Sacha Stern

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THE BABYLONIAN CALENDAR AT ELEPHANTINE

In a series of studies on the Aramaic papyri from 5th century BCE Elephantine, Bezalel Porten established that the calendar in use in these documents, alongside the Egyptian civil calendar, was not 'Jewish' – as assumed by a number of earlier scholars, purely on the grounds that the authors of these documents were Jewish – but Babylonian.[1]

The Babylonian nature of this calendar is evident, *prima facie,* from the Aramaic-Babylonian names of months that are consistently used in these documents. Porten convincingly rejects a suggestion that the year in the Elephantine calendar began in the month of Tishre, as *may* have been customary in this period among the Jews of Judaea,[2] rather than in the month of Nisan, as according to the Babylonian calendar.[3] Although the Jews of the Persian period are known, in post-exilic Biblical works, to have adopted Babylonian names of months (and to have retained them in the Jewish calendar ever since), there is no reason to identify the calendar of Elephantine as specifically 'Jewish'.[4]

Porten's argument commends itself for further reasons. These documents are, by nature, unlikely to have used a 'Jewish' dating system that differed from the 'official' imperial Babylonian calendar. The double-dated documents of Elephantine are all legal contracts that may have required official recognition; they are most likely, therefore, to have been dated in a way that could be recognised and understood by Persian (or other governmental) officials. As Porten has shown, *non-Jewish* Aramaic documents from the same period, from Elephantine as well as from elsewhere in Egypt, are similarly double-dated according to the Babylonian and Egyptian calendars.

Non-Jewish or 'official' calendars were routinely used by Diaspora Jews throughout the whole of Antiquity. [5] In Egypt, in particular, Jewish documents and inscriptions from the Ptolemaic and Roman periods are always dated according to the non-Jewish official calendars – either Macedonian or Egyptian.[6] It is natural to expect, therefore, that the same applied to Elephantine of the Persian period.

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[1] The documents have been published by B. Porten and A. Yardeni, *Textbook of Aramaic Documents from Ancient Egypt, volume 2 (contracts)*, Jerusalem 1989. See also B. Porten *et al*., *The Elephantine Papyri in English*, Leiden 1996; and for a general study, B. Porten, *Archives from Elephantine: the Life of an Ancient Jewish Military Colony*, Berkeley 1968. Porten's main study of the Elephantinian calendar is B. Porten, The Calendar of Aramaic Texts from Achaemenid and Ptolemaic Egypt, in S. Shaked & A. Netzer (eds.), *Irano-Judaica II*, Jerusalem 1990, pp. 13–32.

[2] The evidence is actually rather tenuous: it rests entirely on *Nehemiah* 1:1 and 2:1, which imply that the month of Kislev preceded the month of Nisan in the same regnal year. It should be noted, however, that in post-exilic Biblical works the Biblical first month is consistently identified with Nisan (in the passages cited in footnote 4 below, e.g. *Esther* 3:7). See also *Ezekiel* 40:1, where the beginning of the year *may* be identified as Tishre (see my article New Tombstones from Zoar (Moussaieff Collection), in *Tarbiz* 68, 1999, pp. 177–85 (in Hebrew), on pp. 183–4).

[3] Porten 1990, p. 24, following R. Parker, Some Considerations on the Nature of the Fifth-Century Jewish Calendar at Elephantine, in *Journal of Near Eastern Studies* 14, 1955, pp. 271–4, rejecting the suggestion of S. H. Horn and L. H. Wood, The Fifth-Century Jewish Calendar at Elephantine, in *Journal of Near Eastern Studies* 13, 1954, pp. 1–20, on pp. 14–16.

[4] Babylonian names of months are pervasive in post-exilic Biblical works. In *Zachariah* (1:7, 7:1) and *Esther* (2:16, 3:7, 3:13, 8:12, 9:1) a consistent equivalence is explicitly drawn between Biblical numbered months and Babylonian months, suggesting that both calendars are identical.

[5] S. Stern, *Calendar and Community. A History of the Jewish Calendar, 2nd century BCE – 10th century CE*, Oxford forthcoming, ch. 1.2.

[6] See V. A. Tcherikover & A. Fuks, *Corpus Papyrorum Judaicarum* (*CPJ*), 3 vols., 1957–64. It is significant that not a single document in the entire corpus of *CPJ* is dated according to the Jewish calendar; the same applies to Jewish inscriptions from ancient Egypt (for which see also W. Horbury and D. Noy, *Jewish Inscriptions of Graeco-Roman Egypt*, Cambridge, 1992). The earliest instance of a Jewish dating in Egypt is in the marriage contract from Antinoopolis, dated 417CE (Colette Sirat, Patrice Cauderlier, Michele Dukan & Mordechai Akiva Friedman, *La Ketouba de Cologne. Un contrat de mariage juif à Antinoopolis*, Papyrologica Coloniensia vol. XII, Köln 1986).

The existence of a distinctly 'Jewish' calendar in Diaspora communities of Antiquity would only have been justified in the context of the observance of Biblical (or Jewish) festivals and new moons.[7] If we are to seek evidence of a Jewish calendar at Elephantine, therefore, we should not be looking at the datings of contracts, but rather at references to the festivals. This draws our attention to the so-called 'Passover papyrus'. Whether this document can tell us anything about the Jewish calendar of Elephantine will be considered at the end of this article. But as to the datings of the documents, Porten's conclusion that they were Babylonian must be vigorously endorsed.

The main purpose of this article, however, is to present a fresh interpretation of the discrepancies in the Babylonian datings. I will argue that the Elephantine documents shed light on how the Babylonian calendar would have been reckoned in the distant, southernmost borders of the Persian Empire. Relatively poor communications in the ancient world, even in sophisticated empires such as the Persian, would have made it difficult to maintain an identical 'official' calendar throughout its vast territory. This difficulty is reflected, I will argue, in the datings of the Elephantine archive. Although my findings are of principal relevance to Persian Achaemenid history, I will conclude this article with some additional remarks pertaining to the Jewish calendar of the Elephantinian community.

1. The double-dated documents

The table below comprises all the double dates extant in the Elephantine archive, in chronological order. Because of the uncertainties surrounding the Babylonian calendar, Babylonian dates are only informative if placed in relationship with another, known calendar, such as the Egyptian. This is why documents with single Babylonian dates will not be considered.

