How uncertain is Mesopotamian chronology?

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Most scholars are convinced that Mesopotamian chronology of the second millennium BC is uncertain. I shall try to present the so-called foundations of this chronology, which I think are reliable. I shall then go beyond this and describe the less reliable parts which concern the second millennium.

Mesopotamian chronology is conventionally based on texts: eponym lists; king lists; dated documents; synchronisms; royal inscriptions; *etc.*

The Babylonian system

I shall briefly describe the calendar because it imposes some constraints on chronology. It is based on two clearly defined units: the day and the month. The Babylonian day begins at sunset. The Babylonian month begins with the evening on which the crescent moon is seen for the first time after conjunction of sun and moon. Such a month has either 29 or 30 days. On average, it has 29.53 days, so that months with 30 days are slightly more frequent than months with 29 days.

Apart from day and month, the Babylonian calendar also uses years. In Babylonia, the year begins in Spring. So a Babylonian year called, *e.g.*, 911 BC, is the year that began in Spring of 911 BC and ended in Spring of 910 BC.

A year contains an integer number of months, usually 12. But 12 Babylonian months add up to only about 354 days. Such a year very quickly is out of step with the seasons – as will be noticed by people without any knowledge of astronomy. In order to keep seasonal events like the harvest or some religious festivals at the same season in the year, an intercalary month was added to the year whenever it was thought to be necessary. So some years have 13 months. Intercalary months are attested since the 24th century BC. The decision of when a month had to be intercalated lay with the king, who will have had his advisers. In the second millennium BC, intercalation was irregular, becoming more regular in the 8th and 7th centuries, which may be due to the use of intercalation rules. Around 500 BC, an intercalation cycle of 19 years is evident. This contained 7 additional months in a fixed pattern so that one could know in advance which years would be intercalary (intercalary years: 1st, 3rd, 6th, 9th, 12th, 14th, 17th). This 19-year cycle remained in use in the Seleucid and Arsacid periods.

The Assyrian System

Assyrian chronology is based on the Assyrian king list,[1] which in turn is most likely based on eponym lists, which I shall explain below. There are other sources that can be used for chronological purposes, like royal inscriptions or legal and administrative documents; they are usually in agreement with the kinglist.

The Assyrian kinglist's five main exemplars represent one text with minor variants due to scribal mistakes. The list is divided into four sections of unequal length. The first two sections give the ancestors of the king Šamši-Adad I and need not concern us here. No lengths of reign are given for them. The third section comprises six kings, again without lengths of reign; a summary remark says that their eponyms are unknown.

The fourth and longest part of the Assyrian

[1] Grayson 1983.

kinglist consists of entries for each king with his relationship to his predecessor and the length of his reign, usually following the pattern "$King_1$ son of $King_2$ ruled for x years'. This structure in strict chronological order is kept for the rest of the list.

The Assyrian eponyms

Besides the Assyrian kinglist, there are also lists of eponyms. Eponyms are high officials whose names were used to give a name to a year. Instead of a number, the year is identified by the eponym's name, similar to the dating by consuls used in ancient Rome. Lists were necessary to keep a record of the sequence of the eponyms. Unfortunately, the lists that are preserved do not provide a continuous sequence. There is a long stretch of more than three hundred years in the first half of the first millennium BC. We do have lists from earlier times, especially for about 200 years in the first half of the second millennium, but they cannot be connected to later ones. Some eponym lists contain not only the names but also one or two remarkable events for each year.

The eponym list(s) for the first half of the first millennium are usually dated by means of a solar eclipse mentioned in one of the exemplars. The text is:

> In the eponymy of Bur-sagale, (governor) of Guzana: revolt in the city of Assur; in the month Simanu, the sun made an eclipse.[2]

We can assume that the eclipse was total or near total, more than 95%; otherwise it would probably not have been noticed. It was visible at Assur; this can be taken for granted because this city was the origin and the centre (at least the religious centre) of the Assyrian empire. While solar eclipses are rare at a given location, the description is rather vague. In order to use the eclipse, one has to make additional assumptions about the possible date of the list or any item mentioned in it.

One needs the number of years between a secure date and some event in the eponym list. Secure dates can be found in astronomical events, provided they can be identified with certainty. A tablet collecting lunar eclipses mentions an eclipse in year 1 of Mukin-zeri, a Babylonian king who fought against the Assyrian Tiglath-pilesar III.[3] Since it is known from the so-called Babylonian Chronicle[4] that this year corresponded to Tiglath-pilesar's 15th, the reign of the Assyrian is thereby astronomically dated. A similar eclipse in the same month would at best occur 18 years earlier or later.

