3. The Ancient Practical 360-day Calendar of Mesopotamian Civilization

The recent discovery of Ebla has shown that even in very ancient times a calendar based more on the sun than the moon, but in fact independent of both,[8] was in use in areas gravitating culturally around Babylon. The year was divided in 360 days, subdivided into 30-day months. This calendar must have been quite practical for the bureaucracy and for commerce. Since the year fell behind by five days each year, every so-often an entire month was added. In other words, the amount of time to be added to the 360 days was not taken into consideration every year in order to keep up with the solar calendar. They simply waited for the calendar to fall a whole month behind and then a month was added, making a 390-day year. The extra month was added after the tenth month.[9] This calendar remained a neutral calendar; it was simply the expression of a different set of interests from those that gave rise to the lunar calendar.

4. Jewish Culture Comes into Contact with Babylonian Science

Direct contact with Babylonian culture is clear in some episodes of Genesis, which are paralleled in ancient Mesopotamian stories. I do not intend to discuss this well known point, since interesting comparisons were first made nearly a century ago.[10] Now, Schmid's lowering of the date for the Yahwist[11] only confirms the Mesopotamian background of some Jewish productions.

Alongside the literary parallels, which we find in the accounts of the flood and the creation of mankind from a clay image,[12] there was also

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[8] See G. Pettinato, *Ebla, un impero fondato sull'argilla* (Milan: Mondadori, 1979) 142.

[9] See Pettinato, *Ebla*, 141.

[10] See F. Delitzsch, *Babel und Bibel* (3 vols.; Stuttgart: Deutscher Verlags Anstalt, 1905).

[11] See H. H. Schmid, *Der sogenannte Jahwist* (Zurich: TVZ, 1976). There has been enormous discussion of this issue since Schmid wrote. There is a convenient update in T. B. Dozeman and K. Schmid, ed. *A Farewell to the Yahwist? The composition of the Pentateuch in Recent European Interpretation* (Atlanta: SBL, 2006)

[12] On the myth of Atrahasis see L. Cagni, "Il mito babilonese di Atrahasis," *Rivista Biblica* 23, 225–259; "Creazione e destinazione dell'uomo secondo i sumeri e gli assiro-babilonesi," *L'uomo nella Bibbia e nelle culture ad essa contemporanee. Atti del simp. per il XXV dell'ABI* (Brescia: Paideia, 1975) 9–26; W. R. Meyer, "Ein Mythos der Erschaffung des Menschen und des Königs," *Orientalia* 56 (1987) 55–68.

a much deeper level of contact. Jewish thought elaborated a new and more profound vision of things in contact with Mesopotamian culture and science.

5. Ezekiel and the 364-day Calendar

If there is a direct influence of Babylonian culture to be found in Ezekiel, it is in his vision of the cosmos, derived from what today we would call scientific notions. His vision of the universe broadens, becomes immense, favoring the formation of the image of Yahweh as the absolute, sole God. Ezekiel viewed the world through the lens of Babylonian astronomy, which became the key to understanding the role of the God of Israel in history.

There is a characteristic element in the book of Ezekiel; fourteen dates are given including the year, month and day. Of these fourteen dates, thirteen regard his prophecies. Why is Ezekiel so interested in dating his prophecies down to the day? Why such precision? Was he overcome by a great historical interest in his prophecies, or did the fact that a prophecy came about on one day rather than another hold some particular value, recognized not only by him, but also by those it was addressed to? The fourteenth date does not regard a prophecy, but it does concern a singular event, arrival of the news that Jerusalem had fallen in 587. It is worth noting that Ezekiel does not use the pre-exile names for the months,[13] nor does he use the Babylonian names, as the Jews would do later. Ezekiel refers to the months by number. This is an innovative way of indicating the months.

If we read Ezekiel's dates following the so-called solar calendar of the Enochians, Qumranians and Essenes, which uses ordinal numbers for the months, we get some truly interesting results. Annie Jaubert,[14] whose hypothesis I am following, already noticed this phenomenon. Jaubert sought only to explain the difference in dates for the Last Supper between the synoptic Gospels and John, but I would like to clarify the question by singling out its presuppositions.

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[13] The names of only four months of the pre-exile calendar are known from the Hebrew Bible: *abib* (Ex 13:4), *ziv* (1 Kings 6:1), *etanim* (1 Kings 8:2), *bul* (1 Kings 6:38).