I am relying entirely on Porten's readings of the documents' dates. His definitive readings appear in his calendar article (1990); they are based on a careful re-examination of the actual papyri, and on a judicious avoidance of excessive conjecture.[8]

The conversion of Egyptian dates into equivalent Julian dates is non-problematic, as the Egyptian civil calendar is well known. The Babylonian dates, by contrast, are problematic. The Babylonian calendar was lunar and based on the first appearance of the new moon: the first day of the month would be declared in Babylon as soon as the new moon was sighted.[9] In the absence of reliable double-dated records, it is impossible to know exactly when the Babylonian months began; all we can do is calculate, through astronomical means, when the new moon is likely to have been sighted in Babylon.[10] The dates

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[7] In Judaea (and later Palestine), by contrast, the Jewish calendar would have been widely used as a local civil calendar. This is evident in the dated Judaean desert documents of the 1st–2nd centuries CE (P. Benoit, J. T. Milik and R. De Vaux, *Discoveries in the Judaean Desert (DJD),* vol. 2, 1961, nos. 22, 23, 24, 29, 30; H. M. Cotton & A. Yardeni, *Aramaic, Hebrew and Greek Documentary Texts from Nahal Hever and Other Sites*, *DJD,* vol. 27, Oxford 1997; see also A. Yardeni, New Jewish Aramaic Ostraka, in *Israel Exploration Journal* 40, 1990, pp. 130–52), as well as in the datings of Palestinian funerary inscriptions (most prominently at Zoar: see for instance my article, New inscriptions). Outside Judaea, Jewish datings are almost unattested in inscriptions (see previous footnote; on the dating of the Catania inscription of 383CE (*CIJ* vol. 1 no. 650), and whether it should be interpreted as Jewish, see *Calendar and Community,* section 3.3).

[8] In a personal communication, Prof. Porten confirms to me that the readings and conclusions in this article supersede those of the *Textbook* (1989). Thus, the readings of C8–9 and C15 in Porten 1990 must be preferred.

[9] See for instance R. A. Parker & W. H. Dubberstein, *Babylonian Chronology 626 BC – AD 75*, Providence, RI 1956, pp. 1–4; A. J. Sachs & H. Hunger, *Astronomical Diaries and Related Texts from Babylonia*, vols. 1–3, Vienna, 1988–1996 (especially the introduction, on p. 13); O. Neugebauer, *Astronomical Cuneiform Texts*, Princeton NJ, 1955, vol. 1, pp. 41ff; B. Wacholder and D. B. Weisberg, Visibility of the New Moon in Cuneiform and Rabbinic Sources, in *HUCA* 42 (1971) pp. 227–42. This does not rule out the possibility that *calculation* of the visibility of the new moon may at some stage have replaced its actual *sighting*.

[10] Babylonian astronomical sources, especially the astronomical diaries (see Sachs & Hunger, *op. cit.*), can help in some cases to establish when a Babylonian month actually began, and hence to convert the Babylonian date into a Julian one. Because not enough is known, as yet, about the precision and methods of Babylonian astronomy, it may be safer to restrict oneself to cases where actual sightings of the new moon were made in Babylon and recorded in the diaries (rather than cases

of Babylonian new moons were thus calculated and listed by Parker and Dubberstein, and are included in table 1 below (column 6).[11]

The question arises, however, whether the Babylonian calendar in use at Elephantine was based on the official moon sightings that were made in Babylon – and that would have been conveyed, somehow or other, to distant imperial garrisons as far Elephantine – or whether it was based on local sightings of the new moon. Because of this uncertainty, it is worth considering what the Babylonian dates would have been if based on local sightings. In some cases, as we shall see, the new moon would have been visible in Elephantine one day earlier than in Babylon, further to the East.

For the calculation of first visibility of the new moon at Elephantine, Porten relied entirely on a computer programme designed by Huber, in or around 1980. Because astronomical research has made since then considerable progress, particularly on the question of first visibility of the new crescent,[12] I have checked Porten's results with more up to date computer software.[13] On the whole, his results have been confirmed.

It is important to note, however, that the determination of first visibility of the new moon is fraught with difficulties, because the astronomical criterion for first visibility has never been conclusively defined. Existing models, both ancient and modern, are based on a combination of empirical experience and mathematical inference; none of these models can be scientifically 'proved'. It is safer, therefore, to take a range of models into consideration, and to bear in mind that our findings may be subject to correction in the future.[14]

It is also important to note that astronomical calculations do not necessarily indicate when the new moon would actually have been sighted. Sighting of the new moon could sometimes have been delayed by poor atmospheric conditions, which are obviously impossible to calculate or reconstruct. Sighting of the new moon could also have been disrupted by human error.[15] To a large extent, therefore, these results must be regarded as conjectural.

The purpose of this table is to establish whether the Babylonian dates supplied in the Elephantine documents would have corresponded to the dates of the official Babylonian calendar. In each case, the

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where visibility of the new moon was only astronomically predicted). See L. J. Fatoohi, F. R. Stephenson & S. S. Al-Dargazelli, The Babylonian first visibility of the lunar crescent: data and criterion, in *Journal for the History of Astronomy* 30, 1999, pp. 51–72. Unfortunately, records for the 5th century BCE are rather slim. The only date that can be *firmly* inferred from the diaries for a new moon in the 5th century is 20th October 419 BCE (Fatoohi *et al*., p. 59), which does not help us with any of the Elephantinian double-dated documents.

[11] R. A. Parker & W. H. Dubberstein, *op. cit*. Some of Parker and Dubberstein's dates have been amended in my table on the basis of more reliable astronomical data (see below). Parker and Dubberstein acknowledged themselves that their dates were only to be taken as approximations (p. 25).

[12] See L. E. Doggett & B. E. Schaefer, Lunar Crescent Visibility, in *Icarus* 107, 1994, pp. 388–403; B. E. Schaefer, Visibility of the Lunar Crescent, in *Quarterly Journal of the Royal Astronomical Society*, 29, 1988, pp. 511–23; Y. Loewinger, *Hizuy haReiyah shel haYareah haHadash*, in *Tehumin* 14, Alon Shevut 1994, pp. 473–500; *id.*, *HaKeriterion shel haRambam leReiyat haYareah haHadash*, in *BDD* 3, 1996, pp. 45–85. Knowledge of Delta t has also considerably improved. See J. Meeus, *Astronomical Algorithms*, Richmond, VA 1991, pp. 71–5.