Another astronomical text reports observations of the planets Mars and Mercury, from the reigns of Esarhaddon (year 2) and Šamaš-šum-ukin (year 14, 17, and 19).[5] Their reigns are thus securely dated. The same positions of both the planets on the same calendar dates would not occur again for hundreds of years.

These documents enable us to check whether a solar eclipse did in fact occur in the year for which it is mentioned in the Eponym chronicle. We accept from the astronomical texts just mentioned that Esarhaddon's year 2 corresponds to 679/8 BC in the Julian calendar, and we can go back as many years in the eponym list so as to reach the year where the solar eclipse is mentioned. If we then go back the same number of years in the Julian calendar, by computation we find that a solar eclipse took place in that year and month in Assur. We are therefore entitled to trust the eponym list. We can also see at the same time that it uses solar years (whatever their exact definition), and not lunar ones.

The difficulties begin

I believe that this part of the Assyrian eponym list can be dated with certainty. Now for the uncertainties. For the time before 910 BC, where the preserved exemplars of the eponym list break off, we have to rely on the Assyrian kinglist to reconstruct the chronology. In the case of variant readings or missing lengths of reign we can only rarely invoke the eponym list; its fragments for the second half of the second millennium do not provide enough information.

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[2] Millard 1994, 41.
[3] Hunger 2006, No. 2.
[4] Grayson 1975, 72; Brinkman 1968, 241–2.
[5] Hunger 2006, No. 52.

Assyrian Kinglist	KAV 14	Synchronistic Kinglist
39. Šamši-Adad I 33 years	Šamši-Adad I	
40. Išme-Dagan I 40 years	Išme-Dagan I	
	a. Mut-aškur	
	b. Rimu[š]	
41. Aššur-dugul 6 years		
ina tarṣi Aššur-dugul		
42. Aššur-apla-idi		
43. Naṣir-Sin		
44. Sin-namir		
45. Ipqi-Ištar		
46. Adad-ṣalulu		
47. Adasi		Adasi
48. Belu-bani 10 years		Belu-bani
49. Libaya 17 years		Libaya
50. Šarma-Adad I 12 years		Šarma-Adad I
51. IB.TAR-Sîn 12 years		IB.TAR-Sîn
52. Bazaya 28 years		Bazaya
53. Lullaya 6 years		Lullaya
54. Šu-Ninua 14 years	Šu-Ninua	Šu-Ninua

Table 1.

Proceeding further into the past, the first such point of uncertainty occurs in the reign of Tiglath-pilesar II (No. 97 in the list, as numbered in Grayson 1983), who is said to have ruled for 33 years in the eponym list fragments, while the Assyrian king list presents a variant of 32 years. So his last year is certainly 935; his first may have been 966 or 967. The next uncertain points are the successive reigns of Ninurta-apil-Ekur (No. 82) and Aššur-dan (No. 83): The different sources of the Assyrian king list give Ninurta-apil-Ekur 3 or 13 years, Aššur-dan 46 or 36 years. While it cannot be decided which (if any) is correct, it is very likely that the sum of their reigns is 49 years.

Next, Aššur-nadin-apli has a reign of either 3 or 4 years.

Schematically, we find a maximum variance of 22 years as a consequence of all these discrepancies. Making educated guesses, one can propose likely dates for the kings as early as Enlil-naṣir II (No. 67); according to Brinkman's (1976) tables he ruled from 1430 to 1425 BC.

54. Šu-Ninua	14 years	
55. Šarma-Adad II	3	
56. Erišum III	13	
57. Šamši-Adad II	6	
58. Išme-Dagan II	16	
59. Šamši-Adad III	16	
60. Aššur-nerari I	26	
61. Puzur-Aššur III	14/24	
62. Enlil-naṣir I	13	
63. Nur-ili	12	
64. Aššur-šaduni	1 mo.	
65. Aššur-rabi I	[x]	
66. Aššur-nadin-ahhe I	[x]	
67. Enlil-naṣir II	6	*c.* 1430-1425

There is unfortunately an additional uncertainty at this point: the year numbers of Enlil-naṣir's two predecessors Aššur-nadin-ahhe I and Aššur-rabi are broken in all sources of the king list. They lived in a period of instability, so one tends to assign them relatively short reigns; but there is no way of calculating them.