[14] A. Jaubert, *La date de la Cène* (Paris: Gabalda, 1957).

The later solar calendar as it appears in the Qumran texts, among others, is based on a normal 364-day year divided into twelve months. The months are then divided into four groups corresponding to the time between equinox and solstice. The months each have thirty days, except the last one of each period (the third, sixth, ninth and twelfth) which have thirty-one. The solstice or equinox, then, always falls on the thirty-first day of a thirty-one-day month.[15] Since 364 can be divided by seven, the first day of the year always fell on the same day of the week, Wednesday, the day that God created the sun and moon and, therefore, the possibility of measuring time. In this calendar the seven-day week became a factor of the days of the year (364/7) and the two measures fit together. The phases of the moon were left out. The book of Jubilees, when telling of the creation of the stars on the fourth day of creation, adds this phrase to the biblical text (Jub 2:9): "God gave the sun as a great star on earth (to indicate) the days, the weeks, the *months*, the holy days, the years, the Sabbaths, the jubilees and all the periods of the year." The month became a division of the year. The moon was left out. After the day, the fundamental measure of time was the year, with the week as a subdivision. This would create problems.[16]

As we can deduce from the Astronomical Book,[17] this 364-day calendar was derived from an older one, identical in structure though based on a different philosophy. The earlier one, still of 364 days, was the form that Ezekiel knew and, in fact, it probably originated in his

[15] The thirty-first days are the four days added to the normal month mentioned in Astronomical Book in 1 En 75:1–2. They are the days with no movement.

[16] These arise in some Qumran texts, such as 4Q259, 4Q319 and most of all in 4Q321. 4Q321 presents a concordance between the solar year, rotation of priests and the lunar month. There is no doubt that the rotation of priests, based on the week, was perfectly adapted to the solar year, while the relationship with the lunar month was variable (besides the problems in establishing the meaning of two words; it is not clear which is the first and which the fifteenth day of the lunar month). Whatever the purpose of this concordance, it is clear that the author followed the solar calendar. See C. Martone, "Un calendario proveniente da Qumran recentemente pubblicato," *Henoch* 16 (1994) 49–76; "Calendari;" V. Gillet-Didier, "Calendrier lunaire, calendrier solaire et gardes sacerdotales; recherches sur 4Q321," *REVQ* 20 (2001) 171–206.

[17] See P. Sacchi, "The Two Calendars of the Book of Astronomy", in *Jewish Apocalyptic and its History* (JSPSS 20; Sheffield: Sheffield Academic Press, 1997) 128–139 (Italian Orig. 1990). On the survival of the 360 + 4 calendar in the calculations of the book of Daniel, see G. Boccaccini, "The Solar Calendars of Daniel and Enoch," in J. J. Collins and P. W. Flint (eds.), *The Book of Daniel: Composition and Reception* (Leiden, Brill, 2001) 311–328.

own circles. In this early phase the solar year was divided into twelve months of thirty days each, leaving the four days of the equinoxes and solstices out of the calculation. The "true" year, then, had 360 days, to which four days had to be added outside the normal day count. These four days, the equinoxes and solstices, were days in which the sun stood still—a lack of movement was interpreted as a lack of time.[18]

This apparently marginal element, that the year had 360 days plus four rather than 364, is important because it is fundamental and expresses a complex philosophy. This philosophy is hidden behind the assumption that there are four days with no movement, and therefore out of time. The 360-day plus four calendar became a 364-day one when the earlier philosophy was no longer understood.

The 360 days were the 360 degrees of the horizon, called "days", divided into twelve months corresponding to the twelve signs of the zodiac.[19] As we can see, the four days out of time have no space either to move. The coincidence, even concerning the names, between measures of space and time creates a unitary system, which we can call a cosmic system.

In practical terms the two calendars were identical. The "strong" day of the week was Wednesday and each year began on Wednesday. The week, basis of the Priestly liturgy, was a measure that fit perfectly in the year.

Now, we must turn our attention to the dates of Ezekiel's prophecies and visions, in order to see some meaning in these dates as linked to a particular calendar. Of the thirteen dates given for visions, in nine cases the text is certain: all the Jewish and non-Jewish traditions agree.

