

Dating medieval manuscripts with the help of calendars: an evaluation¹

Abstract

Undated manuscripts that have a calendar are often approximately dated to the starting years of the calendar. This method assumes that scribes were unlikely to include a calendar for past years, since this information would have been no longer relevant. The present article is an evaluation of the method of calendar dating. By examining dated manuscripts that include a calendar, the article demonstrates that calendar dating is unreliable and should not be seen as yielding more than a *terminus post quem*. The article draws attention to types of calendars that are particularly liable to produce erroneous results when used for dating manuscripts and suggests an explanation why scribes included partially outdated calendars.

Only a small fraction of surviving medieval Hebrew manuscripts are dated.² For undated manuscripts various clues and clue combinations are used in order to establish their approximate date. These include being copied by known scribes, codicological and paleographical considerations, textual and historical evidence.³ Manuscripts that include a calendar are often approximately dated to the starting years of the calendar.⁴ This is based on the assumption that scribes were unlikely to include a calendar for past years, since this information would have been no longer relevant. This assumption is supported by explicit statements found in some sources⁵ as well as by dated manuscripts that have a calendar with a starting date close to the date given in the colophon.⁶ Despite this supporting evidence, the method of approximately dating manuscripts by their calendars rests on shaky foundations. It is justified if one assumes that scribes were original calendar-makers and that calendars in books were seen as practical tools that were regularly updated. If, however, scribes merely copied calendars found in their exemplars, the validity of the method becomes significantly compromised.

In this article I evaluate the method of using calendars for the purposes of dating manuscripts. Although different kinds of calendars are attested in Hebrew manuscripts, I

1 This article is based on the results of my research in the ERC Advanced Grant project 'Calendars in Late Antiquity and the Middle Ages: Standardization and Fixation' (PI Sacha Stern), which ran at UCL between 2013–2018. I thank Prof. Sacha Stern and Dr. Justine Isserless for their helpful comments and suggestions.

2 M. BEIT-ARIÉ, *Hebrew Codicology. Historical and Comparative Typology of Hebrew Medieval Codices based on the Documentation of the Extant Dated Manuscripts Using a Quantitative Approach* (Internet pre-print Hebrew version), 2019, p. 51. It is estimated that about 100,000 Hebrew manuscripts survive that were produced up to the end of the 15th century, out of which ca 3,150 are dated (BEIT-ARIÉ, *Hebrew Codicology*, p. 47, 53).

3 M. BEIT-ARIÉ, "Palaeographical identification of Hebrew manuscripts: methodology and practice" in M. BEIT-ARIÉ, *The Makings of the Medieval Hebrew Book*, Jerusalem, 1993, p. 11-40 (35-40).

4 BEIT-ARIÉ, "Palaeographical identification", p. 36, with the *proviso* that calendars and other dated documents included in manuscripts can be copied from earlier exemplars.

5 For example, London, British Library, Or MS 2227 (Yemenite), fol. 199r: "I started (the calendar) in the 19-year cycle 277 because there is no value in writing earlier 19-year cycles which have already passed".

6 Examples include Cincinnati, Hebrew Union College, MS 389 copied in 5074 AM (1313/4 CE) and including a calendar that starts in that same year (fol. 119v) and Jerusalem, National Library of Israel, MS Heb. 34*1114, completed in 5179 AM (1418/9 CE) and with a calendar starting in 5169 AM (1408/1409 CE, fol. 242r-242v).

focus entirely on the type of calendrical composition that is most common in European and late medieval and early-modern Near Eastern Hebrew manuscripts. These are long-term calendars that provide concise information on the calendrical type of each year covered by the calendar (fig. 1). Calendars of other types are not considered in this article. These include, for example, cycles of *tequfot* (equinoxes and solstices) as well as extremely detailed calendars found in Cairo Genizah fragments that belong to the Classical Genizah period (10–13th c. CE). These compositions contain calendar data of a different kind and must be studied separately. Also excluded are most calendars that form an integral part of authorial works. Indeed, the starting point of such calendars is more closely related to the time of a work's composition than to its time of copying.