[13] The main programme I have used is *Hazon Shamayim*, by Eytan Tzikoni, which is especially designed to calculate visibility of the new moon for any given location or period. In order to satisfy myself of the reliability of this programme, I have checked its ephemeride data with those of another astronomical programme, *Ephemeris Tool*, by Manfred Dings. Differences between them partly reflect the fact that they use different Delta t formula (both formulas can be found in Meeus, *op. cit*. p. 73); however, these differences are minimal and do not affect, at least in the cases of this article, the overall result.

[14] *Hazon Shamayim* provides two visibility criteria: one ancient (Maimonides') and one modern (the 'Indian'). Loewinger's study (1996, see conclusions on p. 74) suggests that Maimonides' criterion is a good criterion of non-visibility (which means that if it returns a non-visible verdict, there is no need to look any further), but that visibility of the new moon should not be assumed unless a modern criterion, such as the Indian, is consulted. Some modern criteria are slightly more reliable than the Indian criterion provided by *Hazon Shamayim*, but these variations are slight. I have generally relied on *Hazon Shamayim*'s Indian criterion, but if the results were borderline or near to borderline, I have treated visibility as doubtful. In the event, cases such as these have rarely arisen in the context of this article.

[15] See Doggett & Schaefer, *op. cit*. pp. 398–402.

Egyptian date (column 2) has been used as point of reference (only double-dated documents from Elephantine have been used in this study). This Egyptian date is converted into the equivalent Julian date (column 3). We then turn to the Babylonian date in the document (column 4), and compare it with the Babylonian date that *would* have corresponded to the Egyptian date in the document had the Babylonian date been based on visibility of the new moon at Elephantine (column 5) or in Babylon (column 6).[16] The date in columns 5–6 is based on purely astronomical criteria, as explained above. In many cases, we find a discrepancy of one day (column 7).

Since the new moon is only visible in the evening, shortly after sunset, the Babylonian month began in the evening, and so did, by extension, the Babylonian day (i.e. diurnal period). The Egyptian day, by contrast, began in the morning.[17] In this table, I have assumed that the documents would have been written and dated in day light hours (more on this below). The datings are listed in chronological order.

Table 1

Document[18]	Egyptian date in document (with regnal year)	Equivalent Julian date (with year BCE)	Babylonian date in document	Babylonian date, Elephantine (E)	Babylonian date, Babylon (B)	Discrepancy
C5	28 Pahons, 15 Xerxes I	Sunday 12 September, 471	18 Elul	18 Elul	17 Elul	Nil (E), 1 day (B)
C6	17 Toth, 21 Xerxes	Monday 2 January, 464	18 Kislev	17 Kislev[19]	17 Kislev	1 day
C8–9[20]	21 Mesore, 6 Artaxerxes I	Thursday 1 December, 459	21 Kislev	21 ?	21 Marheshvan	1 month
C10	4 Toth, 9 Artaxerxes	Thursday 18 December, 456	7 Kislev	11 Kislev	11 Kislev	4 days
K1	25 Phamenoth, 14 Artaxerxes	Saturday 6 July, 451	20 Sivan	19 Sivan	19 Sivan	1 day
K2	[30] Pharmuthi, 16 Artaxerxes	Monday 9 August, 449	18 [Av]	16 Av	16 Av	2 days
C15	6 Epiph, [16[21] Artaxerxe]s	Thursday 14 October 449	24 Tishre	23 Tishre	22 Tishre[22]	1 day (E), 2 days (B)
K14	20 Tybi, [19 Artaxerxes]	Tuesday 1 May, 446	8 Iyyar	8 Iyyar	8 Iyyar[23]	Nil
C13	10 Mesore, 19 Artaxerxes	Saturday 17 November, 46	2 Kislev	29 Marheshvan	29 Marheshvan	2 days
C14	19 Pahons, 25 Artaxerxes	Monday 26 August, 440	14 Av	13 Av	12 Av	1 day (E), 2 days (B)
K3	9 Payni, 28 Artaxerxes	Wednesday 14 September, 437	7 Elul	6 Elul	6 Elul	1 day

[16] For Elephantine I have assumed the geographical coordinates of 24.05°N and 32.56°E (following Porten 1990, p. 16). For Babylon I have taken the approximate coordinates of 32.50°N and 44.40°E.

[17] R. A. Parker, *Calendars of Ancient Egypt*, Chicago, 1950, pp. 4–7.

[18] C = A. E. Cowley, *Aramaic Papyri of the Fifth Century B.C.*, Oxford, 1923. K = E. G. Kraeling, *The Brooklyn Museum Aramaic Papyri,* New Haven, 1953.

[19] According to Huber's programme 18th of Kislev would be just 'possible' (Porten 1990, p. 21), but my programmes suggest otherwise.

[20] Since these two documents are dated to the same date, written by the same scribe and referring to related transactions, I will treat them in this article as a single piece of evidence.

[21] The number of this regnal year remains rather conjectural. See Porten 1990, pp. 21–2.

[22] 23 according to Parker and Dubberstein, but 22 according to my programmes.

[23] 7 according to Parker and Dubberstein, but 8 according to my programmes.

K4	25 Epiph, 31 Artaxerxes	Wednesday 30 October, 434	25 Tishre	25 Tishre	25 Tishre	Nil
K5	7 Phamenoth, 38 Artaxerxes	Friday 12 June, 427	20 Sivan	20 Sivan	20 Sivan	Nil
K6	8 Pharmuthi, [4] Darius II	Monday 11 July, 420	8 Tammuz	8 Tammuz	7 Tammuz	Nil (E), 1 day (B)
C20	Payni, 4 Darius	2 September – 1 October, 420	Elul	Elul (2 September – 1 October)	Elul (2 September – 1 October)	Nil[24]
K7	Epiph	2–31 October, 420	Tishre	Tishre (2–31 October)	Tishre (2–31 October)	Nil
K8	22 Payni, 8 Darius	Tuesday 22 September, 416	6 Tishre	6 ?	6 Elul	1 month
C25	12 Toth, 9 Darius	Wednesday 16 December, 416	3 Kislev, 8 Darius[25]	2 Kislev	2 Kislev	1 day
C28	9 Athyr, 14 Darius	Tuesday 10 February 410	24 Shevat	23 Shevat	23 Shevat	1 day
K9	29 Mesore, 1 Artaxerxes II	Thursday 25 November 404	24 Marheshvan	23 Marheshvan	23 Marheshvan	1 day
K10	8 Choiak, 3 Artaxerxes	Thursday 9 March, 402	20 Adar	20 Adar	20 Adar I	Nil

2.The days of the month

In the majority of cases (12 out of 21), there is a discrepancy of at least one day between the Babylonian and the Egyptian dates (i.e., as indicated in this table, between the Babylonian date in the document and the Babylonian date that *should* have corresponded with the Egyptian one). The possibility of error, either in the Egyptian or in the Babylonian dates, cannot be discarded. Thus, C10 has an unusual discrepancy of 4 days, which is best explained as the result of error. Porten convincingly suggests that the author of this document, dated 4th of Toth, forgot about the 5 epagomenal days that precede this month in the Egyptian calendar. The correct Egyptian date should have been 4th epagomenal, corresponding to the 13th of December 456 BCE.[26] The Babylonian date *should* thus have been 6 Kislev, hence a 1 day discrepancy (the document reads 7 Kislev), in line with many of the other documents.

