCE) and the death of Šamši-Adad I (in 1680 BCE) were in fact separated by many decades (ten or so), which makes it a poor candidate for radiocarbon dating, whereas the “Greater Hazor” period is an excellent candidate. These two examples are used to determine the chronology of Hammurabi's reign and since the reign of this Babylonian king is crucial in deciding between the “Middle Chronology” and the “Ultra-Low Chronology”, these two examples must be examined in detail.

IBNI-ADDU KING OF HAZOR (1685-1665): ABSOLUTE CHRONOLOGY VERSUS ¹⁴C DATING

The city of Hazor also had important trade exchanges with Egypt which makes it possible to date this period of exchange through both stratigraphy and the study of the style of pottery in these two cities. Consequently, the Egyptian chronology of this period is linked with the Mesopotamian chronology via the chronology of the city of Hazor. This is particularly true for the history of “Greater Hazor”, which encompasses both the lower and upper cities, forming a site of over 200 acres, the largest in Israel at that time. It stands to reason that the Hazor that corresponded with Mari is “Greater Hazor”, consisting of the acropolis and the lower city. This Hazor, which began in MB IIA–B, approximately 1720–1680 BCE, reached its peak—even if its rise was rapid—only in MB IIB, some 20–30 years later, around 1680 BCE at the earliest. The Hazor that corresponded with Mari was thus Hazor Stratum XVI (= 3), and not XVII (= 4), during which construction of the city's fortifications had only begun. As shown, the Tell el-Dab'a chronology indicates that the MB IIA–B transition occurred not before the end of the 18th century, around 1700 BCE. Weinstein suggests dating this transition somewhat earlier, to between 1730–1710 BCE “in the late third and the early fourth quarters of the 18th century B.C.” The difference between these two sets of dates is not crucial (a date of c. -1710 +/- 20 may be chosen). This is therefore when building activity started at Hazor, even before the earliest mention of Hazor in the Mari documents. One may argue that Stratum F at Tell el-Dab'a, equated with the beginnings of MB Hazor, is wrongly dated and that it is in fact earlier. The response to this would be that there is a consensus among Egyptologists regarding the date of this phase and that any margin of error would be negligible. Stratum F is dated relatively late in the 13th dynasty, the date of which is also generally agreed upon. Even a slightly earlier date for this stratum would have no significant bearing. In summary, the synchronisms between Hammurabi, king of Babylon, Ibni-Addu, king of Hazor, and Neferhotep I, king of Egypt, make it necessary to date all these reigns in the same period. Since the strata of the “Greater Hazor” (of Ibni-Addu) are dated c. -1700 +/- 20 by carbon-14 and those of the corresponding Egyptian period are dated c. -1710 +/- 20, this implies that the corresponding Mesopotamian period (Hammurabi) should also be dated in the same period. The reign of Neferhotep I (1721-1710) was dated through radiocarbon measurements by Rolf Kraus.

TABLE 35

| King of Egypt | Reign (¹⁴ C) | King of Hazor | Reign (¹⁴ C) | King of Babylon | Reign | Chronology |
|---------------|--------------------------|---------------|--------------------------|-----------------|------------------|---------------|
| | (+/- 20) | | (+/- 20) | Hammurabi | 1793–1750 | Middle |
| Neferhotep I | 1721–1710 | Ibni-Addu | 1700–1680 | Hammurabi | 1697–1654 | Ultra-Low |

Therefore, as the conventional Egyptian chronology of this period is in agreement to +/- 20 years with the carbon-14 dating and as the stratigraphic dating of the objects found at Hazor gives the same value of -1700 +/- 20, this confirms the dating of the “Ultra-Low Chronology” (ULC), which fixes Šamši-Adad I's death in 1680 BCE. The chronology of the reigns of Neferhotep I (Dessoudeix: 2008, 197) and Abni-Addu obtained by radiocarbon dating agrees with the astronomical chronology anchored on absolute dates obtained by astronomy, within the limit of course of the measurement errors (+/- 20 years) of the radiocarbon dating in the period 2000-1600 BCE. However, the reign of Ibni-Addu (1685-1665) is 15 years lower than the reign measured by radiocarbon (1700-1680) and that of Neferhotep I (1701-1690) is 20 years lower (1721-1710). How can such a discrepancy be explained? Neferhotep I is considered the 27th Egyptian King of Dynasty 13. This dynasty is difficult to date because the duration of many reigns is not precisely known. However, Egyptologists use two chronological data to calculate these durations: Dynasty 13 began immediately after Dynasty 12, and given the number of reigns over this period, the average duration of the reigns is estimated to be about 4 years. Moreover, the chronology of Dynasty 13 can be anchored on absolute dates (like radiocarbon dates) because the reigns of Senwosret III and Amenemhat III, include well-identified astronomical phenomena. According to dating Middle Bronze Age strata, dated +/- 30 years (Bietak: 1991, 27-72), the first part of the 13th Dynasty could be dated 1750-1650 (MB IIB), the 15th Dynasty in 1650-1550 (MB IIC) and the beginning of the 18th Dynasty in 1550 BCE (LB AI). The material culture of the

Canaanite settlers in the eastern Delta displays a distinct similarity to the material culture found at Middle Bronze Age sites in Palestine (Ben-Tor: 2007, 1-3) and studies of scarabs of the Middle Bronze period from both regions argue for the southern Levant as the place of origin of the Second Intermediate Period of foreign rulers in Egypt⁴⁹ (Ben-Tor: 2009, 1-7). If the first Hyksos (14th dynasty) began to reign around 1750 BCE, they must have already arrived in Egypt more than a century earlier and, according to Egyptian records, most of them came from Palestine, which was called Retenu in Egyptian. Although the name and order of some pharaohs in the Hyksos period based on archaeological findings remain controversial the following chronological framework is generally accepted (Franke: 2013, 7-13):

TABLE 36

| Strata | Period | #1 | #2 | Egyptian Dynasty | Vizier | Asiatic Dynasty | Capital |
|--------|-----------------|-----|----|---------------------------------------|--------|----------------------------|---------|
| MB IIA | 1975–1778 | | | 12 (Lisht/ [Memphis]) | Yes | | |
| MB IIB | 1778–1750 | | | 13 (Lisht/ [Memphis]) (Thebes) | Yes | | |
| | 1750–1680 | | | | Yes | 14 (Hyksos) | Tanis |
| MB IIC | 1680–1613 | 400 | 68 | | - | 15 (Great Hyksos) Apopi | Avaris |
| | 1613–1572 | | 40 | | - | | |
| | 1572–1544 | | | 17 (Thebes) | - | 16 (Theban kings) | Edfu? |
| | 1544–1533 | | | Seqenenre Taa | - | | |
| LB AI | 1533–1530 | | | Kamose | - | (‘War of the Hyksos’) | |
| | 1530 – –1505 | | | 18 (Thebes) Ahmose | Yes | | |

The comparison of archaeological data with the Turin King List shows that the three Hyksos dynasties should be in parallel (Schneider: 1998, 123-145; Vernus, Yoyotte: 1998, 63,185-186). The 17th Dynasty is a continuation of the 13th dynasty. Its reconstruction is easier, but the order of its 9 kings remains controversial (Polz: 2010, 343-352). As there were 50 kings in the 13th Dynasty (1778-1572) and 9 kings in the 17th (1572-1530) the average duration of each reign is approximately 4 years = $(1778 - 1530)/(50 + 9)$. As we know the duration of the last two reigns (3 years for Kamose and 11 years for Seqenenre Taa), the 17th dynasty had to have started in 1572 BCE (= $1530 + 3 + 11 + 7 \times 4$). The average of 4 years may be adjusted based on the number of dated documents and highest dates (Ryholt: 1997, 203-204). There is no consensus about the reconstruction of the 13th Dynasty. The only document available to restore this dynasty is the Turin Canon (Dodson, Hilton: 2010, 100-129), despite its very incomplete state and numerous errors. Durations of missing reigns are supposed to be on average 5 years because the total of 24 known reigns is 118 years. Some lists of Pharaohs appear in a few tombs, but their ranking is sometimes surprising⁵⁰. Consequently, the chronology of the 13th dynasty (1778-1572) is uncertain, because the position of the first 35 kings is approximate and the last 15 kings are not identifiable in the present state of documentation⁵¹. The reign of Sihornedjherkef Hotepibre having several prestigious relics, we can assume that he easily exceeded the average of 4 years. In addition, there are several synchronisms between kings of Egypt and kings of Byblos (Gerstenblith: 1983, 101-107) as well as Zimri-Lim, a king of Mari, that allow the verifying of the reliability of the chronological anchorage. Assuming an exact contemporaneity, the death of Abi-Shemu had to have occurred around 1790 BCE (death of Amenemhat III). The living conditions of Byblos Rulers at the time of these Egyptian kings being quite similar one can assume a period of about 25 years of reign, because 8 reigns lasted 197 years ($25 \text{ years} = 197 \text{ years}/8$). Given that the historical sequence of kings of Byblos is known⁵² (Nigro: 2009, 159-175), one can also assume that Neferhotep I was a contemporary of Yantin-Ammu since there was found at Byblos a relief showing Pharaoh Neferhotep I opposite Prince Yantin-('Ammu) of Byblos. In addition, in a letter dated the 9th year of Zimri-Lim (1680-1667), the name Yantin-Ammu appears as the donor of a gold cup (Ryholt: 1997, 87-88). According to astronomy the first year of the reign of Senwosret I (1946-1901) is dated in 1946 BCE (Gabolde: 2010, 243-256) which therefore fixes the reign of Neferu-sobek (1782-1778).

⁴⁹ The site of Tell el-Dab'a, identified with ancient Avaris, was recently identified with the New Kingdom port of *Prw Nfr*, when two possible harbours were found (Bader: 2011, 137-158).

⁵⁰ For example, on the scene called “Lords of the West” from Inherkau's tomb (TT359) we see on the top row from the right: 1) King Amenhotep I, 2) King Ahmose I, 6) King Siamun A, 11) Crown Prince Ahmose Sapaïr, then on the bottom row from the right: 1) Ahmes-Nefertiry, 2) King Ramses I, 3) King Mentuhotep II, 4) King Amenhotep II, 5) King Taa Seqenenre, 6) Crown prince Ra(?)mose, 7) King Ramses IV, 8) King unknown, 9) King Thutmose I.

⁵¹ The choice made here is that of Dodson who rearranged the Turin King List based on genealogical links between kings. It is difficult to assess the accuracy about those periods of reigns (for the first 35 kings), but a value around +/- 10 years would seem reasonable. Similarly, unknown durations have been replaced by an average value of 4 years, except for kings No. 7 to 10 and because of Nebnuni and Iufeni having left no relics (Quirke: 2010, 55-68) we can assume that their reigns were short.

⁵² 1) Abi-Shemu I (Tomb I), 2) Ip-Shemu-Abi (Tomb II), 3) Yakin-el (Tomb III), a contemporary of Sihornedjherkef Hotepibre, and 4) Ilimi-Yapi (Tomb IV). Yatin-Ammu's father was Yakin.

The following chronological reconstruction shows that the agreement between reign dates, including $^{14}\text{C}^*$ dates, is satisfied at +/- 10 years (the parts highlighted indicate a synchronism between two reigns and the parts highlighted in sky blue indicate that the dates of the reigns were anchored on astronomical dates):

TABLE 37

| King of Mari | Reign | King of Byblos | Reign | King of Egypt | Reign | # |
|----------------|-----------|-----------------|----------------|-------------------------------------|----------------|-----|
| ? | | Abi-Shemu | 1815-1790 [25] | Amenemhat III ($^{14}\text{C}^*$) | 1836-1791 | 45 |
| ? | | Ip-Shemu-Abi | 1790 - [25] | Amenemhat IV ($^{14}\text{C}^*$) | 1791-1782 | 9 |
| ? | | | | Neferu-sobek. ($^{14}\text{C}^*$) | 1782-1778 | 4 |
| ? | | | -1765 | Sobekhotep I | 1778-1775 | 4 |
| ? | | Yakin-el | 1765-1740 [25] | [Hotepibre | 1753-1741 [12] | |
| ? | | Ilimi-yapi ? | 1740 - [20] | [-] Sewadjkare | 1741-1737 | [4] |
| Yaggid-Lîm | 1738 - | | | Sobekhotep II | 1737-1733 | [4] |
| | | | | Hor I | 1732-1728 | [4] |
| | | | | Amenemhat VII | 1728-1724 | [4] |
| | | | -1720 | Wegaf ($^{14}\text{C}^*$) | 1724-1722 | 2 |
| | -1716 | Yakin-[ilu II?] | 1720 - [25] | Khendjer | 1722-1717 | [4] |
| Yahdun-Lîm | 1716 - | | | Imyremeshaw | 1717-1713 | [4] |
| | | | | Antef V | 1713-1709 | [4] |
| | | | | Seth | 1709-1705 | [4] |
| | -1699 | | | Sobekhotep III | 1705-1701 | [4] |
| Sûmû-Yamam | 1699-1697 | | -1695 | Neferhotep I | 1701 - | 11 |
| Samsî-Addu | 1697-1687 | Yantin-Ammu | 1695 - [25] | | -1690 | |
| Yasmah-Addu | 1687-1680 | | | Sobekhotep IV | 1690-1681 | 9 |
| Zimrî-Lîm | 1680 - | | | Sobekhotep V | 1681-1679 | 2 |
| | -1667 | | | Sobekhotep VI | 1679-1676 | 3 |
| | | | -1670 | Ibiaw | 1676 - | 11 |
| Yapaḥ-šumu-Abu | 1667-1664 | ‘Egel? | 1670 - | | -1665 | |

The chronology anchored on the dates obtained by astronomy and that deduced from radiocarbon dating (^{14}C), are in good agreement, radiocarbon dates being only about 15 to 20 years higher.