In long-term Jewish calendars discussed here years are represented in groups of nineteen, corresponding to 19-year cycles of intercalation.⁷ The 19-year cycles are numbered from Creation: cycle 1 stands for years 1-19 of the Creation Era (henceforth AM),⁸ cycle 2 for years 20-38 AM, and so on. Calendars are most commonly provided for full 19-year cycles rather than for parts of a cycle or for individual years. The calendar for each year is provided in the form of a shorthand notation, known as the type or character of a year, and reflects three essential variables: the day of the week of Rosh Hashanah, the length of the variable months Marḥešwan and Kislew, and the number of months in that year. This concise format allows a calendar for hundreds of years to be written on only a few pages and often in one table.

Long-term calendars are frequently used for dating manuscripts and it is assumed that the date of copying falls in the first 19-year cycle covered by the calendar. However, my analysis of calendars included in over two hundred medieval and early-modern manuscripts shows that this assumption is not always justified and that scribes from all parts of the Jewish world frequently included in their copied works calendars that began one or more 19-year cycles before the date of copying. This suggests that in the absence of further supporting evidence, long-term calendars should not be seen as yielding more than a *terminus post quem*. In this article I demonstrate this finding by examining a number of dated manuscripts that have a calendar and comparing dates given in the manuscripts' colophons with the starting periods of included calendars. In addition, I consider some cases where a scribe himself made it clear that the date of copying was later than the starting 19-year cycle of the calendar.

*Città del Vaticano, Biblioteca Apostolica Vaticana, MS Barb. Or. 98 (Ashkenazi)*⁹

Manuscript Vatican, VBA Barb. Or. 98 (Ashkenazi), fol. 93v has a calendar for four 19-year

7 For a detailed explanation of the workings of the Jewish calendar see R. SAR-SHALOM, *Gates to the Hebrew Calendar* (Hebrew), Netanyah, 1984, esp. p. 52, 131-140.

⁸ The beginning of the Creation Era, also known as Anno Mundi, generally corresponds to 3761 BCE. In medieval Hebrew manuscripts from Iran, Kurdistan and other Eastern regions it corresponds to 3760 BCE. See, for example, A. GORDIN, "How to avoid some pitfalls while interpreting dates in Hebrew manuscripts", *Revue des Études Juives*, 178/1-2 (2019), p. 159-184 (175-184).

⁹ Available online at https://digi.vatlib.it/view/MSS_Barb.or.98

cycles 266-269 (scheme 1). Under the 19-year cycle 266, the scribe noted “this table has already passed”, clearly indicating that the first cycle covered by the calendar had passed by the time that the calendar was copied. Then over the 19-year cycle 267, the scribe wrote “we are now in this cycle”. The layout of this calendar clearly demonstrates that the remark concerning the 19-year cycle 266 is not a later addition. The calendar has a somewhat unusual shape, where each 19-year cycle is laid out in a grid of four rows over five columns or vice versa. The first cycle 266 is penned in four rows over five columns and the above-quoted remark is written below forming a fifth row. In order to balance the page and make all grids the same length, the scribe had to arrange the 19-year cycle 267, placed to the left of the cycle 266, in a grid of five rather than four rows and to have only four columns.

Oxford, Bodleian Library, MS Reggio 49 (Byzantine, 1491 CE)

Oxford, MS Reggio 49, a Byzantine manuscript completed in Thebes in Ṭebhet 5251 AM (1491 CE, 19-year cycle 277), announces on fol. 71r a calendar for sixty years beginning in 5210 AM (1449/50 CE, in the 19-year cycle 275). The calendar that is actually included covers more than sixty years but does begin in 5210 AM (fols. 71r-74v). Here the starting date of the calendar is more than forty years, i.e. more than two 19-year cycles, earlier than the date of copying.

*Oxford, Bodleian Library, MS Laud Or 166 (Ashkenazi, 1470 CE)*¹⁰

An extreme case of the described phenomenon is found in Oxford, MS Laud Or 166, dated in the colophon on fol. 218r to 23 Ṭebhet 5231 AM (1470 CE), which falls in the 19-year cycle 276. This manuscript contains on fol. 147r a calendar for 19-year cycles 264-276 (4998-5244 AM, 1237/8-1483/4 CE, fig. 1), meaning that the manuscript was copied in the very last cycle covered by the table (see scheme 2). The manuscript is a copy of Jacob b. Asher’s legal work *Arba’ā Ṭurim* but the included table and instructions for using it provided below do not correspond to the standard text of this work.¹¹ The scribe was clearly aware of this as he said so himself: “I copied this from a different book. This explanation is not from *Oraḥ Ḥayyim*”. This is significant as it shows that the scribe of Oxford, MS Laud Or 166 did not just copy a calendar from his exemplar but knowingly chose to include a table that was almost completely outdated at the time of copying.