It seems unlikely, however, that the *majority* of the discrepancies would have been due to scribal error. The double-dated documents are all legal contracts, that would presumably have been written with precision and care; in most cases they would have been written in the presence of a number of people – the litigants or legal parties, the scribe, the witnesses – among whom errors are more likely to have been spotted and removed.

Errors, moreover, are by nature erratic, whereas the discrepancies in these documents are remarkably consistent. Among the discrepant datings, the largest single group (8 cases, if we now include C10) consists of a one-day discrepancy in the *same* direction, i.e. where the date of the document is always *ahead* of the 'official' calendar by one day.[27]

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[24] It is questionable whether C20 and K7 should be considered zero-day discrepancies, because they are not dated according to the day of the month: they are simply dated "in the month Elul which is Payni" and "in the month Tishre which is Epiph" (respectively). Although both months (Egyptian and Babylonian) happened to coincide in the year 420 BCE – a fact which the scribe must have been aware of – the coincidence did not necessarily need to be *exact* (i.e. both months commencing on exactly the same day; see Horn and Wood, p. 18).

[25] For an explanation of this regnal year, see Porten 1990, p. 21. According to the Babylonian year, which began in Nisan, the 9th regnal year of Darius II had not yet begun.

[26] Porten 1990, p. 25.

[27] Note that there is otherwise no obvious pattern in the discrepancies. Thus the one-day discrepancies do not appear to be concentrated in particular years, months of the year, or days of the month, etc.

Horn and Wood suggested that the documents discrepant by one day would have been written in the evening or at night, when in the Babylonian calendar the next day had already begun. This would explain why the Babylonian date appeared to be ahead, by one day, of the Egyptian date.[28]

This explanation has been fully endorsed by Porten, but it is problematic in more than one respect. In the ancient world, where artificial lighting was often expensive and/or inadequate, scribes would have been reluctant to write legal documents at night: legal documents, indeed, had to be written with precision and care.[29] Although such a practice was *possible* – as Porten points out, the *Mishna* refers to legal documents written at night (*M. Gittin* 2:2), and further evidence could conceivably be found – it seems unlikely that the *majority* of contracts at Elephantine would have been written at night.[30]

Porten argues that it was at night that the Jewish soldiers and other government employees at Elephantine would have been off-duty; he points out that documents with no discrepancy, thus written in the day, were drawn up for Temple officials (K4 and K10) or an old man who was presumably retired from active duty (K5).[31] This is to ignore, however, that some of the documents with no discrepancy, thus written in the day, were written for soldiers (C8–9, K7, K8),[32] whilst other documents with a one-day discrepancy, thus written at night, were written for Temple officials (K1, K9).[33] This clearly discredits Porten's argument. It is also uncertain, in my view, whether scribes writing at night would have been so pedantic as to insert the Babylonian date of the next day. Finally, the Horn and Wood theory is only a partial solution to the discrepancies, as some documents are discrepant by two days.

In order to account for this high incidence of discrepancies, it seems more plausible to argue that the Babylonian calendar at Elephantine was reckoned differently from the standard Babylonian calendar. *How* it was reckoned, however, remains somewhat unclear. The inconsistent relationship between document dates and visibility of the new moon (nil, 1 day, or 2 days) suggests perhaps that at Elephantine, visibility of the new moon was *not* used as a criterion to determine when the new month began.

An alternative criterion that may have been used is invisibility of the old moon.[34] In the table that follows, I have tried to establish whether the Babylonian dates of the Elephantine documents follow any consistent pattern in relation to first invisibility of the old moon. It emerges that the first of the Babylonian month, according to the Elephantine documents, tends to occur either one or two days after first

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[28] Horn and Wood, *op. cit.* pp. 6 and 19.

[29] This is probably why Parker (1955, p. 272) rejected this theory as "wholly unlikely". Note also that most documents were signed by the witnesses themselves, who were normally inexperienced writers (except for C15, K2, K5, and K7, among the double-dated documents, where witnesses' names were signed by the scribe: Porten 1968, p. 192); for them, writing at night would have been even more difficult.

[30] Inasmuch as Porten assumes that the 2 day discrepancy documents were also written at night (with a scribal error of one day: Porten 1990, p. 23), documents written at night would have represented just under the majority of the entire corpus (10 out of 21 cases).

[31] Porten 1990, pp. 20–1. The Temple official of K10 happens also to have been an old man (Porten 1968, pp. 229–30), but I would have thought this is less significant. For evidence that K5 was written for an old man, see Porten 1968, pp. 219–21, and Porten 1996, pp. 220–2 (in the footnotes); it cannot be certain, however, that this soldier had retired from active duty.

[32] C8–9 and K8 can be treated as documents with no discrepancy in days: the discrepancy is only in the name of the month.

[33] The Temple official of K9 was also an old man (the same as in K10). K1 was written for a Temple official and a non-identified man. Note also C10, written for a woman and a non-identified man (also in C13:3), with a one-day discrepancy.