The dates with the days of the week are:

5/IV Sunday (Ezek 1:1);
12/4 Sunday (Ezek 3:15–16);
10/V Sunday (Ezek 20:1);
10/X Friday (Ezek 24:1);
1/I Wednesday (Ezek 29:17);
7/I Tuesday (Ezek 30:20);

[18] See 1 En 75:1: "They (the archangels assigned to the solstice and equinox) do not leave from the fixed stations according of the reckoning of the year." In other words, they stood still in their positions.

[19] On the history of the zodiac see B. L. van der Waerden, "History of the Zodiac," in *Archiv für Orientforschung* 16 (1952–53) 216–230.

1/III Sunday (Ezek 31:1);
1/XII Sunday (Ezek 32:1);
10/VII Friday (Ezek 40:1).

Each of these nine dates regards a prophecy of Ezekiel, including 10/X, the beginning of the siege of Jerusalem, but the date is given as a revelation during a vision. It should, therefore, be considered a prophecy alongside the others. We obtain the following results: five prophecies took place on Sunday, one on Wednesday, two on Friday and one on Tuesday. Apart from Tuesday, which is a common day, we see that Wednesday is the strongest day of the week, while Friday and Sunday are opening and closing moments of the sacrality of the Sabbath.

Moving from the dates confirmed by the entire tradition to those with variants, we obtain the following results, which can easily be inserted into the same schema.

The date of 8:1 is 1/VI, a Sunday following the Hebrew codex Petropolitanus (of year 916) as opposed to 5/VI, a Wednesday in the common Masoretic text and 5/V, a Tuesday in the Septuagint.

The number of the month has been lost in the datation of 26:1 in all the tradition, but the number of the day remains. Since it is the first of the month, there are only three days possible: Wednesday (months I, IV, VII, X), Friday (II, V, VIII, XI) or Sunday (III, VI, IX, XII).

In 29:1 the Masoretic text gives 12/X, Sunday, while the Septuagint has 1/X, a Wednesday.

In 32:17 the Masoretic text gives 10/V, again a Sunday, while the Septuagint again gives a Wednesday, 15/I.

The date contained in 33:21 (5/X) regards the day Ezekiel received news of the fall of Jerusalem, and is not important for us here. At any rate, in the Masoretic text 5/X is once again a Sunday, while the Septuagint gives the fifth day of the twelfth month, a Thursday.

Excluding the date that news of the fall of Jerusalem arrived, there is a preponderance of "strong" days of the week, Sunday in particular, as suitable for prophecies. Even the case of the variants in interesting. In both 29:1 and 32:17 the Masoretic text gives a Sunday and the Septuagint a Wednesday. It seems that the existence of particularly sacred days of the week, and therefore days more suited to manifestations of the sacred, could guide conjectures when there were problems reading the model manuscript. When uncertain the Septuagint opted for Wednesday.

We can conclude, therefore, that Ezekiel dated his prophecies and his visions, because he used a calendar that allowed him to individuate

the quality of the day of the year in relation to the week. This means that every year each day of the year was always in the same position regarding the cosmos. Again this meant that space and time were interconnected dimensions of a higher whole.

This conception of the relationship between time and space was derived from the so-called astrolabes, all of them dating to before 1000 BCE. These astrolabes divided the sky into twelve equal parts, called months, each of them subdivided into thirty days, for a total of 360 days. The horizon, therefore, was divided into 360 degrees. Mul Apin's compilation, composed around the year 700 BCE follows along these lines, though Mul Apin's system is more elaborate; "There are 12 signs, because there are 12 months in the schematic year of Mul Apin. The signs were made of equal length in order to get months of equal duration: they were divided into 30 degrees each because the schematic months were supposed to contain 30 days each."[20] This calendar uses the stars as points of reference, but its 360 days are in reality the 360 degrees of the horizon. It is a "perfect" calendar since it is built around the stars. It only needed to be adapted to daily life.

I am unable to penetrate the complex ancient calculations that modern scholars have published, beginning with Strassmaier, Epping and most of all Kugler, and recently Glessmer and Albani regarding the Astronomical Book, using previously unknown documents[21] The relationship between time and space, however, is perfectly clear and is based on the 1:1 ratio between the number of days and the number of degrees of the horizon, which are indicated as days, because the sky is divided into twelve parts corresponding to the twelve signs of the zodiac, whose counterpart is to found in the measurement of time. Space and time are not two independent entities, but rather two coordinates measuring two dimensions of a single, unique cosmos.