The reason why the scribe of Oxford, MS Laud Or 166 found it worthwhile to copy a table that was nearly outdated has to do with the calendar’s special length. This table for 19-year cycles 264-276 covers precisely thirteen 19-year cycles, equivalent to 247 years (13x19=247). Thirteen 19-year cycles were widely believed by medieval and early-modern Jews to “recur forever” (*ḥozrim ḥalila*), i.e. to form a calendar cycle.¹² This was based on

10 Available online at <https://digital.bodleian.ox.ac.uk/inquire/p/5737b7f1-bcf4-4085-8021-ebf86e19c331>

11 The calendar is found in *Ṭur Oraḥ Ḥayyim*, chapter 428. On calendar tables in manuscripts of *Arba’ā Ṭurim* see N. VIDRO, “Calendar tables in manuscript and printed *Arba’ah Ṭurim: Ṭur Oraḥ Ḥayyim*, chapter 428”, *Journal of Jewish Studies*, 69/1 (2018), p. 58-85.

12 On the 247-year cycle see Y. TOBI, *The Jews of Yemen. Studies in Their History and Culture*, Leiden, 1999, p. 211-226. H. Y. BORNSTEIN, “Dibre yeme ha-ibbur ha-aḥaronim, heleq aleph” [The later history of the Jewish calendar, part 1], *Ha-Tequfah* 14-15 (1934, 3rd edition), p. 321-372 (354-358). H. Y. BORNSTEIN, *Maḥloqet Rabh Sa’adia Gaon and Ben Me’ir* [A Controversy between R. Sa’adia Gaon and Ben Me’ir], Warsaw, 1904, p. 141-144. N. VIDRO, “The origins of the 247-year

the assumption that the type of a year is always the same as that of a year 247 years before or after it so that once a correct sequence of 247-year types is established, it can be used indefinitely without any changes. The claim that 247 years represent a cycle, holds only approximately in the framework of the standard Jewish calendar.¹³ However, many Jews believed that this calendar recurred exactly and hundreds of calendars of this kind can be found in manuscripts from all Jewish geo-cultural areas.¹⁴ For a user of the 247-year calendar, its reiterative nature meant that as soon as one reached the last year covered by the calendar (cell 247 in scheme 2), one could go back to the beginning (cell 1 in scheme 2) and start using it again. From this perspective, a 247-year calendar never went out of date and could be meaningfully copied during any cycle covered by it.¹⁵

Calendars for thirteen 19-year cycles (247 years) constitute the largest group of tables¹⁶ which were included in manuscripts copied later than the first 19-year cycle covered by the calendar. To give some examples from different geo-cultural areas:

*London, British Library, MS Or 2227 (Yemenite, 1540 CE)*¹⁷

The Yemenite prayer-book London, MS Or 2227 explicitly claims that there is no value in copying 19-year cycles that have passed.¹⁸ However, the manuscript itself does not abide by its rule. Copied in 1540 CE in the 19-year cycle 281 (see colophon on fol. 248r), it includes a calendar for thirteen 19-year cycles 277-289 (1484/5-1730/31 CE, fols. 199r-201v). This calendar starts more than eighty years prior to the time of copying.

*Paris, Bibliothèque Nationale, MS Heb. 263 (Italian, 1480/1 CE and later)*¹⁹

Paris, MS Heb. 263 is an Italian miscellany, the first part of which was copied in 5241 AM (1480/1 CE, see colophon on fol. 40r). A later part (fol. 57v) contains a calendar for the 19-year cycles 266-278 (1275/6-1521/2 CE), also dated below the table for a second iteration of the calendar, 19-year cycles 279-291 (1522/3-1768/9 CE). In the heading of this table, its copyist specifically referred to the year 5242 AM (1481/2 CE), at the end of the 19-year cycle 276 (1465/6-1483/4 CE).²⁰ This date falls in the eleventh of the thirteen cycles covered by the table, more than two hundred years after the start of the table in the 19-year cycle 266. If one assumes that this date does not represent the time of copying but was taken from an earlier exemplar, the discrepancy between the first 19-year cycle of the table and the time of copying becomes bigger still.

calendar cycle", *Aleph* 17/1 (2017), p. 95-137. N. VIDRO, "The 247-year Jewish calendar cycle: origins, diffusion, and diversity" in S. STERN (ed.), *Calendars in Antiquity and the Middle Ages* (forthcoming). E. RAVIV, *Mathematical Studies in the Hebrew Calendar* (unpublished PhD thesis, Bar Ilan University), 2015, p. 53-111.