TABLE 38

| Egypt | Reign | | Hazor | Reign | | Babylon | Reign | Chronology |
|--------------|-----------|-------------------|-----------|-----------|-------------------|-----------|-----------|------------|
| Wegaf | 1768-1765 | ^{14}C | | | | | 1793-1750 | Middle |
| | 1721-1710 | ^{14}C | | 1700-1680 | ^{14}C | | | |
| Neferhotep I | 1701-1690 | $^{14}\text{C}^*$ | Ibni-Addu | 1685-1665 | $^{14}\text{C}^*$ | Hammurabi | 1697-1654 | Ultra-Low |

The results of this table (above) show the following:

- The ^{14}C dating of the reign of Ibni-Addu (1700–1680) agrees only with the reign of Hammurabi (1697–1654) according to the Mesopotamian Ultra-Low chronology.
- The ^{14}C dating of the reign of Neferhotep I (1710–1700 BCE) agrees with the conventional Egyptian chronology: 1721–1710 BCE according to Krauss, but 1742–1731 BCE according to Ryholt (Dessoudeix: 2008, 197), and agrees only with the Mesopotamian Ultra-Low chronology.
- The reigns anchored on absolute dates obtained by astronomy: Neferhotep I (1701–1690); Ibni-Addu (1685–1665), provide a better chronological agreement and show that ^{14}C dates are on average 20 years higher ($^{14}\text{C}^*$), which would date the reign of Hammurabi around 1720–1670 BCE, instead of 1697–1654 BCE, and that of Šamši-Adad I around 1730–1700 BCE, instead of 1712–1680 BCE.

It is difficult to improve the accuracy of radiocarbon dating of the reign of Abni-Addu because we ignore his predecessors, which prevents having other synchronisms. On the other hand, we know the predecessors and successors of Neferhotep I, which allows us to refine the dating of this reign.

NEFERHOTEP I KING OF EGYPT (1701-1690): ABSOLUTE CHRONOLOGY VERSUS ^{14}C DATING

Neferhotep I's relative chronological position is secured thanks to the Turin King List as well as contemporary attestations. He was the successor of Sobekhotep III and predecessor of Sobekhotep IV. On the other hand, the absolute chronological position of Neferhotep is debated, with Ryholt and Baker seeing him respectively as the 26th and 27th pharaoh of the 13th Dynasty while Detlef Franke and Jürgen von Beckerath contend that he was only the 22nd ruler. Similarly, the absolute dating of Neferhotep's reign varies by as much as 40 years between the scholars, with Kim Ryholt dating the beginning of his reign c. 1740 BCE

and Thomas Schneider c. 1700 BCE. Ryholt is the only Egyptologist who has published a book to explain in detail how he calculated the chronology of the Second Intermediate Period (1800-1550) including the reign of Neferhotep I⁵³. For the internal chronology of the 13th Dynasty, Ryholt relied partly on the Turin King-list (TKL) and partly on dates preserved in contemporary sources (Ryholt: 1997, 190-251). From the latter group, only dates within the first regnal year and the highest attested dates are mentioned, since only these aid in establishing the reign lengths of the individual kings. The dates within the first regnal year help to narrow the accession date of the kings within the civil year. In order to evaluate Ryholt's chronology, the absolute chronology based on astronomical dates (highlighted in midnight blue) is used to measure dating deviations. The 12th Dynasty chronology is used to measure the differences (D14) between radiocarbon dates (¹⁴C date) and dates deduced from astronomy (Astro date). This date difference (D14 = ¹⁴C date - Astro date) is due solely to the errors in radiocarbon measurements which are random (+/- 10 years). As the 12th Dynasty ends in **1778 BCE** according to astronomy, this date serves as an anchor for the beginning of the 13th Dynasty. However, as Ryholt chose the date 1803 BCE instead of 1768 BCE (the date obtained by radiocarbon) a second deviation (DR) was introduced to measure the differences between the dates having as reference the astronomic dates (DR = D14 - 25 years, with 25 years = 1803 BCE – 1778 BCE). There is no consensus about the reconstruction of the 13th Dynasty. The only document available to restore this dynasty is the Turin King-list (Dodson, Hilton: 2010, 100-129). Consequently, the chronology of the 13th dynasty is uncertain because the position of the first 35 kings is approximate and the last 15 kings are not identifiable in the present state of documentation. It is assumed that the 17th dynasty (**1572-1530**) is a continuation of the 13th dynasty (**1778-1572**).

The 15th dynasty lasted about 108 years according to the Turin King-list and, according to Herodotus, the Egyptians did not want to remember this period perceived by them as harmful and which had lasted 106 years (The Histories II:128). According to the *Stele of year 400*, found at Tanis, the 15th dynasty of the Great Hyksos would have begun around 1680 BCE, 400 years prior to Ramses II. The Stele, made under Ramses II, apparently refers to the Sethian dynasty of the Hyksos, 400 years earlier⁵⁴. The era of Ramses II would be a continuation of a prestigious past, which would place the establishment of the cult of Seth/Baal around 1680 BCE, if one counts from Ramses II's reign. In fact, Seth is completely absent from the titular of Ramses II (1283-1216) and its worship appears only after the Battle of Kadesh (Desroches Noblecourt: 1996, 185-189, 370-372) and from the construction of the temple of Abu Simbel started in year 5 of his reign in **1279 BCE** (= 1283 – 5 + 1). Accordingly, the 15th dynasty began in **1679 BCE** (= 1279 + 400) and ended in **1572 BCE** (= 1679 – 108 + 1). The chronological data on the Hyksos period are few, but they overlap quite well⁵⁵. Eusebius (Preparatio Evangelica IX:27:3-5) quotes Artapan's book entitled: *The Jews* (written c. 200 BCE), explaining that the region above Memphis was divided into various kingdoms under Pharaoh [Sobekhotep IV] Chenephres⁵⁶ (1690-1682). From this pharaoh, titles acquired a military bearing; they pertain to security and replace the character of administrative function of titles from the late Middle Kingdom. Similarly, the evolution of sculpture —relief and full relief— can follow an obvious loss of interest in quality. All these changes could be explained by the presence of Asiatic dynasties, especially the Hyksos dynasty (15th). There is no consensus to precisely restore the chronology of the 15th dynasty (**1680-1572**), except for Apopi, its last Hyksos king, who is well attested and reigned about 4[1] years according to the Turin king-list (Schneider: 1998, 57-75). The Khyan sealings found at Edfu, in the same context together with those of

⁵³ Neferhotep I is known from a relatively high number of objects found over a large area, from Byblos to the north to the Egyptian fortresses of Buhen and Mirgissa in Lower Nubia to the south through all parts of Egypt, especially in the southern portion of Upper Egypt. A single attestation is known from Lower Egypt, a scarab from Tell el-Yahudiya. Other attestations include over 60 scarab seals, 2 cylinder-seals, a statue from Elephantine, and 11 rock inscriptions from Wadi el Shatt el-Rigal, Sehel Island, Konosso and Philae. The inscriptions record the members of Neferhotep's family as well as two high officials serving him: The royal acquaintance Nebankh and the Treasurer Senebi. Two stelae are known from Abydos one of which, usurped from king Wegaf and dated to his 4th regnal year, forbids the construction of tombs on the sacred processional way of Wepwawet. Two naoses housing two statues each of Neferhotep, as well as a pedestal bearing Neferhotep's and Sobekhotep IV's cartouches, have been found in Karnak. There are also a few attestations from the Faiyum region where the capital of Egypt was located at the time, in particular a statuette of the king dedicated to Sobek and Horus of Shedet, now on display in the Archaeological Museum of Bologna. Inscriptions from Aswan indicate that Neferhotep I had at least two children, named Haankhef and Kemi like his parents, with a woman called Senebsen. Despite this, Neferhotep I named his brother Sihathor as coregent in the last months of his reign and when both Sihathor and Neferhotep I died around the same time, they were succeeded by another brother, Sobekhotep IV, whose reign marks the apex of the 13th Dynasty; Mentions on a stela (JE 51911) that was placed in the temple of Amun at Karnak indicate that he was born in Thebes.

⁵⁴ The interpretation of this stele is controversial because it represents the vizier Sety (grandfather of Sety I, father of Ramses II), commemorating the event (Pritchard: 1969, 252-253), but Ramses II seems to have connected his reign to his predecessor whose name Sethos I referred to the god Seth.

⁵⁵ The Egyptian priest Manetho, who wrote around 280 BCE, indicates that the Hyksos ruled Egypt from Pharaoh Toutimaïos (Doudimes?) and they were expelled by the Pharaoh Ahmose (1530-1505).

⁵⁶ The information is accurate, because the royal activities during the 13th dynasty are attested until the end of Sobekhotep IV's reign, the most prestigious king of this dynasty (Vandersleyen: 1995, 123, 140, 159-160), further to the north of Thebes rather than Thebes itself (the capital of Egypt remained Lisht until the end of the dynasty).

Sobekhotep IV (1690-1681), attest a peaceful contact between the Hyksos (15th Dynasty)⁵⁷ and Upper Egypt (13th Dynasty) at that time (Moeller, Marouard: 2011, 108-111). The reign of Neferhotep I is located in a part of the Turin King-list which is well identified. The missing reigning periods in the list of the first 25 kings of the 13th dynasty are replaced by an average value of [4] years (= [1778 – 1679]/25). The duration of the 5 reigns from Sobekhotep III to Sobekhotep VI can be reconstructed because the durations of all these reigns are known, except that of Sobekhotep V which can be replaced by an estimated value of [3] years, which gives a total duration of 27 years⁵⁸ between Sobekhotep III and Sobekhotep V (1705 = 1679 + 27 - 1).

| Dyn | EGYPT | TKL | ¹⁴ C date | # | DR | D14 | Astro date |
|--|--|---------------|----------------------|-----|-----|-----------|------------|
| 13 | 20 Seth | [3] years | 1752-1749 | | +43 | +18 | 1709-1705 |
| | 21 Sobekhotep III <i>Sekemresewadjtawy</i> | 4 years 2 m. | 1749-1742 | 27 | +44 | +19 | 1705-1701 |
| | 22 Neferhotep I <i>Khasekhemre</i> | 11 years 4 m. | 1742-1731 | | +41 | +16 | 1701-1690 |
| | 23 Sihathor <i>Menwadjre</i> | 0 years X m. | 1732-1732 | | +42 | +17 | 1690-1690 |
| | 24 Sobekhotep IV <i>Khaneferre</i> | 9 II Akhet 3 | 1732-1720 | | +42 | +17 | 1690-1681 |
| (15) 25 Sobekhotep V <i>Merhotepre</i> | [3] years | 1720-1717 | +39 | | +14 | 1681-1679 | |
| | 26 Sobekhotep VI <i>Khahotepre</i> | 4 years 8 m. | 1717-1712 | 400 | 108 | +13 | 1679-1676 |
| | 27 Ibiaw <i>Wahibre</i> | 10 years 8 m. | 1712-1701 | | | +11 | 1676-1665 |

The relatively short duration of most of the 13th Dynasty's reigns, 4 years on average, has long intrigued Egyptologists compared to the average duration of 25 years for the 8 kings of the 12th Dynasty (25 years = [1975 – 1778]/8). The succession of Neferhotep I helps to explain the short durations of the 13th Dynasty, because whereas the kings of the 12th Dynasty succeeded one another from father to son, the kings of the 13th Dynasty succeeded one another from elder brother to younger brother⁵⁹. Paralleling ¹⁴C dates (Bronk Ramsey, Dee, Rowland, Higham, Harris, Brock, Quiles, Wild, Marcus, Shortland: 2010, 1554-1557) with astronomy-based dates.