In its still earlier part, the preserved exemplars of

the king lists show more differences so that further calculation is even more problematic (Table 1).

We have, apart from the main text, a fragment (*KAV* 14) that mentions additional names after Išme-Dagan but then immediately continues with Šu-Ninua (No. 54), omitting 7 or more names found in the other list. There is, on the other hand, a synchronistic king list which agrees with the main text from king Adasi onwards. If we simply trust the main list, we ought to neglect the kings who have no reign length and are assigned to the time of Aššur-dugul. Then by adding the numbers we arrive for the first year of Šamši-Adad I at 1726 + *x* or at 1736 + *x* (depending on whether we take 14 or 24 for the reign of Puzur-Aššur III), where *x* is the sum of the lengths of reign of Aššur-nadin-ahhe I and Aššur-rabi, and of other possible corrections to reigns after them.

There are however more doubts. Išme-Dagan I is well-known from the Mari archives, and these suggest that he reigned for only 11 years after his father's death instead of 40. The fragment KAV 14 points in the same direction, with two (or three?) more kings inserted after Išme-Dagan. Mut-aškur is known to be his son, but no independent sources for his length of reign are available.

All this makes one feel uncomfortable. Scholars have tried to overcome the gaps by means of the time-spans (*Distanzangaben*) given in some later Assyrian royal inscriptions for the distance between the present ruler and earlier kings. Unfortunately, the interpretation of these time-spans is not straightforward. The inscriptions do not specify the exact point in the contemporary king's reign from which the measurement allegedly begins, nor do they specify the specific point in the reign of the distant predecessor for which the time-span is measured. The only instruments known to us that could have been used for these calculations are the eponym lists and the Assyrian kinglist. It is fair to assume that they were available to the ancient scribes in a more complete form than they are to us; it may also be that they had faulty copies just as we do.

Doubts about the reliability of the Assyrian Kinglist also come from the inscription of Puzur-Sin, who seems to have been a king of Assur but who does not appear in the king lists available to us.[6] He claims to have defeated a grandson of Šamši-Adad, calling Šamši-Adad a non-Assyrian foreigner who had destroyed temples in Assur.

J. Reade (2001) proposed identifying Puzur-Sin with IB-TAR-Sin (No. 51 above); scribal corruption in transmission would make this possible. This proposal has further consequences: one has to assume that Puzur-Sin = IB-TAR-Sin is listed with the wrong father's name in the king list; errors of this kind do occur. Then, based on *KAV* 14, all the kings listed between Išme-Dagan I and Puzur-Sin = IB-TAR-Sin would have to be considered as misplaced or invented. Reade furthermore eliminates Lullaya (No. 52 above) by equating him with Aššur-dugul (No. 41). Because of the far-reaching emendations required I do not believe that equating Puzur-Sin with IB-TAR-Sin solves all our problems.

Gasche *et al.* also discuss the Assyrian Kinglist tradition.[7] They assign a reign of 11 years to Išme-Dagan (see above) and take kings No. 42-47 as having reigned within Aššur-dugul's reign, so that for these kings no years need to be added to the count. For the two kings Aššur-nadin-ahhe I and Aššur-rabi I, whose lengths of reign are broken off in the King List, 29 years are assumed, based on average throne tenure.

Gasche *et al.* further assume[8] that before the reign of Tiglath-pileser I, the list is based on lunar years of 354 days so that one year has to be subtracted every 33 years to convert this year count to the solar years of the Julian calendar. However, other authorities assume that the eponym year is connected to the solar year for the Old Assyrian period, which includes Šamši-Adad I.[9] Since the Assyrian Kinglist is most likely derived from eponym lists, it too should be based on solar years. It seems very unlikely to me that this relation would have been abandoned in the Middle Assyrian period, and then taken up again by Tiglath-pileser I. Koch (1989) has proposed a procedure by which intercalation may have been practiced in Middle Assyrian times.

[6] Grayson 1985.
[7] Gasche *et al.* 1998, 47–68.
[8] With Weidner 1935/6, 27–9.
[9] Already Larsen 1976, 193; also Veenhof 2003, 59.