13 On the accuracy of the 247-year cycle see RAVIV, *Mathematical Studies*, p. 57-62.

14 For a study of the use of 247-year cycles in different geo-cultural areas see VIDRO, "The 247-year Jewish calendar cycle".

15 Sometimes such tables were re-dated by adding new cycle numbers for the next iteration but this was not always the case.

16 In addition to being tabular, 247-year cycles can also be laid out in columns or as running text.

17 Available online at http://www.bl.uk/manuscripts/FullDisplay.aspx?ref=Or_2227

18 See footnote 5.

19 Available online at <http://archivesetmanuscrits.bnf.fr/ark:/12148/cc77100>

20 Paris, MS Heb. 263, fol. 57v: "In the year 242 of the sixth millennium we are in year 17 of the 19-year cycle 276, and in year 6 of the cycle of the sun".

Leiden, University Library, Cod. Or. 4730 (Italian, 1467 CE)

Leiden, Cod. Or. 4730 is a miscellany, the first part of which (fols. 13r-46v) was copied in Porcia in Šebhaṭ 5227 AM (1467 CE, 19-year cycle 276, see colophon on fol. 46v).²¹ The calendar included in this part of the manuscript covers thirteen 19-year cycles 271-283 (1370/71-1616/7 CE, fols.14v-15r). This means that the date given in the colophon falls in the sixth 19-year cycle of the calendar, just under one hundred years after the beginning of the table.

Autograph copies of Sepher Maharil

Sepher Maharil, a book of customs of Jacob b. Moses Levi Moelin (Maharil), was compiled by Eleazar b. Jacob (Zalman) of St. Goar after Maharil's death in Elul 5187 AM (1427 CE).²² Eleazar b. Jacob wrote a number of autograph versions of this compilation and three of the surviving autographs include a calendar. These are Frankfurt, Universitätsbibliothek MS Hebr. Oct. 94 (5220 AM, 1459/60 CE); Vienna, Österreichische Nationalbibliothek, Cod. Hebr. 75 (5228 AM, 1467/8 CE) and Cod. Hebr. 175 (second half 5229 AM-first half 5230 AM, 1469-1470 CE).²³ The calendar is always the same and covers thirteen 19-year cycles 273-285 (1408/1409-1654/5 CE). The inclusion of a calendar beginning in the 19-year cycle 273 is worth noting: as mentioned above, *Sepher Maharil* was composed after Maharil's death, which occurred in the last month of the last year of this cycle.²⁴ This means that the first included cycle was outdated already at the time of composition. It is obvious that all mentioned autographs, too, were copied later than the initial 19-year cycle covered by the calendar. This is indicated, although not explicitly stated, in the tables. In Frankfurt, MS Hebr. Oct. 94, fol. 219v and Vienna, Cod. Hebr. 75, fol. 154r, cycle numbers are not added to table rows that represent past 19-year cycles (see scheme 3). In Vienna, Cod. Hebr. 175, fol. 6v, cycle numbers and dates from Creation for the next iteration of the 247-cycle are marked in outdated 19-year cycles instead (e.g. cycle 286 is written instead of cycle 273, see scheme 4).²⁵ It is interesting to note here that Eleazar b. Jacob left undated or re-dated some 19-year cycles but did not modify the table so as to make it begin in the 19-year cycle of writing.

Two reasons can be suggested why manuscripts include calendars that start before the time of copying. Firstly, my analysis of a large number of medieval and early-modern calendars shows that tables, and especially so 247-year cycles, were copied from exemplars rather

21 On the copying and binding history of the miscellany see Sfardata (<http://sfardata.nli.org.il>), record 0F015.

22 On this work see I. PELLE, *The Book of "Maharil" (Customs of Maharil) According to its Autograph Manuscripts and its Specialty as a "Multi-Draft Versions" Work* (unpublished PhD thesis, Bar Ilan University), 2006.