[34] Invisibility of the old moon would be noticed in the morning, as the old moon would have been last visible in the previous morning, shortly before sunrise. In the cultic Egyptian lunar calendar, the first day of the new month began on the morning when the old moon was no longer visible (Parker, 1950). Although this system was very different from the Babylonian calendar, I am proposing to establish whether invisibility of the old moon was used at Elephantine (whether or not under Egyptian influence) as a *guideline* for establishing when the Babylonian month began.

invisibility. The absence of consistency suggests again that invisibility was *not* the criterion that determined the beginning of the month.[35]

Table 2

Document	1st day of month (according to document date)	First invisibility (at Elephantine)	Discrepancy
C5	26 August 471	24	2 days
C6	16 December 465	14	2 days
C8–9	11 November 459	9	2 days
C10	7 December 456[36]	5	2 days
K1	17 June 451	16	1 day
K2	23 July 449	23	nil
C15	21 September 449	20	1 day
K14	24 April 446	22	2 days
C13	16 November 446	15 or 16[37]	1 day or nil
C14	13 August 440	12	1 day
K3	8 September 437	7	1 day
K4	6 October 434	4	2 days
K5	24 May 427	22	2 days
K6	4 July 420	2	2 days
K8	17 September 416	15	2 days
C25	14 December 416	12	2 days
C28	18 January 410	16	2 days
K9	2 November 404	1	1 day
K10	18 February 402	16	2 days

Another possibility to consider is that Babylonian months were determined at Elephantine without observing the old or the new moon, but purely on the basis of a fixed calendrical scheme. The interval between the dates of K14 and C13 (both from 446BCE) implies a regular alternation of 29 and 30 day months, which would be expected of a schematic lunar calendar. The same applies to the interval between the dates of K8 and C25 (both from 416BCE). The interval between K2 and C15 (both from 449BCE) implies two consecutive 30 day months; this again is not incompatible with a schematic lunar calendar, where additional 30 days months must occasionally be inserted. Yet none of these observations can *prove* that a schematic calendar was in use.

However the Babylonian calendar was reckoned at Elephantine, it is evident from these documents that it differed from the 'official' Babylonian calendar that was reckoned in Babylon itself. This important finding is easy to explain. At the southern confines of the Persian empire, Elephantine was too remote to be informed, on a regular monthly basis, of when the new moon had been sighted in Babylon and hence when the new Babylonian month officially began. Communications in the ancient world were

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[35] In this table I have omitted C20 and K7 (for reasons explained above in footnote 24), and I have ignored the one-month discrepancy of K8 and C8–9. I have carried out a similar exercise with reference to the lunar conjunction (not tabulated here), and found, not unexpectedly, that the results are just as erratic.

[36] As according to Porten's correction: see above.

[37] According to the Indian criterion, the old moon was still visible on the morning of 15th November 446 BCE; according to Maimonides' criterion, it was not. Thus it is best to treat the result as uncertain.

relatively poor; although the Persian imperial post was famed for its speed and efficiency, it could easily have taken one whole month for a government courier to get from Babylon to Elephantine.[38] It is unknown, moreover, how often such journeys would have taken place; there is certainly no evidence that express messengers were regularly dispatched for the *specific* purpose of conveying the dates of the new month. The dissemination of calendrical information across the Persian Empire is thus unlikely to have been more than sporadic; at Elephantine, the dates of the Babylonian month would generally have arrived too late.[39]

This problem had no real solution. The most natural course of action for the Elephantinians would have been to make their own sightings of the new moon. In some cases, where the discrepancy between document date and visibility of the new moon is nil, this indeed is what they may have done. However, local sightings of the new moon could not always guarantee the same calendar as in Babylon: variations between them were bound to occur because of their different geographical coordinates,[40] weather conditions, and the risk of human error. Thus although C5 appears to have been based on a local sighting of the new moon, its date was still discrepant by one day from the Babylonian calendar of Babylon. If the purpose of reckoning a Babylonian calendar at Elephantine was to conform to an 'official' calendar that was standard across the Persian Empire, this purpose could not have been effectively achieved. The Elephantinians may thus have reasoned that sighting the new moon was not worth the bother. The best they could do was to make an *approximation* of when the 'official' Babylonian new month was likely to have begun. Why they tended to err by one day is unclear, but this question is perhaps unimportant. The variations in the discrepancy between the Elephantine dates and the Babylonian dates of Babylon may indicate, in fact, that the Elephantinian calendar was haphasard and did not follow any fixed system or rule.

This phenomenon was presumably not unique to Elephantine; it would have arisen in any of the more distant areas of the Persian Empire where the Babylonian calendar was in use, but where the official Babylonian dates could seldom be obtained. In Egypt itself, evidence may be adduced from a double-dated papyrus from Memphis, analyzed by Porten in the same article.[41] The Babylonian date of this document, 24th Adar, is one day behind the Egyptian date of 9th Choiak, 15 Xerxes (= 27th March, 471BCE), which should have corresponded to the 25th of Adar; the discrepancy is thus in the opposite direction from that of the Elephantine datings. Whilst it is difficult to rely on a single piece of evidence which could be interpreted in a variety of ways – thus Porten suggests that first visibility of the new moon may have been missed by one day, on that occasion, because of cloudy weather – this document

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[38] On the Persian imperial post, see Herodotus *Histories* 8:98, Xenophon *Cyropaedia* 8:6:17–8. In his description of the Susa-Sardis royal road, Herodotus assumes an average travel speed of 150 stades per day, hence a total journey of three months from Sardis to Susa (*Histories* 5:52–4). However, imperial couriers are likely to have traveled much faster: in emergencies, the 2400 km journey from Susa to Sardis could have taken just one or two weeks (for various estimates see D. M. Lewis, *Sparta and Persia*, Leiden 1977, pp. 56–7; J. M. Cook, *The Persian Empire*, London 1983, p. 108; D. Graf, The Persian royal road system, in *Achaemenid History* 8, 1994, pp. 167–89, on p. 167; P. Briant, *Histoire de l'Empire Perse*, Paris 1996, pp. 372–3 and 382–4, citing also Arrian, *Indica* 43:3–5, on an 8-day forced march across the Arabian peninsula). We may assume similar distances from Babylon to Elephantine: thus unless in cases of emergencies, the journey would normally have taken at least the best part of a month. For comparative purposes, see K. Wellesley, The *Dies Imperii* of Tiberius, in *Journal of Roman Studies* 57, 1967, pp. 23–30, on p. 27, on the speed of couriers in the Roman Empire (based on Tacitus, *Histories* i 18,1). Early rabbinic sources suggest that in late antiquity, it took more than two weeks for the dates of the new month to be transmitted from Palestine to Babylonia (hence the necessity, in Babylonia, to observe *two* festival days in the middle of the month: see *Calendar and Community*, ch. 5). For a late medieval estimate of the time needed to convey calendrical information from Jerusalem to (Lower) Egypt, see Maimonides, *Sanctification of the New Moon*, S. Gandz, J. Obermann & O. Neugebauer (eds.), Yale Judaica Series vol. XI, New Haven 1956, p. 25 (5:10): "eight days or less".

[39] A similar problem was experienced in Late Antiquity by the rabbinic community of Babylonia, who depended on the new moons that had been fixed by the rabbinic court in Palestine: see *Calendar and Community*, ch. 5.

[40] As will have been the case for C15, C14, and K6, as well as C5.