Šamši-Adad I is not the first king in the list. Several of his predecessors are listed with their lengths of reign. The eponym lists found at Kültepe,[10] the ancient Kaniš in Anatolia, confirm the lengths of reign for Šamši-Adad's predecessors. They also agree with eponym lists found at Mari,[11] which for some time was under the rule of Šamši-Adad I. A relative chronology for Old Assyrian times is therefore possible. Günbattı 2008 publishes another such eponym list from Kültepe which contains the eponyms of Šamši-Adad's time and of his successors – exactly those kings about whom we get conflicting information from the king lists. Unfortunately, the names of kings and the changes of reigns are not indicated in this exemplar. The Kültepe eponym lists inspire confidence in the Kinglist, at least for the part that corresponds to their range of time.

The Mari eponym lists can be better called "chronicles" because they frequently add an event which happened during an eponym's year. For instance, the birth of Šamši-Adad I is noted, and for the following year, a solar eclipse is mentioned. People jumped on this seemingly hard piece of evidence, but it turned out to be difficult to handle. I shall come back to this point, but first I want to describe the situation for Babylonia.

There we do not have such a nice king list as for Assyria. The Babylonian lists are not well preserved, and one cannot give a continuous sequence of rulers; often it is unknown for how many years they ruled. In addition, the Babylonian king lists contain more than one dynasty, and it is not indicated whether the dynasties overlapped; the one-dimensional format of the lists does not allow for this. They cannot avoid listing dynasties consecutively, leading to the impression that there was always only one king in the country, necessarily leading to great uncertainties. Generally, Babylonian kings can only be dated if we know about their relations to Assyrian ones.

In the middle of the second millennium, there is a gap in our information on the Babylonian side. Prior to this gap, we know the dynasties of Ur, Isin, Larsa, and Babylon in the first half of the second millennium; their relative chronology is well established. We have lists of year names covering altogether about 400 years. Although one might try to bridge this gap by different hypotheses, it seems better to look for an independent way to date the earlier dynasties. The main problem is how to anchor them to a reliably dated event.

It was therefore a sensation when, at the beginning of the 20th century, F. X. Kugler (1910) found that cuneiform omen texts, using successive appearances and disappearances of Venus as ominous signs, could be connected with the Old Babylonian king Ammiṣaduqa. These omens are preserved in first-millennium copies; so they are separated from the presumed time of observation by almost a millennium. Unfortunately, the calendar dates of these phenomena had been very much corrupted in transmission so that in order to use the text for chronology, emendations were required, not all of which had the same probability. As research went on, three main possible datings of Ammiṣaduqa emerged, labelled as the "High", "Middle" and "Low" Chronologies.

Depending on what other evidence scholars adduced, they arrived at different choices among these three. Applying the three chronologies to the well-known king Hammu-rapi of Babylon, his reign is dated as follows:

"High Chronology":	1848–1806 BC
"Middle Chronology":	1792–1750
"Low Chronology":	1728–1686

The end of Hammu-rapi's dynasty, which occurred 155 years after his death, is therefore placed in 1651, 1595, or 1531 BC, respectively.

In 1998, a new approach by a team led by H. Gasche, was published. Based on Gasche's evaluation of pottery development, they considered a lower chronology (*i.e.*, lower than the "Middle chronology") to be necessary. They then searched for a possible re-interpretation of the Venus Tablet, of eclipse omens referring to the destruction of Ur, and of other evidence adduced in the past, and presented such a new, lower chronology. It gives Hammu-rapi a reign from 1696-1654, and places the end of the dynasty in 1499 BC.

[10] Veenhof 2003; Günbattı 2008.

[11] Birot 1985.

This was greeted both with agreement and with dissent from colleagues. It is therefore evident that the problem of Mesopotamian chronology of the early second millennium has not been solved; at least, there are several people who disagree among each other.

Since it is this part of Mesopotamian chronology that is more or less contemporaneous with the Minoan eruption of Santorini (although, as far as I know, no Mesopotamian record, archaeological or textual, of the eruption exists), I shall try to present the situation as explicitly as possible.

The famous Venus Tablet[12] consists mainly of omens according to the following pattern:

> In month MN, the n^{th} day, Venus disappeared in the west, stayed away n days in the sky, and in month MN, the n^{th} day, Venus became visible in the east.

After this there follows a non-astronomical prediction of the type:

> there will be rains and much water in the springs, kings will send reconciliatory messages to each other.