TABLE 39

| Dyn | EGYPT | Highest date/ TKL | ¹⁴ C date | # | DR | D14 | astronomical date |
|-----|------------------------------------|-------------------|----------------------|-----|-----|-----------|-------------------|
| 12 | 1 Amenemhat I (¹⁴ C*) | 30 | 1975-1948 | 197 | | 00 | 1975-1946 |
| | 2 Senwosret I (¹⁴ C*) | 45 | 1948-1903 | | +2 | 1946-1901 | |
| | 3 Amenemhat II | 35 | 1903-1870 | | +2 | 1901-1863 | |
| | 4 Senwosret II | 8 | 1870-1863 | | +7 | 1863-1855 | |
| | 5 Senwosret III | 19 | 1863-1825 | | +8 | 1855-1836 | |
| | 6 Amenemhat III | 46 | 1825-1781 | | -11 | 1836-1791 | |
| | 7 Amenemhat IV | 9 years 4 months | 1781-1773 | | -10 | 1791-1782 | |
| | 8 Neferu-sobek (¹⁴ C*) | 3 years 10 months | 1773-1768 | | -9 | 1782-1778 | |
| 13 | 1 Sobekhotep I | 4 [I Akhet | 1803-1800 | +25 | 00 | 1778-1775 | |
| | 2 Sonbef | 5 [I Akhet | 1800-1796 | +25 | +2 | 1775-1771 | |
| | 3 [-] Nerikare | [4] years | 1796-1796 | +25 | +2 | 1771-1765 | |
| | 4 Amenemhat V | [4] years | 1796-1793 | +31 | +6 | 1765-1761 | |
| | 5 Qemaw | [4] years | 1793-1791 | +32 | +7 | 1761-1757 | |
| | 6 Iufeni | - | 1788-1788 | +31 | +6 | 1757-1757 | |
| | 7 Amenemhat VI | [4] years | 1788-1785 | +31 | +6 | 1757-1753 | |
| | 8 Nebnuni | 0 year ? | 1785-1783 | +32 | +7 | 1753-1753 | |
| | (14) 9 Sihor. Hotepibre | [4] years ? | 1791-1788 | +38 | +13 | 1753-1741 | |
| | 10 [-] Sewadjkare | [4] years ? | 1781 | +40 | +15 | 1741-1737 | |
| | 11 [-] Nedjemibre | 0 year 7 months | 1780-1780 | +43 | +18 | 1737-1737 | |
| | 12 Sobekhotep II | [4] years | 1780-1777 | +43 | +18 | 1737-1733 | |
| | 13 Reniseneb | 0 year 4 months | 1777-1777 | +45 | +20 | 1733-1732 | |

⁵⁷ In fact, Hyksos kings of the 15th dynasty were considered genuinely Egyptian kings since a manuscript, dated to the Third Intermediate Period (Barbotin: 2008, 58-59), lists two of them (likely six in all) in the following order: *Shareq, Apopi*, then Ahmose and Amenhotep I.

⁵⁸ (0 year + X months) + (8 years + X months) + ([N] years) + (4 years + 8 months) = 4x[4 years] = 16 years; [N] = [3].

27 years = (4 years + 8 months) + (11 years + 4 months) + (0 year + X months) + (8 years + X months) + ([3] years).

⁵⁹ Towards the end of his reign, Neferhotep I shared the throne with his brother Sihathor, a coregency that lasted a few months to a year. Sihathor died shortly before Neferhotep, who probably then appointed another brother, Sobekhotep IV, as coregent. In any case, Sobekhotep IV succeeded Neferhotep I soon afterwards, and reigned over Egypt for 11 years and 4 months. The reigns of the two brothers mark the apex of the 13th Dynasty.

When kings succeeded one another from father to son in a peaceful context the average length of reigns is related to the average life span by the following equation: Average length of reigns = (average life span)/(3 x number of brothers). For example, with an average life of 75 years and a succession of only the elder brother the average length of reign is 25 years (= 75/3) but with an average life of 60 years and a succession of 5 brothers the average length of reign is 4 years (= 60/[3x5]).

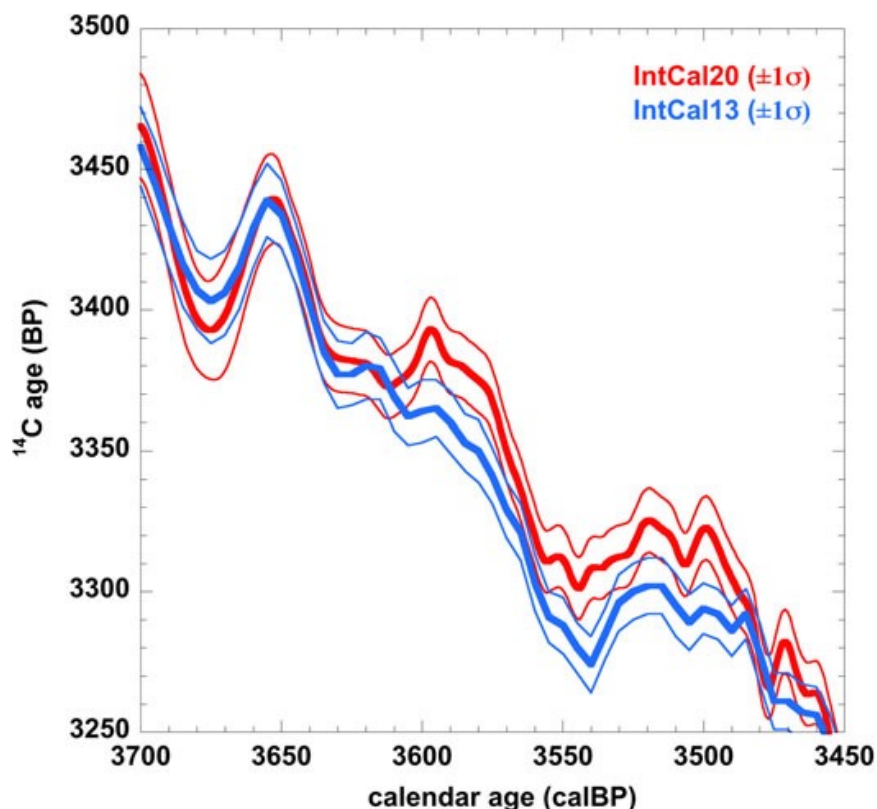
| | | | | | | | | |
|------|----|-----------------------------------|---------------------|-------------|-----|-----|-----|-------------------|
| | 14 | Hor I | [4] years | 1777-1775 | | +45 | +20 | 1732-1728 |
| | 15 | Amenemhat VII | [4] years | 1769-1766 | | +41 | +16 | 1728-1724 |
| | 16 | Wegaf (¹⁴ C*) | 2 years 3 months | 1766-1764 | | +42 | +17 | 1724-1722 |
| | 17 | Khendjer | 5 I Akhet 15 | 1764-1759 | | +42 | +17 | 1722-1717 |
| | 18 | Imyremeshaw | [4] years | 1759-1755 | | +42 | +17 | 1717-1713 |
| | 19 | Antef V | [3] years | 1755-1752 | | +42 | +17 | 1713-1709 |
| | 20 | Seth | [3] years | 1752-1749 | | +43 | +18 | 1709-1705 |
| | 21 | Sobekhotep III | 4 years 2 months | 1749-1742 | 27 | +44 | +19 | 1705-1701 |
| | 22 | Neferhotep I | 11 years 4 months | 1742-1731 | | +41 | +16 | 1701-1690 |
| | 23 | Sihathor | 0 years X month | 1732-1732 | | +42 | +17 | 1690-1690 |
| | 24 | Sobekhotep IV | 9 II Akhet 3 | 1732-1720 | | +42 | +17 | 1690-1681 |
| (15) | 25 | Sobekhotep V | [3] years | 1720-1717 | | +39 | +14 | 1681-1679 |
| | 26 | Sobekhotep VI | 4 years 8 months | 1717-1712 | 400 | 108 | +13 | 1679-1676 |
| | 27 | Ibiaw | 10 years 8 months | 1712-1701 | | | +11 | 1676-1665 |
| | 28 | Aya | [1]3 years 8 months | 1701-1677 | | | | 1665-1652 |
| | 29 | Ini I | 2 years 2 months | 1677-1675 | | | | 1652-1650 |
| | 30 | Sewadjtu | 3 years 4 months | 1675-1672 | | | | 1650-1647 |
| | 31 | Ined | 3 years 1 month | 1672-1669 | | | | 1647-1644 |
| | 32 | Hori | 5 years | 1669-1664 | | | | 1644-1639 |
| | 33 | Sobekhotep VII | 2 years | 1664-1662 | | | | 1639-1637 |
| | 34 | Ini II | [4] years | 1662-1658 | | | | 1637-1633 |
| | 35 | Neferhotep II | [4] years | 1658-1654 | | | | 1633-1629 |
| | | ? | | 1654 - | | | +13 | 1629 - |
| | | Sobekhotep VIII*? | | | | | | 1615-1590 |
| (16) | 50 | ? | | -1580 | | | | -1572 |
| 17 | 1 | Rahotep | | 1580-1576 | | 40 | +8 | 1572-1568 |
| | 2 | Sobekemsaf I | | 1576-1573 | | | +8 | 1568-1566 |
| | 3 | Sobekemsaf II | 7 | | | | | 1566-1556 |
| | 4 | Antef VI | | 1573-1571 | | | +15 | 1556-1554 |
| | 5 | Antef VII | 3 III Peret 25 | 1571-1566 | | | +17 | 1554-1545 |
| | 6 | Antef VIII | 0 | 1566-1566 | | | +21 | 1545-1545 |
| | 7 | Ahmoose (Iahmes) | | 1566-1559 | | | +21 | 1545-1544 |
| | 8 | Taa Seqenenre | 11 II Shemu (1) | 1559-1558 | | | +25 | 1544-1533 |
| | 9 | Kamose | 3 III Shemu 10 | 1558-1554 | | | +25 | 1533-1530 |
| 18 | 1 | Ahmoose (¹⁴ C*) | 22 | 1557-1532 | | | +27 | 04/1530-07/1505 |
| | 2 | Amenhotep I (¹⁴ C*) | 21 | 1532-1511 | | | +27 | 08/1505-02/1484 |
| | 3 | Thutmose I | 11 ? | 1511-1499 | | | +27 | 02/1484-11/1472 |
| | 4 | Thutmose II | 1 II Akhet 8 | 1499-1486 | | | +27 | 08/1472-05/1469 |
| | | [Hatshepsut] (¹⁴ C*) | 20 III Peret 2 | [1480-1458] | | | | [08/1472-04/1450] |
| | 5 | Thutmose III (¹⁴ C*) | 54 III Peret 30 | 1486-1434 | | | +14 | 08/1472-03/1418 |
| | 6 | Amenhotep II (¹⁴ C*) | 26 | 1434-1407 | | | +15 | 04/1418-02/1392 |
| | 7 | Thutmose IV | 8 III Peret 2 | 1407-1397 | | | +14 | 02/1392-10/1383 |
| | 8 | Amenhotep III (¹⁴ C*) | 38 III Shemu 1 | 1397-1359 | | | +14 | 10/1383-07/1345 |
| | 9 | Amenhotep IV (¹⁴ C*) | 17 II Akhet | 1359-1345 | | | +3 | 03/1356-10/1340 |
| | 10 | Semenkhkare | 1 | 1345 - | | | +5 | 10/1340-11/1338 |
| | 11 | -Ankhkheperure | 3 III Akhet 10 | -1342 | | | | 11/1338-11/1337 |
| | 12 | Tutankhamun (¹⁴ C*) | 10 [III Akhet] | 1342-1333 | | | +5 | 11/1337-10/1327 |
| | 13 | Aÿ | 4 IV Akhet 1 | 1333-1330 | | | +6 | 10/1327-11/1323 |
| | 14 | Horemheb I/II (¹⁴ C*) | 27 I Shemu 9 | 1330-1302 | | | +7 | 11/1323-01/1295 |

The dating of the reign of Neferhotep I (1701-1690) anchored on absolute chronology, and in agreement with the ¹⁴C dating (1717-1706), confirms the synchronism between the reign of Hammurabi (1697-1654) and Neferhotep I. This synchronism is also confirmed by the dating of the reign of Ibni-Addu (1685-1665) anchored on absolute chronology, and in agreement with the ¹⁴C dating (1700-1680).

| EGYPT | Reign | BYBLOS | Reign | HAZOR | Reign | BABYLON | Reign |
|-----------------------|-----------|-------------|-----------|-----------------------|-----------|-----------|-----------|
| Neferhotep I | 1701-1690 | Yantin-Ammu | 1695-1670 | Ibni-Addu | 1685-1665 | Hammurabi | 1697-1654 |
| ¹⁴ C date: | 1717-1706 | | | ¹⁴ C date: | 1700-1680 | | |
| D14 : | +16 years | | | | +15 years | | |