[41] The document was originally published by N. Aimé-Giron, *Textes Araméens d'Egypte,* Cairo 1931; see Porten 1990, p. 29.

may be taken to indicate that at Memphis too, reckoning of the Babylonian calendar was by necessity haphazard and never more than approximate.

3. The months of the year

A similar conclusion can be reached with regard to the months of the year. As noted above, two of the Elephantine documents are discrepant by one month: C8–9 and K8. Porten interprets these discrepancies as scribal errors.[42] In K8, dated 6 Tishre and 22 Payni, the scribe would have erred in the Egyptian month: instead of Epiph, he wrote the name of the previous month, Payni. Porten argues that this is more likely than the reverse: only 6 days into Elul, the scribe is unlikely to have entered, in error, the following month of Tishre. However, he acknowledges that to write the name of the previous month (Payni) on the 22nd of the month 'strains the imagination'.

In C8–9, dated 21 Kislev and 21 Mesore, the error could not have been the Egyptian month: Mesore is followed in the Egyptian calendar by the 5 epagomenal days, so that the 21st of the subsequent month, Toth, would not have corresponded to the 21st of Kislev. Thus the scribe must have erred in the Babylonian month: instead of Marheshvan, he wrote the name of the next month, Kislev – an error which in the context of K8, Porten preferred to discard as unlikely.

Since these scribal errors appear rather unlikely, particularly in the context of legal contracts (as I have argued above), it seems more simple to explain the one-month discrepancies as resulting from the way the Babylonian calendar was reckoned at Elephantine. The dates of both C8–9 and K8 come after the intercalation of a second month of Adar in the Babylonian calendar (in 459 BCE and 416 BCE, respectively).[43] Failure to intercalate this additional month at Elephantine would have caused all subsequent Babylonian months to occur one month earlier, which would account for the one-month discrepancy in both sets of documents.

Failure to intercalate is a calendrical error that could easily have been committed at Elephantine, if we assume that knowledge of the Babylonian calendar was relatively limited. Porten considers this possibility with reference to C8–9, but comments: "such a failure [to intercalate a second Adar in 459] would have been strange since three years would already have elapsed since the previous intercalation in 462. Without intercalation 1 Nisan would have fallen on March 20, a uniquely early date".[44] Indeed, the earliest occurrence of 1 Nisan in this particular period was, in the Babylonian calendar, the 25th of March.[45]

This is to assume, however, that the Jews of Elephantine were able to determine whether their 1 Nisan had occurred too early in the spring. For us this is easy, because we use a calendar – the Julian calendar – that conforms approximately to the tropical year or cycle of seasons: 25th of March is thus a fairly reliable point of reference. At Elephantine, the only point of reference that could be used was the Egyptian 365 day calendar, which itself drifted from the cycle of seasons by about one day every four years. In terms of the Egyptian calendar, the earliest occurrences of 1 Nisan would thus have been 5 Choiak in 484BCE, 9 Choiak in 465BCE, and in 500BCE in the preceding Egyptian month, 28 Hathyr. Because the earliest date of 1 Nisan was variable, especially in terms of the Egyptian calendar, the Jews of Elephantine would not necessarily have been aware that the occurrence of 1 Nisan on 5 Choiak (20th of March) in 459BCE was too early.

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[42] Porten 1990, pp. 23–4.

[43] The intercalation of a second month of Adar in the Babylonian calendar is well attested for these years: see Parker and Dubberstein, p. 6, and for the evidence, pp. 8–9.

[44] *Ibid.* p. 24.

[45] 23rd March in 500 BCE (arguably, before the introduction of the 19 year cycle: see further below), then 26th March in 484, 25th March in 465, and after the date of this document, 26th March in 446, 427, and 408 BCE (Parker and Dubberstein, pp. 30–3).

The same observations apply to K8, assuming that the one-month discrepancy was due to a failure to intercalate. Without intercalation, the 1st of Nisan would have occurred, in 416BCE, on the 24th of March. The Jews of Elephantine would not necessarily have known or realised that this was too early.

It may be argued that knowledge of the 19 year cycle of intercalations should have precluded the omission, at Elephantine, of an intercalation in 460/59 and in 417/6 BCE. By the 5th century BCE, indeed, the Babylonian calendar appears to have followed such a cycle; most scholars are now of the view that it was instituted at the beginning of the 5th century.[46] This cycle, however, was still subject to minor adjustments during the 5th century and later, which suggests that it was not completely 'fixed'.[47] It is also uncertain whether the calendrical rule of the19 year cycle would have been publicly known throughout the Persian Empire, particularly as early as 459BCE. There is no guarantee, therefore, that the 19 year cycle was either known or used at Elephantine in the 5th century, and hence that the Elephantinians had reliable means of predicting when intercalations would be made in the Babylonian calendar.

The documents of Elephantine suggest, therefore, that it could take some time before it was known that the year had been intercalated. K10 is dated to the month of Adar, but without specification that this month was actually *first* Adar, as according to the Babylonian calendar a second Adar was due to be intercalated.[48] It would appear that when the document was written, this forthcoming intercalation was not yet known.[49]

News of the intercalation would not have reached Elephantine till much later in the year. This is the case at least in K8, dated Tishre (416BCE), which as noted above ignores the intercalation of a second Adar earlier in the year (more precisely, at the end of the previous Babylonian year: Adar 416 BCE). But by the time C25 was written, in Kislev of the same year (416 BCE), the correct Babylonian month was entered; this suggests that by the month of Kislev, news of the intercalation had reached Elephantine. In some years, however, it may have taken even longer for this information to arrive. C8–9 suggest that as late as Kislev in 459BCE, the intercalation of a second Adar was not yet known.[50]

Thus, the one-month discrepancies in some of the documents can be explained as the result of ignorance that the previous Babylonian year had been intercalated. News of the intercalation may have taken some time to reach the Elephantinian community.

4. Sabbath and Passover

Although the calendar of these documents is clearly Babylonian, some remarks can be made about the Jewish (or 'Israelite') calendar that would presumably have been reckoned by Elephantinian Jews.

From table 1 (above) it emerges that two documents would have been written on a Saturday, K1 and C13; to which we may also add C10, which according to Porten's correction would have been written

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[46] See reference in A. C. Bowen and B. R. Goldstein, Meton of Athens and astronomy in the late fifth century BC, in E. Leichty *et al*. (eds.), *A Scientific Humanist: Studies in Memory of Abraham Sachs*, Philadelphia, 1988, pp. 39–81, on p. 42 n. 17; also W. Hartner, The young Avestan and Babylonian calendars, in *Journal for the History of Astronomy* 10, 1979, pp. 1–22. The existence of this cycle finds confirmation, in the Elephantine archive, in the 19 year interval between K14 and K5 (446 and 427 BCE), and between C10 and K3 (456 and 437 BCE). See next footnote.