Ezekiel accepted such a calendar and adapted it to his theology.. The important thing is not that his visions took place on a Friday or a Sunday, but the fact that he considered it important, that he took note of it and consecrated it to memory. And this because for him it must

[20] B. L. van der Waerden, "History," 218.

[21] See G. Schiaparelli, *Scritti sulla storia dell'Astronomia antica* (2 vols.; Bologna: Zanichelli, 1925) 1.47ff.; M. Albani, *Astronomie und Schöpfungslaube: Untersuchungen zum astrononischen Henochbuch* (WMANT 68; Neukirchen-Vluyin: Neukirchener, 1994); U. Glessmer, "Horizontal measuring in the Babylonian astronomical compendium MUL.APIN and in the Astronomical Book of 1Enoch," *Hen* 18,3 (1996) 259–282.

have been an important element of the vision itself. No other prophet, either before or after him, had done this. Apparently, for Ezekiel the week was not simply a period of seven days, but rather the earthly projection of a cosmic structure, the structure of creation. Sacred and profane, past and future, history and prophecy take on values that they had not had before. God had revealed himself on earth to the great prophets of the past. Ezekiel, in exile, had visions from beyond the heavens (Ezek 1:1).

6. Consequences of the Space-Time Unity

The God of pre-exilic Israel was a mighty being, capable of flying on the clouds (Ps 68:5.34) and protecting his people, when they deserved it. He could cause prophets to prophesy with admonitions, but also with usually short-term predictions. He moved and lived within the space of this earthly world. Now, with Ezekiel, God reveals himself beyond the heavens: "On the fifth day of the fourth month (therefore Sunday)... the sky opened, and I saw divine visions" (Ezek 1:1–2). God lives beyond the sky and his gaze is all-encompassing. The object of Ezekiel's contemplation obeys laws that are no longer those of this world—the four-wheeled chariot of Ezekiel's vision can move in all directions (Ezek 1:17): it is a philosophy based on the number four, independently of the laws governing this world. The living creatures all have four faces and four wings each.

The events of this world take on new meaning; God punishes and rewards, but there is a meaning to history that goes beyond divine retribution. God wants to accomplish something in the cosmos, or rather, accomplish the cosmos. In order to reach his goal God can even give bad laws to Israel (see below). God's works are laid out in history and direct it towards a final end.

The view of history becomes vast in Ezekiel. Hosea claimed that God had led his people from Egypt under the guidance of a prophet (Hos 12:14). Amos had predicted punishment for Israel's great sins and for those of the neighboring peoples (Am 1–2). Isaiah had predicted the liberation of Israel from the two kings that were oppressing the Jews at that time (Is 7:16); he also predicted, if the passage is his,[22] as

[22] See C. F. Whitley, "The Call and Mission of Isaiah," *Journal of Near Eastern Studies* 18 (1959) 38–48; R. Knierim, "The vocation of Isaiah," *VT* 18 (1968) 47–68 as

of a new rise, is the year of the Temple's destruction. The beginning of a rebirth comes about with the rise of Awil-Marduk to the throne, when Jehoiachin "left prison".[33] R1's text is still bound to the hopes based on the house of David and must have been written before that house was taken from the throne.

The Hebrew text underlying the Septuagint was composed when the Edict of Cyrus was already commonly believed to be history and the returned exiles were considered heirs to all the Jews, because all the Jews[34] had been deported. We are therefore certainly in a period after Nehemiah. The most probable date seems to be the fourth century BCE.

8. Use of the 360-day Calendar

The existence of a 360-day calendar is documented both for the exilic period and for the second century BCE.

An academic tradition holds that there are two sources for the story of the Flood: J and P. Here I would like to examine the dates as they appear in the text handed down to us. We will see that there are some divergences in the system of dating that are difficult to reconcile with the two sources normally taken to lie at the basis of the story.

The story goes (Gen 7–8) that in Noah's 600th year, on the 17th day of the second month, the flood began (Gen 7:11) and it finished on 27 of the second month of the next year (Gen 8:14). 17/II is a Sunday, 27/II is Wednesday. These details are meaningful in the 364-day calendar (or the 360 + 4 one); the flood begins on the day after the Sabbath. In Gen 7:17 we read that the flood lasted 40 days. If we count forty days from 17/II, it takes us exactly to 27/III, which falls on a Friday, the day before the Sabbath. It is clear that we are faced with a solar calendar. The ark comes to rest on Ararat on the 17th of the seventh month, a Friday (8:4). The mountain tops appear on the first of the tenth month (8:5), a Wednesday, the day of the great celebrations in

[33] 2 Kings 25:27. The translation "prison" is traditional. The otherwise unknown term must indicate the limitation of movements imposed on the Jewish king under Babylonian domination.