23 Of these manuscripts only Vienna, Cod. Hebr. 175 has a dated colophon (fol. 146r). However, all autographs include references to the year of copying, each time different, which could not have been taken from an exemplar since the manuscripts are autographs. In Vienna, Cod. Hebr. 75 only the calendar part on fols. 152v-154r is Eleazar of St. Goar's autograph extract from *Sepher Maharil*. Frankfurt, MS Hebr. Oct. 94 is available online at <http://nbn-resolving.de/urn:nbn:de:hebis:30:2-8843>; Vienna, Cod. Hebr. 75 is available online at <http://data.onb.ac.at/rep/100364D0>; Vienna, Cod. Hebr. 175 is available online at https://web.nli.org.il/sites/NLIS/en/ManuScript/Pages/Item.aspx?ItemID=PNX_MANUSCRIPTS000187112.

24 PELLE, *The Book of "Maharil"*, p. 68.

25 This method is also attested in Cambridge, University Library, Add 635, fol. 210r, a non-autograph copy of *Sepher Maharil*.

than prepared from scratch.²⁶ The standard Jewish calendar is based on a complex arithmetic calculation that requires specialised knowledge and numerical expertise. It appears that most medieval and early-modern Jews, including the general educated elites, did not know how to construct, modify or correct a calendar.²⁷ Many scribes did not necessarily see themselves responsible for the contents of calendar tables and simply copied what they found in their exemplars. Less educated copyists may not have known their relevant 19-year cycle. In his 14th-century legal code *Arba'at Turim*, Jacob b. Asher included a separate explanatory note for people who did not know what 19-year cycle they were in.²⁸ A later, 16th-century author wrote about people complaining that they could not find calendrical data for their year when tables did not specify dates from Creation or Seleucid dates.²⁹ This suggests that some people had difficulties using the system of dating by 19-year cycles. There is no reason why copyists of calendars should have been better at this than their users.

Secondly, it may have been more important that a calendar could be used for a long time after it was copied, than that it had no outdated parts at the time of copying. Indeed, manuscripts were used over long periods of time and their calendars became gradually outdated even if they were perfectly in date to begin with. This attitude is evident in a letter by an Avignon physician Mordecai Nathan,³⁰ composed between 1427/8-1435/6.³¹ Mordecai Nathan was asked by his correspondent to create a new calendar. He refused but offered to send a copy of an existing table for twelve 19-year cycles (228 years) of which only three and a half cycles (ca. 68 years) had passed, arguing that what was left of the table (ca. 160 years) was “enough for our generation and for that after us”.³²

Conclusions

In this article I assessed the method of dating manuscripts by long-term calendars included in them. This method assumes that the first 19-year cycle of a calendar is indicative of a manuscript's time of copying. By comparing dates given in colophons of dated manuscripts with initial 19-year cycles of their respective calendars, I demonstrated that scribes did not necessarily begin calendars close to the time of copying. This was particularly the case with calendars for thirteen 19-year cycles (247 years), which were believed by many medieval and early-modern Jews to be reiterative and useable forever. These findings suggest that, in the absence of other supporting evidence, calendars included in medieval and early-modern manuscripts cannot be regarded as indicating more than a *terminus post quem* of the time

26 See VIDRO, “The 247-year Jewish calendar cycle”. See also BEIT-ARIÉ, “Palaeographical identification”, p. 36.

27 See VIDRO, “Calendar tables”, p. 77-78 and VIDRO, “The 247-year Jewish calendar cycle”. See also E. CARLEBACH, *Palaces of Time: Jewish Calendar and Culture in Early Modern Europe*, Cambridge, Mass., London, 2011, p. 6.

28 Jacob b. Asher, *Tur Oraḥ Hayyim*, chapter 428.

29 Issachar Ibn Susan, *Tiqqun Issachar*, Venice, 1578/9, fol. 3v.

30 On Mordecai Nathan see I. SIMON, A. DAVID, “Nathan, Mordecai,” *Encyclopaedia Judaica*, edited by M. BERENBAUM and F. SKOLNIK, 2nd ed., 2007, vol. 15, p. 10-11. Accessed on Gale Virtual Library on 23 March 2018.

31 Preserved in a later copy in Moscow, Russian State Library, MS Guenzburg 365, fols. 147r-148r (Provençal, ca. 1487).

32 Moscow, Russian State Library, MS Guenzburg 365, fol. 148r: וכי לא עברו מהשנים ההם כי אם ג מחזורים וחצי ודי במה שלאחריהם לדורינו ולבא אחריו ואין במלאכה ההיא כל חדש לא ראיתי לה מקום

of copying. This conclusion applies to calendar formats most commonly found in European and later medieval and early-modern Near Eastern Hebrew manuscripts, namely long-term calendars for a range of 19-year cycles in which each year is represented by one calendrical year type. A separate investigation is required and is currently in progress with regard to detailed calendars preserved in Cairo Genizah fragments from the Classical Genizah period (10-13th c. CE).