[47] For example, in 465/4 BCE a second month of Ulul was intercalated, whereas in 446/5 BCE (19 years later) it was a second Adaru (Parker and Dubberstein, p. 6, with the evidence on p. 8). This explains the apparent inconsistency, first noted by H. Y. Bornstein (*Peleta miney kedem*, in D. N. Günzburg and I. Markon (eds.), *Sefer A. Harkavy*, St Petersburg, 1908, pp. 63–104, on pp. 78–9 (Hebrew)), between C6 and C13 (dated to these years). I am grateful to Bernard Goldstein for clarifying this point.

[48] Parker and Dubberstein, p. 6 (and for the evidence, p. 8). Specification that the month was first Adar would have been normal.

[49] Without intercalation, the 1st of Nisan would have occurred in 402 BCE on the 20th of March; as explained above, it might not have been obvious to the Elephantinians that this was too early.

[50] For evidence of intercalation in these years, see above note 48.

on Saturday the 13th of December 456 BCE (see above). Three documents were thus written, for (and mostly by) Jews, on a Sabbath.[51] There is no reason to assume that the 7 day week was reckoned differently at Elephantine, with the Sabbath on a different day: for the documents, all pertaining to Jews, are evenly distributed among all days of the week.

Further evidence can be adduced from Elephantine documents and letters involving Jews with *single* Egyptian dates. They are listed chronologically in the following table, following Porten's readings.

Table 3

Document	Egyptian date in document	Julian date
C1	2 Epiph, 27 Darius I	Wednesday 22 October, 495
C2	28 Phaophi, 3 Xerxes	Tuesday 17 February, 483
C22	3 Phamenoth, year 5	*Either* Tuesday 6 June, 419 *or* Friday 1 June, 400[52]
C7	18 Phaophi, 4 Artaxerxes II	Thursday 18 January, 401
C35	23 Phamenoth, 5 Amyrtaeus	Saturday 21 June, 400
K13	5 Epiph	Thursday 1 October, 399[53]

This gives us an additional document written on Saturday/Sabbath (C35, a contract), with the rest reasonably distributed among other days of the week.

That four legal contracts were written by and for Jews on a Sabbath, suggesting that normal business was carried out by Jews on that day, should not necessarily come as a surprise. The extent to which the Sabbath was observed at Elephantine is difficult to establish, as has been discussed by Porten elsewhere;[54] but *Nehemiah* 13:15–22 (see also 10:32) suggests that in Jerusalem in the same period, the observance of Sabbath was rather slack. Jewish documents from Ptolemaic and Roman Egypt are also dated to all days of the week, including Saturday;[55] one document states unashamedly that money was paid on the night festival of Tabernacles, when in Biblical law all work would have been forbidden.[56] According to Philo of Alexandria, the day of Atonement (*yom kippur*) was "carefully observed not only by the zealous for piety and holiness but also by those who never act religiously in the rest of their

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[51] Only K1 was written by a non-Jewish scribe: Porten 1968, pp. 194–5.

[52] See Porten 1990, p. 18.

[53] So dated by events (Porten 1990, p. 17).

[54] Porten 1968, pp. 126–7. The implications of ostrakon CG152 are particularly unclear.

[55] To my knowledge, this has never previously been noted. The following documents from *CPJ* are dated to a Saturday: from the Ptolemaic period, nos. 60, 63, 69 (if 12 March 140 BCE), and 93; from the Roman period, nos. 200, 236, 265, 269, 286, 292, 300, 307, 308, 309, 313, 326, 378, 392, 424, and 483. The Jewish identity of some of these documents may be debated: e.g. 63, identified as Jewish only on the basis of the name 'Simon' (on the Jewish identity of *CPJ* documents, see *CPJ* vol. 1, pp. xviii–xix and 200; S. Honigman, The birth of a Diaspora: the emergence of a Jewish self-definition in Ptolemaic Egypt in the light of onomastica, in S. J. D. Cohen & E. Frerichs (eds.), *Diasporas in Antiquity*, Atlanta 1993, pp. 93–127). Some other documents in *CPJ* are given a Julian date that would have been a Saturday, but the Egyptian date was incorrectly converted by the *CPJ* editors. Thus the date of no. 22 is given in *CPJ* as 12th August 201 BCE, which would have been Saturday; but the correct date is *22nd* August (15th Epeiph). Likewise, no. 61 should be 153 BCE, not 154 BCE (20th Mesore, year 28 of Ptolemy VI Philometor); no. 284 (if from 77 CE) should be 30th March, not 29th (4th Pharmuthi); no. 348 should be 24th March 108 CE, not 25th (29th Phamenoth, in a Julian leap year); no. 388 should be 28th July 164 CE, not 29th (5th Mesore, in a Julian leap year). None of these would have occurred, therefore, on a Saturday. For the conversion of Egyptian to Julian dates, see T. C. Skeat, *The reigns of the Ptolemies*, Munich 1954. Because I assumed, in the course of my survey of *CPJ*, that the editors' Julian conversions were correct, I may have missed some additional dates that would have been Saturday if correctly converted.

[56] *CPJ* vol. 3, 452a. Biblical law: *Leviticus* 23:33–9, etc.

life",[57] which suggests that non-observance of Biblical laws may have been quite common among Jews in early Roman Egypt.[58]

This raises the question, however, of what kind of activity or 'work' would have been considered forbidden. Nehemiah is said to have prohibited all kinds of commerce on the Sabbath (*ibid.*). Philo mentions the prohibition of carrying loads, recovering loans,[59] receiving or giving anything, and transacting any part of the business of ordinary life, particularly of a lucrative kind.[60] Whether the writing of legal contracts fell into any of these categories is perhaps unclear.[61] Thus, it is difficult to use the Elephantine documents that were written on Saturday as evidence that the Sabbath was generally ignored.

Another aspect of the Jewish calendar that is revealed by the Elephantine archive is the date of the Jewish/Biblical festivals. The 'Passover papyrus', although obscure in many other respects, indicates at least quite clearly that in 419BCE, the festival of Unleavened Bread was to be observed from the 15th to the 21st of the *Babylonian* month of Nisan.[62] In the Pentateuch, the date of this festival is 15th–21st of the 'first month'.[63] Just as in post-exilic Biblical works,[64] the Biblical 'first month' was thus identified, at Elephantine, with the first month of the Babylonian year.