Radiocarbonists defending the Middle Chronology instead of the “Ultra-Low” Chronology have been misled due to a methodological problem (only the reigns associated with many carbonaceous objects are dateable by radiocarbon) and ignorance of historical eclipses (only total eclipses over a Mesopotamian capital city have been observed). The 15–20-year gap between the ^{14}C dates over the period 1750–1350 BCE and the dates anchored by the absolute chronology has long been ignored by radiocarbonists, as this discrepancy has been equated with measurement errors. For example, the trees carbonized by the eruption of the Santorini volcano (Thera) have been dated precisely in 1627 BCE by dendrochronology but around 1645 \pm 25 BCE by ^{14}C . However, as the accuracy of the ^{14}C measurements had been improved to \pm 8 years (instead of \pm 25 years), it was no longer possible to match the two dates, which were approximately 18 years apart (= 1945 BCE - 1927 BCE). This conundrum was solved recently: it had to be admitted that the calibration curve of the ^{14}C had to be recalibrated by 18 years! (Van Der Plicht, Bronk Ramsey, Heaton, Scott, Talamo: 2020, 1–23). For calibration purposes, chronological anchor points provide crucial tests. A case in point of major importance is the catastrophic Minoan eruption of the Santorini/Thera volcano in the second millennium BC, a crucial anchor for Bronze Age prehistory. The precise date of the eruption has been debated for decades. Using a Greenland ice core chronology, the Thera eruption was originally thought to date to around 1645 BCE based upon volcanic tephra found in the core. However, a recent and timely analysis shows that these volcanic horizons are more likely to be the result of eruptions in Alaska rather than Thera (McAneney /Baillie: 2019, 99–112). ^{14}C dating obviously plays a major role in this discussion. The debate has been and still is that ^{14}C shows older dates than archaeological dating of the eruption, up to more than a century. The authors of the study explain:

A key component for reliable radiocarbon calibration is the quantification and modeling of uncertainty, as well as how we approach data from different laboratories, different trees, different regions, and different environmental compartments. This is critical both for the construction of a robust IntCal20 curve and later calibration against it. We use the word uncertainty rather than error since it more correctly captures the natural variations that we are concerned with. Simply put every ^{14}C measurement comes with a measure of uncertainty (estimated by the laboratory) which must be incorporated into the curve fitting and calibration procedures. The better we can understand and represent this uncertainty the more reliable the calibration process. Historically, from radiometric days, the quoted error was provided by the laboratory considering the internal measurement processes only. When an assemblage of dates is then formed, it frequently becomes apparent that the scatter in the results from the individual laboratory is greater than had been imagined given the quoted uncertainties on the individual measurements (...) This development led to major ^{14}C (re)dating efforts of wood dated by dendrochronology for the relevant time range (...) The result is that indeed between ca. 3600 and 3500 calBP the calibration curve needs a shift of about 20 BP upwards in ^{14}C age, as can be seen in the figure (below).



By itself, this confirms the original observation by Pearson et al. (2018) and so, after calibration, the calendar dates will, therefore, become younger by a certain amount (...) Summarized, the ^{14}C date of the eruption can be taken as 3350 ± 10 BP ($1-\sigma$), which is an average of many dates from key sites like Palaikastro and Akrotiri (Bronk Ramsey et al. 2004; Bruins et al. 2008). Calibrating this ^{14}C date with calibration curves prior to the present IntCal20 curve yields a calendar date of the event in the late 17th century BC, most notably by wiggle matched ^{14}C dates of tree rings from an olive tree killed by the eruption. This resulted in a date of 1627–1600 BC for the event (Friedrich et al. 2006), between 100–150 years older than previous traditional archaeological assessments. This difference between archaeology and ^{14}C has spawned debates lasting decades (...) With IntCal13, the posterior calendar age estimate is approximately unimodal (i.e., shows a single large peak). In such an instance, it is reasonable to report a single interval—here we obtain a 68.2% ($1-\sigma$) interval extending from 1658–1624 calBC (= 1641 BCE +/- 17). However, with IntCal20 the picture is much more complex as our ^{14}C date of 3350 ± 10 BP hits the plateau in the curve (...) we note that the peak centered around 1625 calBC (1626 BCE +/- 19) carries the largest individual probability.

This new calibration curve transforms the raw radiocarbon dates (BP) into calibrated radiocarbon dates (calBP). Before 2020 the previous curve (IntCal13) gave the date of 1641 BCE but now the new curve (IntCal20) gives the date of 1626 BCE, i.e., a rejuvenation of 15 years (= 1641 - 1626). Although this 15-year lag depends on the position on the calibration curve and varies according to a complex relationship, this 15-year value corresponds to those measured with the ^{14}C dates of the reigns of Neferhotep I and Ibni-Addu. This recalibration of the ^{14}C dates proves that only the chronology anchored on absolute dates obtained by astronomy is an absolute chronology (+/- 0 year).

According to radiocarbonists, Djer's reign should be dated to 3055-2965 BCE with a margin of error of +/- 19 years (68% confidence range) or 3078-2967 BCE with a margin of error of +/- 55 years (95% confidence range). It is easy to see that the highest confidence range (95%) gives a reign length ($\Delta 2$) of 111 years, which is physically impossible, but this outlier does not confuse radiocarbonists. Second, even if the length of the reigns cannot be evaluated in absolute value, it can be evaluated in relative value deduced from the number of censuses and it is easy to see that the lengths of the reigns obtained by ^{14}C ($\Delta 2$) have no connection with those from the Egyptian king lists ($\Delta 0$). Third, radiocarbonists claim (naively) to establish an absolute chronology, but the dates obtained get younger with time since the beginning of Dynasty 2 started around 2930 BCE, in 1992 (Vercoutter: 1992, 200,223), then around 2819 BCE, in 2013, then around 2700 BCE, in 2019 (Mączyńska, Chłodnicki, Ciałowicz: 2019, 1-139), a rejuvenation of 230 years in only 27 years, which is much for an “absolute chronology”. Paradoxically, in 1970, the first (uncalibrated) ^{14}C dates of the Egyptian dynasties (Berger: 1970, 23-36) were much lower than later results.

| ^{14}C dating in: | (1970) | (1992) | (2013) | (2019) |
|----------------------------|------------------|------------------|------------------|------------------|
| Dynasty 1 | 2685–2315 | 3185–2930 | 3150–2819 | 3000–2700 |
| Dynasty 2 | 2315–2225 | 2930–2715 | 2819–2660 | 2700–2600 |

The preceding results clearly show that the Egyptian chronology obtained by ^{14}C measurements is not an absolute chronology, contrary to the claims of radiocarbonists, but only a relative chronology that must be recalibrated more rigorously.

All Mesopotamian synchronisms over the period 2040-1050

| BCE | URUK IV | | MARI | | GUTIUM | | ASSYRIA | | ELAM | |
|------|-----------|----|------------|----|------------|---|-------------|----|------------------|----|
| 2040 | Puzur-ilî | 3 | Išdub-El | 9 | Jarlaganda | 6 | Hayâni | 12 | Ĥita (AWAN) | 25 |
| 2039 | | 4 | | 10 | n°20 | 7 | | 13 | Puzur-Inšušinak | 1 |
| 2038 | n°5 | 5 | n°6 | 11 | Si'um | 1 | n°21 | 14 | n°12/n°1 | 2 |
| 2037 | Ur-Utu | 1 | Iškun-Addu | 1 | | 2 | Ilu-Mer | 1 | | 3 |
| 2036 | | 2 | | 2 | | 3 | | 2 | | 4 |
| 2035 | | 3 | | 3 | | 4 | | 3 | | 5 |
| 2034 | | 4 | | 4 | | 5 | | 4 | | 6 |
| 2033 | | 5 | | 5 | n°21 | 6 | | 5 | | 7 |
| 2032 | URUK V | 6 | | 6 | Tirigan | 7 | | 6 | | 8 |
| 2031 | Utu-ĥegal | 1 | | 7 | | | | 7 | | 9 |
| 2030 | | 2 | n°7 | 8 | | | | 8 | | 10 |
| 2029 | | 3 | Apil-Kîn | 1 | | | | 9 | | 11 |
| 2028 | | 4 | | 2 | | | | 10 | | 12 |
| 2027 | | 5 | | 3 | | | | 11 | | 13 |
| 2026 | | 6 | | 4 | | | | 12 | | 14 |
| 2025 | | 7 | | 5 | | | | 13 | | 15 |
| 2024 | | 8 | | 6 | | | n°22 | 14 | | 16 |
| 2023 | | 9 | | 7 | | | Yakmesi | 1 | | 17 |
| 2022 | | 10 | | 8 | | | | 2 | | 18 |
| 2021 | | 11 | | 9 | | | | 3 | | 19 |
| 2020 | UR III | 12 | | 10 | | | | 4 | /[king? of SUSA] | 20 |
| 2019 | Ur-Namma | 1 | 13 | 11 | | | | 5 | | 21 |
| 2018 | n°1 | 2 | 14 | 12 | | | | 6 | | 22 |
| 2017 | | 3 | 15 | 13 | | | | 7 | | 23 |
| 2016 | | 4 | 16 | 14 | | | | 8 | | 24 |
| 2015 | | 5 | 17 | 15 | | | | 9 | n°2 | 25 |
| 2014 | | 6 | 18 | 16 | | | | 10 | [Ĥie?]-lu | 1 |
| 2013 | | 7 | 19 | 17 | | | | 11 | | 2 |
| 2012 | | 8 | 20 | 18 | | | | 12 | | 3 |
| 2011 | | 9 | | 19 | | | | 13 | | 4 |
| 2010 | | 10 | | 20 | | | n°23 | 14 | | 5 |
| 2009 | | 11 | | 21 | | | Yakmeni | 1 | | 6 |
| 2008 | | 12 | | 22 | | | | 2 | | 7 |
| 2007 | | 13 | | 23 | | | | 3 | | 8 |
| 2006 | | 14 | | 24 | | | | 4 | | 9 |
| 2005 | | 15 | | 25 | | | | 5 | | 10 |
| 2004 | | 16 | | 26 | | | | 6 | | 11 |
| 2003 | | 17 | | 27 | | | | 7 | | 12 |
| 2002 | n°2 | 18 | | 28 | | | | 8 | | 13 |
| 2001 | Šulgi | 1 | | 29 | | | | 9 | | 14 |
| 2000 | | 2 | | 30 | | | | 10 | | 15 |
| 1999 | | 3 | | 31 | | | | 11 | | 16 |
| 1998 | | 4 | | 32 | | | | 12 | | 17 |
| 1997 | | 5 | | 33 | | | | 13 | | 18 |
| 1996 | | 6 | | 34 | | | n°24 | 14 | | 19 |
| 1995 | | 7 | n°8 | 35 | | | Yazkur-El | 1 | | 20 |
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| 1992 | | 10 | | 3 | | | | 4 | | 23 |
| 1991 | | 11 | | 4 | | | | 5 | | 24 |
| 1990 | | 12 | n°9 | 5 | | | | 6 | n°3 | 25 |
| 1989 | | 13 | Ilum-Iš'ar | 1 | | | | 7 | Kudu[ur-Lagamar] | 1 |
| 1988 | | 14 | | 2 | | | | 8 | n°1 /Girnamme | 2 |
| 1987 | | 15 | | 3 | | | | 9 | (SIMASKI) | 3 |
| 1986 | | 16 | | 4 | | | | 10 | | 4 |
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| 1981 | | 21 | | 9 | | | Ila-kabkabû | 1 | | 9 |
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| 1979 | | 23 | | 11 | | | | 3 | | 11 |