Figure 1

Long-term calendar table for the 19-year cycles 264–276 in a copy of Jacob b. Asher’s legal work *Arba’a Turim*. Oxford, Bodleian Library, MS Laud Or 166, fol. 147r (**image obtained, permission to publish received, awaiting official letter from the Bodleian**)

Scheme 1

Città del Vaticano, Biblioteca Apostolica Vaticana, MS Barb. Or. 98, fol. 93v
https://digi.vatlib.it/view/MSS_Barb.or.98

Calendar for the 19-year cycles 266-269. Cells with a grey background are filled with calendar data.

	4	3	2	1		5	4	3	2	1	
	מחזור רסז במחזור הזה אנו קיימים					מחזור רסו					
1											1
2											2
3											3
4											4
5	ס[ליק]					כבר עברה זאת הלוח					
	ס[ט]	ר	זור	מח			רסח	זור	מח		
1											1
2											2
3											3
4						סליק					4
5	ס[ליק]					סח	ר	מן	אחת	לוח	
	4	3	2	1		5	4	3	2	1	

Scheme 2

Oxford, Bodleian Library, MS Laud Or 166, fol. 147r

(<https://digital.bodleian.ox.ac.uk/inquire/p/5737b7f1-bcf4-4085-8021-ebf86e19c331>)

Calendar for the 19-year cycles 264-276. Cells with a light grey background are filled with calendar data.

The cell with a dark grey background corresponds to the year of copying given in the colophon (5231 AM, 1470 CE).

19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1		
																		1	רסד	1
																			רסה	2
																			רסו	3
																			רסז	4
																			רסח	5
																			רסט	6
																			רע	7
																			רעא	8
																			רעב	9
																			רעג	10
																			רעד	11
																			רעה	12
247																			רעו	13

Scheme 3

Frankfurt, Universitätsbibliothek, MS Hebr. Oct. 94, fol. 219v

(<http://nbn-resolving.de/urn:nbn:de:hebis:30:2-8843>)

Calendar for the 19-year cycles 273-285. Cells with a light grey background are filled with calendar data.

The cell with a dark grey background corresponds to the year of copying (5220 AM, 1459/60 CE). The first two 19-year cycles, found in the first two rows of the table, are not numbered because they had already passed at the time of writing.

19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1			
																				1	
																				2	
																				ערה	3
																				ערו	4
																				ערז	5
																				ערח	6
																				ערט	7
																				רף	8
																				רפא	9
																				רפב	10
																				רפג	11
																				רפד	12
																				רפה	13

Scheme 4

Vienna, Österreichische Nationalbibliothek, Cod. Hebr. 175, fol. 6v

([https://web.nli.org.il/sites/NLIS/en/ManuScript/Pages/Item.aspx?ItemID=PNX MANUSCRIPTS000187112](https://web.nli.org.il/sites/NLIS/en/ManuScript/Pages/Item.aspx?ItemID=PNX_MANUSCRIPTS000187112))

Calendar for the 19-year cycles 273-285, partially redated. Cells with a silver background are filled with calendar data.

The cells with a dark grey background correspond to the years of copying given in the colophon (second half 5229 AM-first half 5230 AM, 1469-1470 CE). The table covers 19-year cycles 273-285. However, the first 19-year cycle, found in the first row of the table, is numbered 286 rather than 273, corresponding to the second iteration of the 247-year cycle. The same must have been the case in the next two 19-year cycles represented by rows two and three of the table. The 19-year cycle numbers themselves did not survive due to a tear in the manuscript but dates from the Era of Creation found in the first three lines correspond to the second rather than the first iteration of this table: 5420-5470 AM. In lines 4-13 the dates are for the first iteration of the table: 5230-5410 AM (only decades are indicated).

	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	
1					תל										תר					רפו
2				תנ										תמ						[רפז]
3			תע										תס							[רפח]
4					רמ										רל					[ערז]
5				רס										רנ						[ערח]
6			רפ										רז							ערט
7		ש										רז								רף
8	שך										שי									רפא
9									של											רפב
10								שנ										שמ		רפג
11							שע										שס			רפד
12						שץ											שף			רפה
13					תי												ת			