[34] *All*: The idea that all the Jews had been deported to Babylonia and, therefore, only the descendents of the exiles were Jews, was a product of Nehemiah's policies. See P. Sacchi, *The History of the Second Temple Period* (Sheffield: Sheffield Academic Press, 2000) 137–147.

the 364-day calendar. 1/I of the following year is another Wednesday, when the waters were dried up and Noah removed the covering from the ark. It is clear that the final touches were given to the story by a scribe who was used to calculating the days of the year based on the 364-day calendar.

A few details, however, do not fit. If the flood finished on the 27th day of the second month, having begun on the 17th of the same month in the previous year, it follows that the flood lasted 374 days, based on the 364-day year—and the perfect correspondence between the days of the week and their symbolic values indicates use of the 364-day calendar. But 374 has no symbolic value. We would expect the flood to last a year, not a year and ten days. If, however, we take the lunar calendar in consideration with its 354 days, the total becomes precisely 364. This means admitting that the author had a 364-day year in mind, but that he expressed it with the formula 354 + 10, which is hardly clear. The fact of the matter is that if the flood had lasted exactly one year, then it would have begun on a Sunday and, as a result, ended on a Saturday, which the author apparently found unacceptable. Having the ending date correspond to the beginning date would have been even worse; the flood would have ended on a Sunday, the day of beginnings. The effort to avoid such difficulties must have led to the adopted formula; the flood ends on the strongest day of the week, a Wednesday.

The story of the flood, however, reserves another surprise. The span of time between the beginning of the flood on 17/II and the ark's coming to rest on Ararat, 17/VII, is given as 150 days. Now, if the calculation was made following the solar calendar that period would be 152 days. Following the lunar calendar the days would be 147 or 148. In order to get 150 days, we must count five months of 30 days each. In other words we must use the 360-day calendar.

This detail betrays the presence of a source that calculated time following a calendar that was neither solar nor lunar. This points to a Babylonian calendar counting time as in the Ebla calendar.

If a 360–day calendar was in use around the time of the exile, it seems that it was still in use in the book of Daniel.[35] In any case, it was the calendar used in the Jerusalem Temple until the time of the Maccabaean revolt. Dan 7:25 mentions that king Antiochus IV had

[35] On the survival of the calendar of 360 + 4 days in the numerical calculations of the book of Daniel, see G. Boccaccini, "The Solar Calendars."

changed the Jerusalem calendar. This has been interpreted as the end of the solar calendar's use in the Jerusalem Temple and its substitution by the lunar-solar calendar typical of the Hellenistic world. It was believed that the replaced calendar was the 364-day solar calendar known to us through the Qumran manuscripts and the book of Jubilees. As we have seen, though, the Astronomical Book narrates how the calendar of 360 + 4 days became the 364-day solar calendar. For the Enochic author the existence of four days outside time made no sense, because apparently the reasoning behind having 360 days had been lost. "In reference to them (the four uncounted days of the 360 + 4 calendar) men are mistaken, because those lights work in exactness in the position of the world... and every 364 positions of the world the perfect harmony of the world is achieved" (1 En [BA] 75:2). And again: "In fact they (the four days) are part of the calculation of the year and are true additions to time" (1 En [BA] 82:6). The perfect harmony of the world is brought about through the liturgy distributed over 364 days. Enochism maintained the original values of the calendar, but it found them in a different philosophy.

This development was a problem within Enochism and could not, therefore, affect the Jerusalem Temple. On the other hand, the text of Daniel mentioned above indicates that the 364-day calendar had been abolished in the Temple. Only the more recent calendar, the 364-day one, had been taken into consideration by scholars, because the existence of the 360 + 4 day one had not yet come to light.[36] The above quoted article by G. Boccaccini[37] demonstrates that the 364-day calendar must have remained in use in the Jerusalem Temple, but with the structure of the 360 + 4 one. The chronological references in Daniel had never been clarified, because they did not correspond to either the solar or lunar-solar calendar. They do, however, become clear in light of a 360-day year.