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| 1978 | | 24 | n°10 | 12 | | | 4 | | 12 |
| 1977 | | 25 | Turâm-Dagan | 1 | | | 5 | | 13 |
| 1976 | | 26 | | 2 | (EGYPT) | | 6 | | 14 |
| 1975 | | 27 | | 3 | Amenemhat I | 1 | 7 | | 15 |
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| 1973 | | 29 | | 5 | | 3 | 9 | | 17 |
| 1972 | | 30 | | 6 | | 4 | 10 | | 18 |
| 1971 | | 31 | | 7 | | 5 | 11 | | 19 |
| 1970 | | 32 | | 8 | | 6 | 12 | | 20 |
| 1969 | | 33 | | 9 | | 7 | 13 | | 21 |
| 1968 | | 34 | | 10 | | 8 | n°26 | 14 | 22 |
| 1967 | | 35 | | 11 | | 9 | Amînum | 1 | 23 |
| 1966 | | 36 | | 12 | | 10 | | 2 | 24 |
| 1965 | | 37 | | 13 | | 11 | | 3 | 25 |
| 1964 | | 38 | | 14 | | 12 | | 4 | 26 |
| 1963 | | 39 | | 15 | | 13 | | 5 | 27 |
| 1962 | | 40 | | 16 | | 14 | | 6 | 28 |
| 1961 | | 41 | | 17 | | 15 | | 7 | 29 |
| 1960 | | 42 | | 18 | | 16 | | 8 | 30 |
| 1959 | | 43 | | 19 | | 17 | | 9 | 31 |
| 1958 | | 44 | n°11 | 20 | | 18 | | 10 | 32 |
| 1957 | | 45 | Puzur-Eštar | 1 | | 19 | | 11 | 33 |
| 1956 | | 46 | | 2 | | 20 | | 12 | 34 |
| 1955 | | 47 | | 3 | | 21 | | 13 | 35 |
| 1954 | n°3 | 48 | | 4 | | 22 | n°27 | 14 | Tazitta I/Ebarat I 36 |
| 1953 | Amar-Sîn | 1 | | 5 | | 23 | Sulili | 1 | SIMĀŠKI 2 |
| 1952 | | 2 | | 6 | | 24 | | 2 | 3 |
| 1951 | | 3 | | 7 | | 25 | | 3 | 4 |
| 1950 | | 4 | | 8 | | 26 | | 4 | 5 |
| 1949 | | 5 | | 9 | | 27 | | 5 | 6 |
| 1948 | | 6 | | 10 | | 28 | | 6 | 7 |
| 1947 | | 7 | | 11 | | 29 | | 7 | 8 |
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| 1943 | | 2 | | 15 | | | | 11 | 12 |
| 1942 | | 3 | | 16 | | | | 12 | 13 |
| 1941 | | 4 | | 17 | | | | 13 | 14 |
| 1940 | | 5 | | 18 | | | (n°28) | 14 | n°3 15 |
| 1939 | | 6 | | 19 | | | Kikkia | 1 | Ebarat I 1 |
| 1938 | | 7 | | 20 | | | | 2 | 2 |
| 1937 | | 8 | | 21 | | | | 3 | 3 |
| 1936 | n°5 | 9 | | 22 | | | | 4 | 4 |
| 1935 | Ibbi-Sîn | 1 | | 23 | | | | 5 | n°4 5 |
| 1934 | | 2 | | 24 | | | | 6 | Tazitta II 1 |
| 1933 | | 3 | n°12 | 25 | | | | 7 | 2 |
| 1932 | | 4 | Hitlal-Erra | 1 | | | | 8 | 3 |
| 1931 | | 5 | | 2 | LARSA | 0 | | 9 | 4 |
| 1930 | | 6 | | 3 | Naplânum | 1 | | 10 | 5 |
| 1929 | | 7 | | 4 | n°1 | 2 | | 11 | 6 |
| 1928 | | 8 | | 5 | | 3 | | 12 | 7 |
| 1927 | | 9 | | 6 | | 4 | n°29 | 13 | 8 |
| 1926 | | 10 | n°13 | 7 | | 5 | Akia | 1 | 9 |
| 1925 | | 11 | Hanun-Dagan | 1 | | 6 | | 2 | n°5 10 |
| 1924 | | 12 | | | | 7 | | 3 | Lurrak-luḥḥan 1 |
| 1923 | | 13 | ISIN I | 0 | | 8 | | 4 | 2 |
| 1922 | | 14 | Išbi-Erra | 1 | | 9 | | 5 | 3 |
| 1921 | | 15 | n°1 | 2 | | 10 | | 6 | 4 |
| 1920 | | 16 | | 3 | | 11 | | 7 | 5 |
| 1919 | | 17 | | 4 | | 12 | | 8 | 6 |
| 1918 | | 18 | | 5 | | 13 | | 9 | 7 |
| 1917 | | 19 | | 6 | | 14 | | 10 | 8 |
| 1916 | | 20 | | 7 | | 15 | | 11 | 9 |
| 1915 | | 21 | | 8 | | 16 | | 12 | 10 |

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| 1914 | | 22 | | 9 | | 17 | | 13 | Kindadu | 1 |
| 1913 | | 23 | | 10 | | 18 | n°30 | 14 | n°6 | 2 |
| 1912 | | 24 | | 11 | | 19 | Puzur-Aššur I | 1 | | 3 |
| 1911 | | 25 | | 12 | | 20 | | 2 | | 4 |
| 1910 | | | | 13 | n°2 | 21 | | 3 | | 5 |
| 1909 | | | | 14 | Iemšium | 1 | | 4 | | 6 |
| 1908 | | | | 15 | | 2 | | 5 | | 7 |
| 1907 | | | | 16 | | 3 | | 6 | | 8 |
| 1906 | | | | 17 | | 4 | | 7 | | 9 |
| 1905 | | | | 18 | | 5 | | 8 | n°7 | 10 |
| 1904 | | | | 19 | | 6 | | 9 | Idadu I | 1 |
| | | | | | | | | 10 | | |
| 1903 | | | | 20 | | 7 | | 11 | | 2 |
| 1902 | | | | 21 | | 8 | | 12 | | 3 |
| 1901 | | | | 22 | | 9 | | 13 | | 4 |
| 1900 | | | | 23 | | 10 | n°31 | 14 | | 5 |
| 1899 | | | | 24 | | 11 | Šalim-ahum | 1 | | 6 |
| 1898 | | | | 25 | | 12 | | 2 | | 7 |
| 1897 | | | | 26 | | 13 | | 3 | | 8 |
| 1896 | | | | 27 | | 14 | | 4 | | 9 |
| 1895 | | | | 28 | | 15 | | 5 | | 10 |
| 1894 | | | | 29 | | 16 | | 6 | | 11 |
| 1893 | | | | 30 | | 17 | | 7 | | 12 |
| 1892 | | | | 31 | | 18 | | 8 | | 13 |
| 1891 | | | | 32 | | 19 | | 9 | | 14 |
| 1890 | | | n°2 | 33 | | 20 | | 10 | n°8 | 15 |
| 1889 | | Šū-ilīšu | | 1 | | 21 | | 11 | Tan-Ruḫuratir I | 1 |
| 1888 | | | | 2 | | 22 | | 12 | | 2 |
| 1887 | | | | 3 | | 23 | | 13 | | 3 |
| 1886 | | | | 4 | | 24 | n°32 | 14 | | 4 |
| 1885 | | | | 5 | | 25 | Ilu-šumma | 1 | | 5 |
| 1884 | | | | 6 | | 26 | | 2 | | 6 |
| 1883 | | | | 7 | | 27 | | 3 | | 7 |
| 1882 | | | | 8 | n°3 | 28 | | 4 | | 8 |
| 1881 | | | | 9 | Sâmium | 1 | | 5 | | 9 |
| 1880 | | | n°3 | 10 | | 2 | | 6 | | 10 |
| 1879 | | Iddin-Dagān | | 1 | | 3 | | 7 | | 11 |
| 1878 | | | | 2 | | 4 | | 8 | | 12 |
| 1877 | | | | 3 | | 5 | | 9 | | 13 |
| 1876 | | | | 4 | | 6 | | 10 | | 14 |
| 1875 | | | | 5 | | 7 | | 11 | EPARTIDS | 15 |
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| 1872 | | | | 8 | | 10 | Erišu I | 1 | | 3 |
| 1871 | | | | 9 | | 11 | | 2 | | 4 |
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| 1870 | | | | 10 | | 12 | | 4 | | 5 |
| 1869 | | | | 11 | | 13 | | 5 | | 6 |
| 1868 | | | | 12 | | 14 | | 6 | | 7 |
| 1867 | | | | 13 | | 15 | | 7 | | 8 |
| 1866 | | | | 14 | | 16 | | 8 | | 9 |
| 1865 | | | | 15 | | 17 | | 9 | | 10 |
| 1864 | | | | 16 | | 18 | | 10 | | 11 |
| 1863 | | | | 17 | | 19 | | 11 | | 12 |
| 1862 | | | | 18 | | 20 | | 12 | | 13 |
| 1861 | | | | 19 | | 21 | | 13 | | 14 |
| 1860 | | | | 20 | | 22 | | 14 | | 15 |
| 1859 | | | n°4 | 21 | | 23 | | 15 | | 16 |
| 1858 | | Išme-Dagān | | 1 | | 24 | | 16 | | 17 |
| 1857 | | | | 2 | | 25 | | 17 | | 18 |
| 1856 | | | | 3 | | 26 | | 18 | | 19 |
| 1855 | | | | 4 | | 27 | | 19 | | 20 |
| 1854 | | | | 5 | | 28 | | 20 | Šilḫaḫa | 1 |
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| 1851 | | | 8 | | 31 | | 23 | | 4 |
| 1850 | | | 9 | | 32 | | 24 | | 5 |
| 1849 | | | 10 | | 33 | | 25 | | 6 |
| 1848 | | | 11 | | 34 | | 26 | | 7 |
| 1847 | | | 12 | n°4 | 35 | | 27 | | 8 |
| 1846 | | | 13 | Zabâia | 1 | | 28 | | 9 |
| 1845 | | | 14 | | 2 | | 29 | | 10 |
| 1844 | | | 15 | | 3 | | 30 | | 11 |
| 1843 | | | 16 | | 4 | | 31 | | 12 |
| 1842 | | | 17 | | 5 | | 32 | | 13 |
| 1841 | | | 18 | | 6 | | 33 | | 14 |
| 1840 | | n°5 | 19 | | 7 | | 34 | | 15 |
| 1839 | | Lipit-Eštar | 1 | | 8 | | 35 | | 16 |
| 1838 | | | 2 | n°5 | 9 | | 36 | | 17 |
| | | | | | | | 37 | | |
| 1837 | | | 3 | Gungunum | 1 | | 38 | | 18 |
| 1836 | | | 4 | | 2 | | 39 | | 19 |
| 1835 | | | 5 | | 3 | n°34 | 0 40 | | 20 |
| 1834 | | | 6 | | 4 | Ikunum | 1 1 | Temti-Agun I | 1 |
| 1833 | | | 7 | | 5 | | 2 2 | | 2 |
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| 1831 | | | 9 | | 7 | | 4 4 | | 4 |
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| 1829 | | n°6 | 11 | | 9 | | 6 6 | | 6 |
| 1828 | | Ur-Ninurta | 1 | | 10 | | 7 7 | | 7 |
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| 1824 | | | 5 | | 14 | | 11 11 | | 11 |
| 1823 | | | 6 | | 15 | | 12 12 | | 12 |
| 1822 | | | 7 | | 16 | | 13 13 | | 13 |
| 1821 | | | 8 | | 17 | n°35 | 14 14 | | 14 |
| 1820 | | | 9 | | 18 | Sargon I | 15 1 | | 15 |
| 1819 | | | 10 | | 19 | | 16 2 | | 16 |
| 1818 | | | 11 | | 20 | | 17 3 | | 17 |
| 1817 | | | 12 | | 21 | | 18 4 | | 18 |
| 1816 | | | 13 | | 22 | | 19 5 | | 19 |
| 1815 | | | 14 | | 23 | | 20 6 | | 20 |
| 1814 | | | 15 | | 24 | | 21 7 | Pala-iššan | 1 |
| 1813 | | | 16 | | 25 | | 22 8 | | 2 |
| 1812 | | | 17 | | 26 | | 23 9 | | 3 |
| 1811 | | | 18 | n°6 | 27 | | 24 10 | | 4 |
| 1810 | | | 19 | Abî-sarê | 1 | | 25 11 | | 5 |
| 1809 | | | 20 | | 2 | | 26 12 | | 6 |
| 1808 | | | 21 | | 3 | | 27 13 | | 7 |
| 1807 | | | 22 | | 4 | | 28 14 | | 8 |
| 1806 | | | 23 | | 5 | | 29 15 | | 9 |
| 1805 | | | | | 6 | | 30 16 | | 10 |
| | | | 24 | | | | 31 17 | | |
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| 1803 | | | 26 | | 8 | | 33 19 | | 12 |
| 1802 | | | 27 | | 9 | | 34 20 | | 13 |
| 1801 | | n°7 | 28 | | 10 | | 35 21 | | 14 |
| 1800 | | Būr-Sîn | 1 | n°7 | 11 | | 36 22 | | 15 |
| 1799 | BABYLON | 0 | 2 | Sumu-El | 1 | | 37 23 | | 16 |
| 1798 | Sumu-abum | 1 | 3 | | 2 | | 38 24 | | 17 |
| 1797 | n°1 | 2 | 4 | | 3 | | 39 25 | | 18 |
| 1796 | | 3 | 5 | | 4 | | 40 26 | | 19 |
| 1795 | | 4 | 6 | | 5 | | 41 27 | | 20 |
| 1794 | | 5 | 7 | | 6 | | 42 28 | Kuk-Kirmaš | 1 |
| 1793 | | 6 | 8 | | 7 | | 43 29 | | 2 |
| 1792 | | 7 | 9 | | 8 | | 44 30 | | 3 |
| 1791 | | 8 | 10 | | 9 | | 45 31 | | 4 |