This finding may seem trivial at first sight, but it is actually of highest importance. The original nature of the Biblical calendar, whether solar or lunar, empirical or schematic, has been the object of much scholarly controversy.[65] It is a question that cannot really be resolved, since the Bible provides little or no information about how its calendar is reckoned. If the Biblical calendar was originally solar, the adoption by Jews of the Babylonian lunar calendar in the post-exilic or Persian period would have represented a major calendrical reform. But even if it was originally lunar, the identification of Biblical numbered months with the Babylonian months would have represented an important change in the way the calendar was reckoned, and particularly as to the time of the year when festivals were celebrated.

The occurrence of Biblical festivals, indeed, would have been governed in the Biblical period by purely *agricultural* criteria. Passover and Unleavened Bread occurred in the season of *aviv*, a reference to the ripeness of the barley crop; Pentecost at the beginning of the wheat harvest; and Tabernacles at the end of the agricultural year.[66] The identification of the Biblical first month with the Babylonian Nisan suggests that agricultural criteria were abandoned in favour of a different and alien calendrical system. Inasmuch as from the early 5th century BCE, the Babylonian Nisan always began after the

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[57] *Special Laws* i 35 (186).

[58] Note however that of the festival of the first fruits (i.e. Pentecost), Philo says that it is 'widely observed': *Special Laws* i 35 (183). See further L. H. Feldman, The Orthodoxy of the Jews in Hellenistic Egypt, in *Jewish Social Studies* 22, 1960, pp. 212–37.

[59] *Migration of Abraham* 16 (91).

[60] *Embassy to Gaius* 23 (158). We also know from *CPJ* no. 10 (3rd century BCE?) that a delivery of bricks was interrupted on the Sabbath.

[61] Rabbinic sources prohibit unambiguously any form of writing on the Sabbath: see for instance *Mishna Shabbat* 7:2, 12:3–6. There is no reason to assume, however, that the Jews of Elephantine defined forbidden work in the same way as rabbinic sources. It is more prudent, in this context, to restrict oneself to sources that are either contemporary with Elephantine (*Nehemiah*), or that are later but belong to Egypt (Philo).

[62] C21 (= A4.1 in Porten and Yardeni vol. 1, 1986 = B13 in Porten 1996, pp. 125–6). The Babylonian identity of this month is overlooked by S. Talmon, *King, Cult and Calendar in Ancient Israel*, Jerusalem 1986, pp. 136–8. On the year (419BCE), see Porten 1990, pp. 19–20.

[63] *Leviticus* 23:5–8, etc.

[64] See above note 2. Post-exilic Biblical sources do not confirm, however, that the date of *festivals* would have been based on the Babylonian calendar. Thus in *Ezra* 6:19 and *Nehemiah* 8:14, festivals are dated according Biblical numbered months – although these verses are arguably Pentateuchal citations. The Passover papyrus of Elephantine is in this sense unique.

[65] See *Calendar and Community*, ch. 1.1.

[66] *Exodus* 23:15–16, 34:18–22, etc. For the meaning of *aviv*, cf *Exodus* 9:31.

equinox,[67] Passover and Unleavened Bread would have always occurred between two to six weeks after the equinox, which is likely to have been considerably *later* than the agricultural *aviv*.[68] The festivals may thus have fallen out of line with their original agricultural datings.[69]

The adoption by Elephantinian (and presumably other) Jews of the Babylonian calendar for the observance of their festivals is not necessarily symptomatic of cultural weakness or of some general capitulation to Babylonian culture. Because the calendar in the Bible was ill defined, the Jewish calendar may have been prone to assimilation with whatever calendar happened to be dominant at the time. No one, indeed, may even have thought twice about it.

5. Conclusion

The calendar that was used at Elephantine, besides the Egyptian civil one, was undoubtedly Babylonian. However, it was a Babylonian calendar with a difference. Because the dates of the new moons that were empirically determined in Babylon could never be communicated to Elephantine, at the southern confines of the Persian Empire, without considerable delay, the community of Elephantine could only *estimate* when the Babylonian months would have begun. The same applied to the occasional intercalation of a 13th month. The necessarily haphazard nature of Babylonian calendar reckoning at Elephantine explains why so many of the double-dated documents diverge from what one expects the 'true' Babylonian dates to have been.[70]

London School of Jewish Studies Sacha Stern

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[67] See above note 45; Hartner 1979.

[68] That the Biblical *aviv* occurs before the equinox is argued by R. T. Beckwith, *Calendar and Chronology, Jewish and Christian*, Leiden 1996, pp. 284–6. This may be difficult to prove, however, because the notion of *aviv* is not precisely defined. Rabbinic sources from the Roman period and early medieval Karaites took it for granted that *aviv* could frequently occur before the equinox: see *Tosefta Sanhedrin* 2:2–3 (Zuckermandel ed., p. 416), and my remarks in *Calendar and Community* ch. 2.5; on Karaites, see M. Gil, *A History of Palestine, 634–1099*, Cambridge 1992, pp. 795–9, and J. Olszowy-Schlanger, *Karaite Marriage Documents from the Cairo Geniza*, Leiden 1998, pp. 248–50.

[69] This process was not, however, irreversible. Already in the Ptolemaic period, Babylonian calendrical influence appears to have considerably waned. Thus in Egypt of the mid 2nd century BCE, the Jewish Passover is said to occur at (or around) the equinox (Aristobulus of Alexandria, *apud* Eusebius, *Hist. Eccl.* 7:32:17–8), which implies on average one month *before* the Babylonian 14th/15th Nisan. The same is apparent in Philo's works (1st century CE: see *Special Laws* i 35 (181) and (186), etc.). In the 4th century CE, Peter of Alexandria reports that the Jewish Passover occurs "twice in Phamenoth and once in Pharmuthi" and thus, in many and perhaps most cases, *before* the equinox (*apud* L. Dindorf, *Chronicon Paschale*, *Corpus Scriptorum Historiae Byzantinae*, part 9, vol. 1, Bonn 1832, p. 7; Migne, *PG* 92, 73B-C). For a full discussion of these sources, see *Calendar and Community* ch. 2.

[70] I am grateful to Bernard Goldstein, Yaaqov Loewinger, and Bezalel Porten for their generous assistance. Responsibility for errors and misconceptions is entirely mine.