The text continues:

> In month MN, the n^{th} day, Venus disappeared in the east, stayed away n days in the sky, and in month MN, the n^{th} day, Venus became visible in the west.

This is again followed by a prediction.

In this way, the last and first visibilities alternate with each other. The interesting point is that the dates, months and days, are not random, but agree pretty well with dates expected from the natural sequence of the Venus phenomena. It is therefore very likely that the dates are based on observations made at some point, and predictions were added to them. Thereby the observations became signs, *i.e.* indications for the predicted events connected with them.

For us, the dates – that is the presumed observations – are the interesting part.

In Table 2 is a list of the first 10 such sets of dates.

Last visibility	Interval of invisibility	First visibility
XI 15	3 d	XI 18
VIII 11	2 m 7 d	X 19
VI 23	20 d	VII 13
VII (IV!) 2	2 m 1 d	VI 3
II 2	18 d	II 18
IX 25	2 m 4 d	XI 29
VIII 18 (28!)	3 d	IX 1
V 21	2 m 11 d	VIII 2
IV 25	7 d	V 2
XII 25		

Table 2.

Apart from two easy-to-correct errors, these dates are what one expects from celestial mechanics. The last date is not followed by an omen, but by a year-name referring to a "golden throne". The year was identified by Kugler with the eighth year of Ammiṣaduqa.[13] This set of dates, after correction, can be considered to reflect observations from the first 8 years of Ammiṣaduqa's reign.

Unfortunately, they do not suffice to uniquely identify these years in our calendar.

Even more unfortunately, however, the remaining dates in the text are far more corrupt. About one-third of them are astronomically impossible, so one has to emend them. Pingree stated that the first 10 omens, corresponding to an 8-year cycle of Venus phenomena, are a valid negative argument in the chronology debate.[14] In other words, he thought that these data were reliable enough that one could expect the correct chronology to agree with them. However, he considered the rest of the data as hopelessly corrupt, so much so that he doubted their relation to Ammiṣaduqa's reign.

Huber gave a renewed evaluation of chronologies, partly in response to Gasche *et al.* (1998).[15]

[12] Reiner & Pingree 1975.

[13] Sassmannshausen 2006 has drawn attention to the fact that "golden thrones" do occur in several Old Babylonian year names, not only in Ammiṣaduqa 8. In defense of Kugler's choice of Ammiṣaduqa 8 it can be noted that the intercalary years required by the calendar dates in the Venus Tablet do agree with attested intercalations during the first years of Ammiṣaduqa's reign: the intercalary year implied by omen 4 is attested from documents of the time of Ammiṣaduqa; omen 5 again requires an intercalation, which is supposedly also found in a document which unfortunately cannot be located any more. Furthermore, the Venus tablet covers 21 years, the length of Ammiṣaduqa's reign.

[14] In Reiner & Pingree 1975, 25.

[15] Huber 2000a.

He considered five types of astronomical data: the Venus Tablet, Old Babylonian month lengths, Ur III lunar eclipses, Ur III month lengths, and lunar eclipses of the Akkadian dynasty.[16] Since the Minoan eruption of Santorini took place around the middle of the second millennium, we are concerned either with Old Babylonian times or with the period immediately thereafter (depending upon when the eruption took place and whether the First Dynasty of Babylon ended *c.* 1595, 1531 or 1499 BC). Thus we can disregard the earlier periods (which would take us well into the third millennium and more than half a millennium away from the Minoan eruption, without any useful input).

In my opinion[17] it is doubtful whether one can use eclipse descriptions preserved in omen texts of the first millennium BC as if they were records of actually observed eclipses for Ur III at the end of the third millennium BC. Leaving aside the lunar eclipses, a combination of the Venus Tablet data and Old Babylonian month lengths alone supports only the so-called High chronology. According to Huber, the data has been misunderstood by Gasche and his team;[18] their astronomical calculations are also marred by errors.[19] In particular, the insistence by Gurzadyan[20] that the Venus Tablet can only be used to establish an 8-year cycle of Venus phenomena beginning with Ammiṣaduqa year 1 does not seem to reflect an understanding the Babylonian lunar calendar.[21] While Gasche's chronology is based on the archaeological material, it cannot be considered verified by astronomy.