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| 1790 | | 9 | | 11 | | 10 | | 46 | 32 | | 5 |
| 1789 | | 10 | | 12 | | 11 | | 47 | 33 | | 6 |
| 1788 | | 11 | | 13 | | 12 | | 48 | 34 | | 7 |
| 1787 | | 12 | | 14 | | 13 | | 49 | 35 | | 8 |
| 1786 | | 13 | | 15 | | 14 | | 50 | 36 | | 9 |
| 1785 | n°2 | 14 | | 16 | | 15 | | 51 | 37 | | 10 |
| 1784 | Sumu-la-Il | 1 | | 17 | | 16 | | 52 | 38 | | 11 |
| 1783 | | 2 | | 18 | | 17 | | 53 | 39 | | 12 |
| 1782 | | 3 | | 19 | | 18 | n°36 | 54 | 40 | | 13 |
| 1781 | | 4 | | 20 | | 19 | Puzur-Aššur II | 55 | 1 | | 14 |
| 1780 | | 5 | | 21 | | 20 | | 56 | 2 | | 15 |
| 1779 | | 6 | n°8 | 22 | | 21 | | 57 | 3 | | 16 |
| 1778 | | 7 | Lipit-Enlil | 1 | | 22 | | 58 | 4 | | 17 |
| 1777 | | 8 | | 2 | | 23 | | 59 | 5 | | 18 |
| 1776 | | 9 | | 3 | | 24 | | 60 | 6 | | 19 |
| 1775 | | 10 | | 4 | | 25 | | 61 | 7 | | 20 |
| 1774 | | 11 | n°9 | 5 | | 26 | n°37 | 62 | 8 | Kuk-Naḥudi | 1 |
| 1773 | | 12 | Erra-imittī | 1 | | 27 | Naram-Sîn | 63 | 1 | | 2 |
| 1772 | | 13 | | 2 | | 28 | | 64 | 2 | | 3 |
| | | | | | | | | 65 | 3 | | |
| 1771 | | 14 | | 3 | n°8 | 29 | | 66 | 4 | | 4 |
| 1770 | | 15 | | 4 | Nûr-Adad | 1 | | 67 | 5 | | 5 |
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| 1768 | | 17 | | 6 | | 3 | | 69 | 7 | | 7 |
| 1767 | | 18 | | 7 | | 4 | | 70 | 8 | | 8 |
| 1766 | | 19 | n°10 | 8 | | 5 | | 71 | 9 | | 9 |
| 1765 | | 20 | Enlil-Bāni | 1 | | 6 | | 72 | 10 | | 10 |
| 1764 | | 21 | | 2 | | 7 | | 73 | 11 | | 11 |
| 1763 | | 22 | | 3 | | 8 | | 74 | 12 | | 12 |
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| 1757 | | 28 | | 9 | | 14 | | 80 | 18 | | 18 |
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| 1755 | | 30 | | 11 | n°9 | 16 | | 82 | 20 | | 20 |
| 1754 | | 31 | | 12 | Sîn-iddinam | 1 | | 83 | 21 | Kuk-Našur I | 1 |
| 1753 | | 32 | | 13 | | 2 | | 84 | 22 | | 2 |
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| 1749 | n°3 | 36 | | 17 | | 6 | | 88 | 26 | | 6 |
| 1748 | Sābium | 1 | | 18 | n°10 | 7 | | 89 | 27 | | 7 |
| 1747 | | 2 | | 19 | Sîn-irībam | 1 | | 90 | 28 | | 8 |
| 1746 | | 3 | | 20 | n°11 | 2 | | 91 | 29 | | 9 |
| 1745 | | 4 | | 21 | Sîn-iqišam | 1 | | 92 | 30 | | 10 |
| 1744 | | 5 | | 22 | | 2 | | 93 | 31 | | 11 |
| 1743 | | 6 | | 23 | | 3 | | 94 | 32 | | 12 |
| 1742 | | 7 | n°11 | 24 | | 4 | | 95 | 33 | | 13 |
| 1741 | | 8 | Zambīya | 1 | n°12 | 5 | | 96 | 34 | | 14 |
| 1740 | | 9 | | 2 | Silī-Adad | 1 | | 97 | 35 | | 15 |
| 1739 | | 10 | | 3 | n°13 | 1 | | 98 | 36 | | 16 |
| | | | n°12 | | Warad-Sîn | | | 99 | 37 | | |
| 1738 | | 11 | Itēr-pīša | 1 | | 2 | | 100 | 38 | | 17 |
| 1737 | | 12 | | 2 | | 3 | | 101 | 39 | | 18 |
| 1736 | | 13 | | 3 | | 4 | | 102 | 40 | | 19 |
| 1735 | n°4 | 14 | n°13 | 4 | | 5 | | 103 | 41 | | 20 |
| 1734 | Apil-Sîn | 1 | Urdukuḡa | 1 | | 6 | | 104 | 42 | Atta-ḥušu | 1 |
| 1733 | | 2 | | 2 | | 7 | | 105 | 43 | | 2 |
| 1732 | | 3 | | 3 | | 8 | | 106 | 44 | | 3 |
| 1731 | | 4 | n°14 | 4 | | 9 | | 107 | 45 | | 4 |
| 1730 | | 5 | Sîn-māgir | 1 | | 10 | | 108 | 46 | | 5 |

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| 1729 | | 6 | | 2 | | 11 | | 109 | 47 | | 6 |
| 1728 | | 7 | | 3 | | 12 | | 110 | 48 | | 7 |
| 1727 | | 8 | | 4 | n°14 | 13 | | 111 | 49 | | 8 |
| 1726 | | 9 | | 5 | Rîm-Sîn I | 1 | | 112 | 50 | | 9 |
| 1725 | | 10 | | 6 | | 2 | | 113 | 51 | | 10 |
| 1724 | | 11 | | 7 | | 3 | | 114 | 52 | | 11 |
| 1723 | | 12 | | 8 | | 4 | | 115 | 53 | | 12 |
| 1722 | | 13 | | 9 | | 5 | n°38 | 116 | 54 | | 13 |
| 1721 | | 14 | | 10 | | 6 | Ērišu II | 117 | 1 | | 14 |
| 1720 | | 15 | n°15 | 11 | | 7 | | 118 | 2 | | 15 |
| 1719 | | 16 | Damiq-ilišu | 1 | | 8 | | 119 | 3 | | 16 |
| 1718 | | 17 | | 2 | | 9 | | 120 | 4 | | 17 |
| 1717 | (n°5) | 18 | HANA | 3 | | 10 | | 121 | 5 | | 18 |
| 1716 | Sîn-muballit | 1 | Yahdun-Lîm | 4 | | 11 | | 122 | 6 | | 19 |
| 1715 | | 2 | 1 | 5 | | 12 | | 123 | 7 | | 20 |
| 1714 | | 3 | 2 | 6 | | 13 | | 124 | 8 | Širuk-tuḥ | 1 |
| 1713 | | 4 | 3 | 7 | | 14 | | 125 | 9 | | 2 |
| 1712 | | 5 | 4 | 8 | | 15 | n°39 | 126 | 10 | | 3 |
| 1711 | | 6 | 5 | 9 | | 16 | Šamsî-Adad I | 1 | | | 4 |
| 1710 | | 7 | 6 | 10 | | 17 | | 128 | 2 | | 5 |
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| 1708 | | 9 | 8 | 12 | | 19 | | 130 | 4 | | 7 |
| 1707 | | 10 | 9 | 13 | | 20 | | 131 | 5 | | 8 |
| 1706 | | 11 | 10 | 14 | | 21 | | 132 | 6 | | 9 |
| | | | | | | | | 133 | 7 | | |
| 1705 | | 12 | 11 | | | 22 | | 134 | 8 | | 10 |
| 1704 | | 13 | 12 | 16 | | 23 | | 135 | 9 | | 11 |
| 1703 | | 14 | 13 | 17 | | 24 | | 136 | 10 | | 12 |
| 1702 | | 15 | 14 | 18 | | 25 | | 137 | 11 | (EGYPT) | 13 |
| 1701 | | 16 | 15 | 19 | | 26 | | 138 | 12 | <i>Neferhotep I</i> | 14 |
| 1700 | | 17 | 16 | 20 | | 27 | | 139 | 13 | 1 | 15 |
| 1699 | | 18 | 17 | 21 | | 28 | | 140 | 14 | 2 | 16 |
| 1698 | | 19 | 1 | 22 | | 29 | | 141 | 15 | 3 | 17 |
| 1697 | n°6 | 20 | MARI | 23 | | 30 | | 142 | 16 | 4 | 18 |
| 1696 | Hammurabi | 1 | Samsî-Addu | 1 | | 31 | | 143 | 17 | 5 | 19 |
| 1695 | (BYBLOS) | 2 | | 2 | | 32 | | 144 | 18 | 6 | 20 |
| 1694 | <i>Yantin-Ammu</i> | 3 | | 3 | | 33 | | 145 | 19 | Siwe-palar-ḥuppak | 1 |
| 1693 | 2 | 4 | | 4 | | 34 | | 146 | 20 | 8 | 2 |
| 1692 | 3 | 5 | | 5 | | 35 | | 147 | 21 | 9 | 3 |
| 1691 | 4 | 6 | | 6 | | 36 | | 148 | 22 | 10 | 4 |
| 1690 | 5 | 7 | | 7 | | 37 | | 149 | 23 | 11 | 5 |
| 1689 | 6 | 8 | | 8 | | 38 | | 150 | 24 | | 6 |
| 1688 | 7 | 9 | | 9 | | 39 | | 151 | 25 | | 7 |
| 1687 | 8 | 10 | | 10 | | 40 | | 152 | 26 | | 8 |
| 1686 | 9 | 11 | Yasmah-Addu | 1 | | 41 | | 153 | 27 | (HAZOR) | 9 |
| 1685 | 10 | 12 | | 2 | | 42 | | 154 | 28 | <i>Ibni-Addu</i> | 10 |
| 1684 | 11 | 13 | | 3 | | 43 | | 155 | 29 | 1 | 11 |
| 1683 | 12 | 14 | | 4 | | 44 | | 156 | 30 | 2 | 12 |
| 1682 | 13 | 15 | | 5 | | 45 | | 157 | 31 | 3 | 13 |
| 1681 | 14 | 16 | | 6 | | 46 | | 158 | 32 | 4 | 14 |
| 1680 | 15 | 17 | | 7 | | 47 | n°40 | 159 | 33 | 5 | 15 |
| 1679 | 16 | 18 | Zimrî-Lîm | 1 | | 48 | İšme-Dagan I | 1 | 1 | 6 | 16 |
| 1678 | 17 | 19 | | 2 | | 49 | | 2 | 2 | 7 | 17 |
| 1677 | 18 | 20 | | 3 | | 50 | | 3 | 3 | 8 | 18 |
| 1676 | 19 | 21 | | 4 | | 51 | | 4 | 4 | 9 | 19 |
| 1675 | 20 | 22 | | 5 | | 52 | | 5 | 5 | 10 | 20 |
| 1674 | 21 | 23 | | 6 | | 53 | | 6 | 6 | 11 | 21 |
| 1673 | 22 | 24 | | 7 | | 54 | | 7 | 7 | 12 | 22 |
| | | | | | | | | 8 | 8 | | |
| 1672 | 23 | 25 | | 8 | | 55 | | 9 | 9 | 13 | 23 |
| 1671 | 24 | 26 | | 9 | | 56 | | 10 | 10 | 14 | 24 |
| 1670 | 25 | 27 | | 10 | | 57 | n°41 | 11 | 11 | 15 | 25 |
| 1669 | | 28 | | 11 | | 58 | Aššur-dugul | 12 | 1 | Kudu-zuluš I | 1 |