9. Second Isaiah

The cosmic vision of reality and history is very strong in Second Isaiah, who lived in the exile court circles and whose ideas and ideals were

[36] See J. C. VanderKam, "2 Maccabees 6:7a and Calendrical Change in Jerusalem," *JSJ* 12 (1981) 52–74.
[37] See n. 36.

quite different from those of Ezekiel. Second Isaiah had an incredible sense of history as guided by God. God desired to carry out his project: "My purpose shall stand, and I will fulfil my intention" (Is 46:10). Everything that happens is part of God's project in history; God has chosen Israel and remains faithful to it, even though Israel sins against him. God forgets Israel's sins for his own sake (Is 43:35). "The grass withers, the flower fades; but the word of our God will stand forever" (Is 40:8). From the beginning of time God has had a plan in history and he has revealed it to his prophets: "Who has announced from of old the things to come?" (Is 44:7). God is the first and the last (Is 44:6), or as we would say with John, the alpha and the omega, point of departure and of arrival. The cosmos takes on meaning in its entirety, because history, which is part of the cosmos, bears the sign of God's will acting within it. The cosmic element was already present in Ezekiel, but in Second Isaiah the unifying presence of the one God is felt even more strongly. Second Isaiah's God acts in a cosmos that is caught up in the dramatic force of its own becoming.

The experiences of some Jewish circles during the exile are among the greatest in humanity during that period. And those years have been called pivotal in human existence and history, because of the concentration of great insights in various parts of the globe. It is fascinating to see how the vast amount of scientific information borrowed from the superior Babylonian civilization was structured entirely along the lines of the Jews' own culture and religion. This was a great deal of evolution, but no new religion was born. Similar effects were produced by the encounter between the Iranian and Babylonian civilizations, when the mixture of traditional faith and acquired astronomical knowledge carried Zoroastrianism a considerable way from its origins.[38] Astronomy's impact was great on western thought as well.[39] In the Jewish world there was a love-hate relationship with astronomy, which at times was considered a prohibited science,[40] and at others was seen as the basis for

[38] See J. Bidez and F. Cumont, *Les mages hellénisés: Zoroastre, Ostanès, Hystaspe—d'après la tradition grecque* (2 vols.; Paris: Belles Lettres, 1938 [1973]).

[39] On the impact of astronomy/astrology on western culture, see F. Boll, C. Bezold and W. Gundel, *Storia dell'astrologia* (Bari: Laterza, 1979). On the distinction in western thought between philosophical speculation regarding the divinity on the one hand, and religion on the other, see L. Troiani, "Qualche considerazione sopra il politeismo degli antichi," *Rendiconti dell'Istituto Lombardo. Classe di Lettere e Scienze Morali e Storiche* 134/2 (2000) 445–452.

[40] See Deut 4:19. In Enochism astrology is considered diabolical, 1 En [BW] 8:3.

all religious knowledge.[41] This simply demonstrates the ancient Jewish fascination with the mysteries of the cosmos.

10. The 364-day Calendar and the 354-day Calendar

In order to have clear evidence of the presence of the 354-day lunar-solar calendar in Jerusalem we must arrive at the book of Jubilees, where this calendar is mentioned polemically as something that had been recently introduced. I believe that the book of Jubilees should be dated to the same period that saw the origins of the Book of Dream Visions and Daniel, a time of great tension within Israel. This was the period following the end of the legitimate priesthood with Onias III. In this period a power struggle had been unleashed in Israel for the position of high priest.[42]

In Jub 6:34–36 we read: "All of the sons of Israel will forget, and they will not find the way of the years... they will set awry all of the ordinances of the year. I (the guiding angel speaking to Moses) know and henceforth I shall make you know—but not from my own heart, because the book is written before me and is ordained in the heavenly tablets of the division of days—that they will forget[43] the feasts of my covenant and they will walk in the feasts of the gentiles, after their errors and their ignorance. And there will be those who will examine the moon diligently because it will corrupt the appointed times and it will advance from year to year ten days."

The target of this critique is the 354-day calendar, the one that falls behind by ten days a year in respect to the sun. Accepting this calendar meant confusing the liturgical days. The relationship between the liturgy and the cosmos, as God had created it, would disappear; the cosmos would return to being chaos.