The dynasty following the First Dynasty of Babylon – either immediately or after a short break – is known as the Kassite. Recently, Boese (2008) has identified two Kassite kings found in the dates of recently discovered tablets from Tell Muhammad with two names of such rulers in the Synchronistic Kinglist. Since some dates of the Tell Muhammad texts refer to the time after the resettling of Babylon, a latest possible date for the Fall of Babylon could be established by means of the Synchronistic Kinglist. Boese finds 1530 BC as the minimum, but considers *c.* 1545 BC to be more likely. This argument depends on the reliability of the Synchronistic Kinglist.

I would sum up the situation as follows: if the Venus Tablet contains reliable records from the time of Ammiṣaduqa, and if the Old Babylonian month lengths are usable data, then the Huber's "High Chronology" is the most likely one.[22] If we think that we are forced by other evidence, ceramics for instance, to arrive at a different (lower) chronology, we have to abandon the use of these astronomical data.[23]

Šamši-Adad I is known from the Mari correspondence to have died in year 18 of Hammurapi.[24] Returning therefore to the Assyrian king list, in its earlier part, we can connect the two uncertain approaches to chronology, from Assyria and Babylonia. At first sight, if one reads the Assyrian kinglist in the way I did above, it can be accommodated easily to the "Low Chronology", but not to the others. Given the problems inherent in the interpretation of the kinglist, however, I would no longer consider this to be a decisive argument.

Then we can remember the solar eclipse reported for the year after the birth of Šamši-Adad I in the so-called Mari Eponym Chronicle mentioned earlier; and a dendrochronological date of 1774 (+4/-7) BC for beams used for building a palace at Acem-höyük[25] which can be dated more or less to the time of this king. By "more or less" I mean that sealings bearing the name of Šamši-Adad have been found in the ruins. Since it is not completely clear how the seals are related to the beams,[26] dendrochronology cannot provide us with a decisive argument.

Michel 2002 has taken the Acem-höyük date

[16] "Ur III" is shorthand for the Third Dynasty of Ur, a dynasty which ruled somewhere around the last century of the third millennium or the first century of second millennium. The Akkadian dynasty, whose rulers were associated with the city of Agade, ruled in the second half of the third millennium BC.

[17] Hunger 2000.

[18] Huber 2000a, 53 and 61; Huber 2000b.

[19] Koch 1998; Seal 2001.

[20] Gurzadyan 2000, 181; repeated by Gasche 2003, 209.

[21] Huber 2000b, 288–9.

[22] Huber 2000b, 288.

[23] For another argument against using the Venus tablet, see Warburton 2004, 591.

[24] Charpin & Ziegler 2003, 136–7 and 262.

[25] Manning *et al.* 2001.

[26] Collon 2000.

proposed by Manning as a starting point and looked for a solar eclipse that could have been observed in the year after Šamši-Adad's birth. She came up with one in 1833 BC; Šamši-Adad would then have been born in 1834 BC, and have reigned in Assur from 1792 to 1760 BC, at the time of the building of the palace.

It must be said though that the choice of solar eclipses for such early times is a delicate procedure. We only know the year in which it is supposed to have happened, no month, season or time of day. For identification, additional assumptions have to be made which reflect evaluation of the changes in the earth's rotation. Depending on such assumptions eclipses which appear plausible to one scholar may seem unlikely to another.[27] Not being able to do better eclipse calculations than professional scientists, I observe that different choices have been proposed so far: in contrast to Michel & Rocher (2000), Gurzadyan (2000) considers the eclipse of 1833 BC as impossible, proposing (for his chronology) one of 1754 BC instead; Huber (pers. comm.) says that he could not find an eclipse that would easily agree with any of the chronologies proposed so far.

Pruzsinszky (2006) has supported Michel's choice by means of the Assyrian time-spans (*Distanzangaben*) which I mentioned earlier. While people may be inclined to disregard the time-spans altogether, Pruzsinszky's proposal happens to agree with that by Michel, which was based on Manning's use of dendrochronology. Unfortunately, other dendrochronological data, from buildings in Kültepe, cannot be brought into agreement with Michel's proposal, see Veenhof 2007.

In conclusion I regret to say that there is conflicting evidence for Mesopotamian chronology: pottery development suggests a relatively Low Chronology, tree rings (assuming they are correctly interpreted) a somewhat higher, and astronomy (if P. Huber is correct) a very high one. At the moment, a decision seems to me impossible, but I hope for better data.

[27] Huber 2000, 57.