| | | | | | | | | | | | |
|------|-------------|-----------|----------------|-----------|----------------|-----------|--------------|----|-----------|-----------------|-----------|
| 1668 | | 29 | | 12 | | 59 | | 13 | 2 | 17 | 2 |
| 1667 | | 30 | | 13 | | 60 | | 14 | 3 | 18 | 3 |
| 1666 | | 31 | Yapaḥ-šumu- | 1 | | 61 | | 15 | 4 | 19 | 4 |
| 1665 | | 32 | Abu | 2 | | - | | 16 | 5 | 20 | 5 |
| 1664 | | 33 | | 3 | | - | (42-47) n°48 | 17 | 6 | | 6 |
| 1663 | | 34 | | | | - | Bêlu-bâni | 18 | 1 | | 7 |
| 1662 | | 35 | | | | - | | 19 | 2 | | 8 |
| 1661 | | 36 | KASSITE | 0 | | - | | 20 | 3 | | 9 |
| 1660 | | 37 | Gandaš | 1 | | - | | 21 | 4 | | 10 |
| 1659 | | 38 | n°1 | 2 | | - | | 22 | 5 | | 11 |
| 1658 | | 39 | | 3 | | - | | 23 | 6 | | 12 |
| 1657 | | 40 | | 4 | | - | | 24 | 7 | | 13 |
| 1656 | | 41 | | 5 | | - | | 25 | 8 | | 14 |
| 1655 | | 42 | | 6 | | - | | 26 | 9 | | 15 |
| 1654 | n°7 | 43 | | 7 | | - | n°49 | 27 | 10 | | 16 |
| 1653 | Samsu-iluna | 1 | | 8 | | - | Libbaya | 28 | 1 | | 17 |
| 1652 | | 2 | | 9 | | - | | 29 | 2 | | 18 |
| 1651 | | 3 | | 10 | | - | | 30 | 3 | | 19 |
| 1650 | | 4 | | 11 | | - | | 31 | 4 | | 20 |
| 1649 | | 5 | | 12 | | - | | 32 | 5 | | 21 |
| 1648 | | 6 | | 13 | | - | | 33 | 6 | | 22 |
| 1647 | | 7 | | 14 | | - | | 34 | 7 | | 23 |
| 1646 | | 8 | | 15 | Rîm-Sîn II | 0 | | 35 | 8 | | 24 |
| 1645 | | 9 | | 16 | | 1 | | 36 | 9 | | 25 |
| 1644 | | 10 | | 17 | | 2 | | 37 | 10 | Kutir-Naḥunte I | 1 |
| 1643 | | 11 | | 18 | | 3 | | 38 | 11 | | 2 |
| 1642 | | 12 | | 19 | | 4 | | 39 | 12 | | 3 |
| 1641 | | 13 | | 20 | | 5 | | 40 | 13 | | 4 |
| 1640 | | 14 | | 21 | | | | 41 | 14 | | 5 |
| | | | | | SEALAND | | | 42 | 15 | | |
| 1639 | | 15 | | 22 | Ilu-ma-ilu | 9 | | 43 | 16 | | 6 |
| 1638 | | 16 | | 23 | | 10 | n°50 | 44 | 17 | | 7 |
| 1637 | | 17 | | 24 | | 11 | Šarma-Adad I | 45 | 1 | | 8 |
| 1636 | | 18 | | 25 | | 12 | | 46 | 2 | | 9 |
| 1635 | | 19 | n°2 | 26 | | 13 | | 47 | 3 | | 10 |
| 1634 | | 20 | Agum I | 1 | | 14 | | 48 | 4 | | 11 |
| 1633 | | 21 | | 2 | | 15 | | 49 | 5 | | 12 |
| 1632 | | 22 | | 3 | | 16 | | 50 | 6 | | 13 |
| 1631 | | 23 | | 4 | | 17 | | 51 | 7 | | 14 |
| 1630 | | 24 | | 5 | | 18 | | 52 | 8 | | 15 |
| 1629 | | 25 | | 6 | | 19 | | 53 | 9 | | 16 |
| 1628 | | 26 | | 7 | | 20 | | 54 | 10 | | 17 |
| 1627 | | 27 | | 8 | | 21 | | 55 | 11 | | 18 |
| 1626 | | 28 | | 9 | | 22 | n°51 | 56 | 12 | | 19 |
| 1625 | | 29 | | 10 | | 23 | Puzur-Sîn | 57 | 1 | | 20 |
| 1624 | | 30 | | 11 | | 24 | | 58 | 2 | | 21 |
| 1623 | | 31 | | 12 | | 25 | | 59 | 3 | | 22 |
| 1622 | | 32 | | 13 | | 26 | | 60 | 4 | | 23 |
| 1621 | | 33 | | 14 | | 27 | | 61 | 5 | | 24 |
| 1620 | | 34 | | 15 | | 28 | | 62 | 6 | | 25 |
| 1619 | | 35 | | 16 | | 29 | | 63 | 7 | Temti-Agun II | 1 |
| 1618 | | 36 | | 17 | | 30 | | 64 | 8 | | 2 |
| 1617 | | 37 | | 18 | | 31 | | 65 | 9 | | 3 |
| 1616 | n°8 | 38 | | 19 | | 32 | | 66 | 10 | | 4 |
| 1615 | Abi-ešuh | 1 | | 20 | | 33 | | 67 | 11 | | 5 |
| 1614 | | 2 | | 21 | | 34 | n°52 | 68 | 12 | | 6 |
| 1613 | | 3 | n°3 | 22 | | 35 | Bazaya | 69 | 1 | | 7 |
| 1612 | | 4 | Kaštiliašu I | 1 | | 36 | | 70 | 2 | | 8 |
| 1611 | | 5 | | 2 | | 37 | | 71 | 3 | | 9 |
| 1610 | | 6 | | 3 | | 38 | | 72 | 4 | | 10 |
| 1609 | | 7 | | 4 | | 39 | | 73 | 5 | | 11 |
| 1608 | | 8 | | 5 | | 40 | | 74 | 6 | | 12 |
| 1607 | | 9 | | 6 | | 41 | | 75 | 7 | | 13 |

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|------|------------|-----------|---------------|-----------|----------------|----------|---------------|-----|-----------------|----------------|
| | | | | | | 76 | 8 | | | |
| 1606 | | 10 | | 7 | | 42 | 77 | 9 | 14 | |
| 1605 | | 11 | | 8 | | 43 | 78 | 10 | 15 | |
| 1604 | | 12 | | 9 | | 44 | 79 | 11 | 16 | |
| 1603 | | 13 | | 10 | | 45 | 80 | 12 | 17 | |
| 1602 | | 14 | | 11 | | 46 | 81 | 13 | 18 | |
| 1601 | | 15 | | 12 | | 47 | 82 | 14 | 19 | |
| 1600 | | 16 | | 13 | | 48 | 83 | 15 | 20 | |
| 1599 | | 17 | | 14 | | 49 | 84 | 16 | 21 | |
| 1598 | | 18 | | 15 | | 50 | 85 | 17 | 22 | |
| 1597 | | 19 | | 16 | | 51 | 86 | 18 | 23 | |
| 1596 | | 20 | | 17 | | 52 | 87 | 19 | 24 | |
| 1595 | | 21 | | 18 | | 53 | 88 | 20 | 25 | |
| 1594 | | 22 | | 19 | | 54 | 89 | 21 | Kutir-Silḥaḥa 1 | |
| 1593 | | 23 | | 20 | | 55 | 90 | 22 | 2 | |
| 1592 | | 24 | | 21 | | 56 | 91 | 23 | 3 | |
| 1591 | | 25 | n°4 | 22 | | 57 | 92 | 24 | 4 | |
| 1590 | | 26 | Kaštīliašu II | 1 | | 58 | 93 | 25 | 5 | |
| 1589 | | 27 | | 2 | | 59 | 94 | 26 | 6 | |
| 1588 | n°9 | 28 | | 3 | | 60 | 95 | 27 | 7 | |
| 1587 | Ammiditana | 1 | | 4 | Damiq-ilišu II | 1 | n°53 | 96 | 28 | 8 |
| 1586 | | 2 | | 5 | | 2 | Lullaya | 97 | 1 | 9 |
| 1585 | | 3 | | 6 | | 3 | | 98 | 2 | 10 |
| 1584 | | 4 | | 7 | | 4 | | 99 | 3 | 11 |
| 1583 | | 5 | n°5 | 8 | | 5 | | 100 | 4 | 12 |
| 1582 | | 6 | Abi-Rattaš | 1 | | 6 | | 101 | 5 | 13 |
| 1581 | | 7 | | 2 | | 7 | n°54 | 102 | 6 | 14 |
| 1580 | | 8 | | 3 | | 8 | Šû-Ninûa | 103 | 1 | 15 |
| 1579 | | 9 | | 4 | | 9 | | 104 | 2 | 16 |
| 1578 | | 10 | | 5 | | 10 | | 105 | 3 | 17 |
| 1577 | | 11 | | 6 | | 11 | | 106 | 4 | 18 |
| 1576 | | 12 | | 7 | | 12 | | 107 | 5 | 19 |
| 1575 | | 13 | | 8 | | 13 | | 108 | 6 | 20 |
| 1574 | | 14 | | 9 | | 14 | | 109 | 7 | 21 |
| | | | | | | | | 110 | 8 | |
| 1573 | | 15 | | 10 | | 15 | | 111 | 9 | 22 |
| 1572 | | 16 | | 11 | | 16 | | 112 | 10 | 23 |
| 1571 | | 17 | | 12 | | 17 | | 113 | 11 | 24 |
| 1570 | | 18 | | 13 | | 18 | | 114 | 12 | 25 |
| 1569 | | 19 | | 14 | | 19 | | 115 | 13 | Kuk-Našur II 1 |
| 1568 | | 20 | | 15 | | 20 | n°55 | 116 | 14 | 2 |
| 1567 | | 21 | | 16 | | 21 | Šarma-Adad II | 1 | 3 | |
| 1566 | | 22 | | 17 | Iškibal | 22 | | 118 | 2 | 4 |
| 1565 | | 23 | | 18 | | 23 | n°56 | 119 | 3 | 5 |
| 1564 | | 24 | | 19 | | 24 | Ērišu III | 120 | 1 | 6 |
| 1563 | | 25 | n°6 | 20 | | 25 | | 121 | 2 | 7 |
| 1562 | | 26 | Urzigurumaš | 1 | | 26 | | 122 | 3 | 8 |
| 1561 | | 27 | | 2 | | 27 | | 123 | 4 | 9 |
| 1560 | | 28 | | 3 | | 28 | | 124 | 5 | 10 |
| 1559 | | 29 | | 4 | | 29 | | 125 | 6 | 11 |
| 1558 | | 30 | | 5 | | 30 | | 126 | 7 | 12 |
| 1557 | | 31 | | 6 | | 31 | | 127 | 8 | 13 |
| 1556 | | 32 | | 7 | | 32 | | 128 | 9 | 14 |
| 1555 | | 33 | | 8 | | 33 | | 129 | 10 | 15 |
| 1554 | | 34 | | 9 | | 34 | | 130 | 11 | 16 |
| 1553 | | 35 | | 10 | | 35 | | 131 | 12 | 17 |
| 1552 | | 36 | | 11 | | 36 | n°57 | 132 | 13 | 18 |
| 1551 | n°10 | 37 | | 12 | | 37 | Šamši-Adad II | 1 | 19 | |
| 1550 | Ammišaduqa | 1 | | 13 | | 38 | | 134 | 2 | 20 |
| 1549 | | 2 | | 14 | | 39 | | 135 | 3 | 21 |
| 1548 | | 3 | | 15 | | 1 | | 136 | 4 | 22 |
| 1547 | | 4 | | 16 | | 2 | | 137 | 5 | 23 |
| 1546 | | 5 | | 17 | | 3 | n°58 | 138 | 6 | 24 |
| 1545 | | 6 | | 18 | | 4 | Išme-Dagan II | 1 | 25 | |

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|------|-----------------|----|---------------|----|-------------|----|-----------------|-----|----|---------------|----|
| 1544 | | 7 | | 19 | | 5 | | 140 | 2 | Kudu-zuluš II | 1 |
| 1543 | | 8 | | 20 | | 6 | | 141 | 3 | | 2 |
| | | | n°7 | | | | | 142 | 4 | | |
| 1542 | | 9 | Ḫurba | 1 | | 7 | | 143 | 5 | | 3 |
| 1541 | | 10 | | 2 | | 8 | | 144 | 6 | | 4 |
| 1540 | | 11 | | 3 | | 9 | | 145 | 7 | | 5 |
| 1539 | | 12 | | 4 | | 10 | | 146 | 8 | | 6 |
| 1538 | | 13 | | 5 | | 11 | | 147 | 9 | | 7 |
| 1537 | | 14 | | 6 | | 12 | | 148 | 10 | | 8 |
| 1536 | | 15 | | 7 | | 13 | | 149 | 11 | | 9 |
| 1535 | | 16 | | 8 | | 14 | | 150 | 12 | | 10 |
| 1534 | | 17 | | 9 | | 15 | | 151 | 13 | | 11 |
| 1533 | | 18 | | 10 | | 16 | | 152 | 14 | | 12 |
| 1532 | | 19 | | 11 | | 17 | | 153 | 15 | | 13 |
| 1531 | | 20 | | 12 | | 18 | n°59 | 154 | 16 | | 14 |
| 1530 | n°11 | 21 | | 13 | | 19 | Šamšî-Adad III | 1 | | | 15 |
| 1529 | Samsuditana | 1 | | 14 | | 20 | | 156 | 2 | | 16 |
| 1528 | | 2 | | 15 | | 21 | | 157 | 3 | | 17 |
| 1527 | | 3 | n°8 | 16 | | 22 | | 158 | 4 | | 18 |
| 1526 | | 4 | Šipta-ulzi | 1 | | 23 | | 159 | 5 | | 19 |
| 1525 | | 5 | | 2 | | 24 | | 160 | 6 | | 20 |
| 1524 | | 6 | | 3 | | 25 | | 161 | 7 | Tan-Uli | 1 |
| 1523 | | 7 | | 4 | | 26 | | 162 | 8 | | 2 |
| 1522 | | 8 | | 5 | | 27 | | 163 | 9 | | 3 |
| 1521 | | 9 | | 6 | | 28 | | 164 | 10 | | 4 |
| 1520 | | 10 | | 7 | | 29 | | 165 | 11 | | 5 |
| 1519 | | 11 | | 8 | | 30 | | 166 | 12 | | 6 |
| 1518 | | 12 | | 9 | | 31 | | 167 | 13 | | 7 |
| 1517 | | 13 | | 10 | | 32 | | 168 | 14 | | 8 |
| 1516 | | 14 | | 11 | Pešgaldara- | 33 | | 169 | 15 | | 9 |
| 1515 | | 15 | | 12 | meš | 34 | n°60 | 170 | 16 | | 10 |
| 1514 | | 16 | | 13 | | 35 | Aššur-nêrârî I | 1 | | | 11 |
| 1513 | | 17 | | 14 | | 36 | | 172 | 2 | | 12 |
| 1512 | | 18 | | 15 | | 37 | | 173 | 3 | | 13 |
| 1511 | | 19 | | 16 | | 38 | | 174 | 4 | | 14 |
| | | | n°9 | | | | | 175 | 5 | | |
| 1510 | | 20 | Agum II | 1 | | 39 | | 176 | 6 | | 15 |
| 1509 | | 21 | | 2 | | 40 | | 177 | 7 | | 16 |
| 1508 | | 22 | | 3 | | 41 | | 178 | 8 | | 17 |
| 1507 | | 23 | | 4 | | 42 | | 179 | 9 | | 18 |
| 1506 | | 24 | | 5 | | 43 | | 180 | 10 | | 19 |
| 1505 | | 25 | | 6 | | 44 | | 181 | 11 | | 20 |
| 1504 | | 26 | | 7 | | 45 | | 182 | 12 | Temti-ḫalki | 1 |
| 1503 | | 27 | | 8 | | 46 | | 183 | 13 | | 2 |
| 1502 | | 28 | | 9 | | 47 | | 184 | 14 | | 3 |
| 1501 | | 29 | | 10 | | 48 | | 185 | 15 | | 4 |
| 1500 | | 30 | | 11 | | 49 | | 186 | 16 | | 5 |
| 1499 | Fall of Babylon | 31 | 1 | 12 | | 50 | | 187 | 17 | | 6 |
| 1498 | resettling of | 2 | | 13 | Akurduana | 1 | | 188 | 18 | | 7 |
| 1497 | Babylon | 3 | | 14 | | 2 | | 189 | 19 | | 8 |
| 1496 | | 4 | | 15 | | 3 | | 190 | 20 | | 9 |
| 1495 | | 5 | n°10 | 16 | | 4 | | 191 | 21 | | 10 |
| 1494 | | 6 | Burna-Burias̄ | 1 | | 5 | | 192 | 22 | | 11 |
| 1493 | | 7 | I | 2 | | 6 | | 193 | 23 | | 12 |
| 1492 | | 8 | | 3 | | 7 | | 194 | 24 | | 13 |
| 1491 | | 9 | | 4 | | 8 | | 195 | 25 | | 14 |
| 1490 | | 10 | | 5 | | 9 | n°61 | 196 | 26 | | 15 |
| 1489 | | 11 | | 6 | | 10 | Puzur-Aššur III | 1 | | | 16 |
| 1488 | | 12 | | 7 | | 11 | | 198 | 2 | | 17 |
| 1487 | | 13 | | 8 | | 12 | | 199 | 3 | | 18 |
| 1486 | | 14 | | 9 | | 13 | | 200 | 4 | | 19 |
| 1485 | | 15 | | 10 | | 14 | | 201 | 5 | | 20 |
| 1484 | | 16 | | 11 | | 15 | | 202 | 6 | Kuk-Našur III | 1 |
| 1483 | | 17 | | 12 | | 16 | | 203 | 7 | | 2 |
| 1482 | | 18 | | 13 | | 17 | | 204 | 8 | | 3 |