I emphasize that the author of the book of Jubilees considered the lunar-solar calendar a recent pagan introduction. It was not the old Jewish calendar to be substituted by the solar one, but an innovation

[41] See the Astronomical Book.

[42] On the political position of the author of the book of Jubilees, as one who aimed at the high priesthood as a means of gathering all the Jews under him, see G. Boccaccini, *Beyond the Essene Hypothesis*, 86–98.

[43] This translation follows the edition of L. Fusella in P. Sacchi, *Apocrifi*, 251. This follows ms. C. In the other manuscripts the verb is negative. Charles translated it, "lest they forget..."

brought about by the acceptance of pagan ways.[44] In fact, the lunar-solar calendar was in use from Greece to Babylonia. The calendar was, therefore, an abomination. Such disdain for something that we consider absolutely neutral, choosing one measure of time over another, stems from the fact that the 364-day solar calendar represented more than merely a way of measuring time. The calendar was the tangible earthly projection of the unchangeable, divinely ordered cosmos. The 364-day calendar achieved the "perfect harmony of the world".

We have seen that the lunar-solar calendar was not in use in Judaea at the time of the Astronomical Book, while it was in use when the book of Jubilees was written. This means that the lunar-solar calendar must have come into use between the third and the middle of the second century BCE. A more precise date for its adoption in Jerusalem can be deduced from Daniel 7:25,[45] where he says that during the reign of Antiochus IV "the sacred seasons and the Law" were changed.

A change in the Law is also alluded to in 2 Macc 4:9–12, according to which, "(Jason) destroyed the lawful ways of living and introduced new customs contrary to the law." The situation got worse under Menelaus (see 2 Macc 6:1 and following); Greek, and therefore pagan, laws and customs penetrated ever deeper in Jerusalem. It is plausible that the calendar of the Temple liturgy was changed as well. The restoration came about some years later with Judas Maccabeus, who had the Temple rededicated.

At this point there could have been a return to the previous situation, at least as far as the liturgy was concerned. Regarding lay use, though, it is highly unlikely, because the lunar-solar calendar was used throughout the civilized world of the time, except in Egypt, and its presence is well documented in Judaea (see below).

Things could have been different in liturgical use. There is a piece of information that returns several times in rabbinical writings,[46] which tells that towards the end of the first century CE there was some doubt about how to behave when Passover fell on a Saturday; were the norms regarding the Sabbath to apply, or those governing Passover? The question was posed to Hillel the Elder as he was arriving from Babylonia,

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[44] See the text quoted above: "they will walk in the feasts of the gentiles".

[45] See J. C. VanderKam, "2 Maccabees." Eshel's contribution mentioned at page 1, in the text, should be added here.

[46] See F. Manns, *Pour lire la mishna* (Jerusalem: Franciscan Printing, 1984) 50–51.

therefore towards the end of the first century. They told him that they had forgotten whether to follow the laws of Passover or those of the Sabbath when Passover fell on a Saturday. Hillel answered in favor of Passover. But that is not what is important to us here. What is important is that, since it would be impossible to *forget* how one was to behave on Passover when it came on Saturday, it must have been a new situation, created by the adoption of the civil lunar-solar calendar even in the liturgy of the Temple.

However, the presence of these two calendars appears in several religious texts of the second century BCE, though not in reference to the Temple liturgy. The book of Jubilees warned against celebrating Passover "a day and a month late" (49:7), a sign that at that time some people must have been celebrating Passover in accordance with the lay calendar. The Damascus Rule, of uncertain date, but not far from the book of Jubilees, forbade making offerings at the altar on the Sabbath (CD 11:17–18), as could happen with the lunar-solar calendar. Something similar can also be found in the fragmentary text 4Q513, fr. 3, where "shaking the stick on the Sabbath" (1:2–3) is called "blind bewilderment" (1:4).

The history of the various calendars in not only interesting in itself, but it bears witness to the human effort to see meaning in creation and life. The measurement of time was not a neutral activity, because the world was creation, it had been made by God and therefore it held tangible signs of the divine in its structure. Loss of an immediate sense of the creation—even believers tend to put the creation back almost infinitely in time—has led to a loss of the sense of "the perfect harmony of the world" reflected in the liturgy. The liturgy—and this even from ancient times—has been memory, commemoration, actualization. These, however, are all historical concepts; the cosmic meaning of the liturgy has been lost in the main currents of Christianity and Judaism.