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| 1481 | | 19 | | 14 | | 18 | | 205 | 9 | | 4 |
| 1480 | | 20 | | 15 | | 19 | | 206 | 10 | | 5 |
| 1479 | | 21 | | 16 | | 20 | | 207 | 11 | | 6 |
| | | | n°11 | | | | | 208 | 12 | | |
| 1478 | | 22 | Ur[...]iaš | 1 | | 21 | | 209 | 13 | | 7 |
| 1477 | | 23 | | 2 | | 22 | | 210 | 14 | | 8 |
| 1476 | | 24 | | 3 | | 23 | | 211 | 15 | | 9 |
| 1475 | | 25 | | 4 | | 24 | | 212 | 16 | | 10 |
| 1474 | | 26 | | 5 | | 25 | | 213 | 17 | | 11 |
| 1473 | | 27 | | 6 | | 26 | | 214 | 18 | | 12 |
| 1472 | | 28 | | 7 | Ea-gamil | 1 | | 215 | 19 | | 13 |
| 1471 | | 29 | | 8 | | 2 | | 216 | 20 | | 14 |
| 1470 | | 30 | | 9 | | 3 | | 217 | 21 | | 15 |
| 1469 | | 31 | | 10 | | 4 | | 218 | 22 | | 16 |
| 1468 | | 32 | | 11 | | 5 | | 219 | 23 | | 17 |
| 1467 | | 33 | | 12 | | 6 | n°62 | 220 | 24 | | 18 |
| 1466 | | 34 | | 13 | | 7 | Enlil-nâsir I | 221 | 1 | | 19 |
| 1465 | | 35 | | 14 | | 8 | | 222 | 2 | | 20 |
| 1464 | | 36 | | 15 | | 9 | | 223 | 3 | Kidinu | 1 |
| 1463 | | 37 | n°12 | 16 | | 10 | | 224 | 4 | | 2 |
| 1462 | | 38 | Kaštiliašu III | 1 | | | | 225 | 5 | | 3 |
| 1461 | | 39 | | 2 | | | | 226 | 6 | | 4 |
| 1460 | | 40 | | 3 | | | | 227 | 7 | | 5 |
| 1459 | | 41 | | 4 | | | | 228 | 8 | | 6 |
| 1458 | | | | 5 | | | | 229 | 9 | | 7 |
| 1457 | | | | 6 | | | | 230 | 10 | | 8 |
| 1456 | | | | 7 | | | | 231 | 11 | | 9 |
| 1455 | HANA | | | 8 | | | | 232 | 12 | | 10 |
| 1454 | Iddin-Kakka | 1 | | 9 | | | n°63 | 233 | 13 | | 11 |
| 1453 | | 2 | | 10 | | | Nûr-ili | 234 | 1 | | 12 |
| 1452 | | 3 | | 11 | | | | 235 | 2 | | 13 |
| 1451 | | 4 | n°13 | 12 | | | | 236 | 3 | | 14 |
| 1450 | | 5 | Ulam-Buriaš | 1 | | | | 237 | 4 | | 15 |
| 1449 | | 6 | | 2 | | | | 238 | 5 | Inšušinak-sunkir- | 1 |
| 1448 | | 7 | | 3 | | | | 239 | 6 | nappipir | 2 |
| 1447 | | 8 | | 4 | | | | 240 | 7 | | 3 |
| | | | | | | | | 241 | 8 | | |
| 1446 | | 9 | | 5 | | | | 242 | 9 | | 4 |
| 1445 | | 10 | | 6 | | | | 243 | 10 | | 5 |
| 1444 | | 11 | | 7 | | | n°64 | 244 | 11 | | 6 |
| 1443 | | 12 | | 8 | | | Aššur-šadûni | 245 | 12 | | 7 |
| 1442 | | 13 | | 9 | | | Aššur-rabi I | 246 | 1 | | 8 |
| 1441 | | 14 | | 10 | | | n°65 | 247 | 2 | | 9 |
| 1440 | | 15 | | 11 | | | | 248 | 3 | | 10 |
| 1439 | | 16 | n°14 | 12 | | | | 249 | 4 | Tan-Ruḥuratir II | 1 |
| 1438 | | 17 | Agum III | 1 | | | | 250 | 5 | | 2 |
| 1437 | | 18 | | 2 | | | | 251 | 6 | | 3 |
| 1436 | | 19 | | 3 | | | | 252 | 7 | | 4 |
| 1435 | | 20 | | 4 | | | | 253 | 8 | | 5 |
| 1434 | | 21 | | 5 | | | | 254 | 9 | Šalla | 1 |
| 1433 | | 22 | | 6 | | | n°66 | 255 | 10 | | 2 |
| 1432 | | 23 | | 7 | | | Aššur-nâdin- | 256 | 1 | | 3 |
| 1431 | | 24 | | 8 | | | aḥḫe I | 257 | 2 | | 4 |
| 1430 | | 25 | | 9 | | | | 258 | 3 | | 5 |
| 1429 | Išar-Lim | 1 | | 10 | | | | 259 | 4 | | 6 |
| 1428 | | 2 | | 11 | | | | 260 | 5 | | 7 |
| 1427 | | 3 | | 12 | | | | 261 | 6 | | 8 |
| 1426 | | 4 | | 13 | | | | 262 | 7 | | 9 |
| 1425 | | 5 | | 14 | | | | 263 | 8 | | 10 |
| 1424 | | 6 | | 15 | | | | 264 | 9 | Tepti-aḫar | 1 |
| 1423 | | 7 | n°15 | 16 | | | n°67 | 265 | 10 | | 2 |
| 1422 | | 8 | Kadašman- | 1 | | | Enlil-našir II | 266 | 1 | | 3 |
| 1421 | | 9 | Harbe I | 2 | | | | 267 | 2 | | 4 |
| 1420 | | 10 | | 3 | | | | 268 | 3 | | 5 |

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| 1419 | | 11 | | 4 | | | 269 | 4 | | 6 |
| 1418 | | 12 | | 5 | | | 270 | 5 | | 7 |
| 1417 | | 13 | | 6 | | | n°68 271 | 6 | | 8 |
| 1416 | | 14 | | 7 | | | Aššur-nêrârî II | 1 | | 9 |
| | | | | | | | 273 | 2 | | |
| 1415 | | 15 | | 8 | | | 274 | 3 | | 10 |
| 1414 | | 16 | | 9 | | | 275 | 4 | | 11 |
| 1413 | | 17 | | 10 | | | 276 | 5 | | 12 |
| 1412 | | 18 | | 11 | | | 277 | 6 | | 13 |
| 1411 | | 19 | | 12 | | | n°69 278 | 7 | | 14 |
| 1410 | | 20 | | 13 | | | Aššur-bêl- | 279 | 1 | 15 |
| 1409 | | 21 | | 14 | | | nišešu | 280 | 2 | 16 |
| 1408 | | 22 | | 15 | | | 281 | 3 | | 17 |
| 1407 | | 23 | n°16 | 16 | | | 282 | 4 | | 18 |
| 1406 | | 24 | Kara-indaš | 1 | | | 283 | 5 | | 19 |
| 1405 | | 25 | | 2 | | | 284 | 6 | | 20 |
| 1404 | Iggid-Lim | 1 | | 3 | | | 285 | 7 | Igi-halki | 1 |
| 1403 | | 2 | | 4 | | | 286 | 8 | | 2 |
| 1402 | | 3 | | 5 | | | n°70 287 | 9 | | 3 |
| 1401 | | 4 | | 6 | | | Aššur-rê'im- | 288 | 1 | 4 |
| 1400 | | 5 | | 7 | | | nišešu | 289 | 2 | 5 |
| 1399 | | 6 | | 8 | | | 290 | 3 | | 6 |
| 1398 | | 7 | | 9 | | | 291 | 4 | | 7 |
| 1397 | | 8 | | 10 | | | 292 | 5 | | 8 |
| 1396 | | 9 | | 11 | | | 293 | 6 | | 9 |
| 1395 | | 10 | | 12 | | | 294 | 7 | | 10 |
| 1394 | | 11 | | 13 | | | n°71 295 | 8 | | 11 |
| 1393 | | 12 | | 14 | | | Aššur-nâdin- | 296 | 1 | 12 |
| 1392 | | 13 | | 15 | | | aḥḫe II | 297 | 2 | 13 |
| 1391 | | 14 | n°17 | 16 | | | 298 | 3 | | 14 |
| 1390 | | 15 | Kurigalzu I | 1 | | | 299 | 4 | | 15 |
| 1389 | | 16 | | 2 | | | 300 | 5 | | 16 |
| 1388 | | 17 | | 3 | | | 301 | 6 | | 17 |
| 1387 | | 18 | | 4 | | | 302 | 7 | | 18 |
| 1386 | | 19 | | 5 | | | 303 | 8 | | 19 |
| 1385 | | 20 | | 6 | | | 304 | 9 | | 20 |
| 1384 | | 21 | | 7 | | | n°72 305 | 10 | Pahir-iššan | 1 |
| | | | | | | | Eriḫba-Adad I | 306 | 1 | |
| 1383 | | 22 | | 8 | | | 307 | 2 | | 2 |
| 1382 | | 23 | | 9 | | | 308 | 3 | | 3 |
| 1381 | | 24 | | 10 | | | 309 | 4 | | 4 |
| 1380 | | 25 | | 11 | | | 310 | 5 | | 5 |
| 1379 | Iših-Dagan | 1 | | 12 | | | 311 | 6 | | 6 |
| 1378 | | 2 | | 13 | | | 312 | 7 | | 7 |
| 1377 | | 3 | | 14 | | | 313 | 8 | | 8 |
| 1376 | | 4 | | 15 | | | 314 | 9 | | 9 |
| 1375 | | 5 | n°18 | 16 | | | 315 | 10 | | 10 |
| 1374 | | 6 | Kadašman- | 1 | | | 316 | 11 | Attar-Kittaḫ | 1 |
| 1373 | | 7 | Enlil I | 2 | | | 317 | 12 | | 2 |
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| 1162 | | | 10 | | | 100 | 17 | | 28 |
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| 1136 | | | 5 | | | 126 | 43 | | 19 |
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| 1084 | | | 17 | | | 176 | 31 | |
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| 1079 | | | 4 | | | 181 | 36 | |
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| 1077 | | | 6 | | | 183 | 38 | |
| 1076 | | | 7 | | n°88 | 184 | 39 | |
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| 1048 | | n°45 | 22 | | | 212 | 2 | |

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