Evidence of a seven-day week in the Ancient Near East: part 2—the Israelite calendar and the lunar cycle

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The Jewish calendar is described here from the Second Temple period, noting similarity with the Babylonian calendar; more specifically in terms of the Sabbath day of rest cohering with the phases of the moon. The Hebrews had their own calendar regulations in the Law of Moses, which established weekly, monthly, and yearly observances. The lunar pattern for Sabbath observance described here is necessarily inferred from the Old Testament, as opposed to being explicitly stated in the text. However, it is outlined by commentators such as Philo of Alexandria. On the other hand, attempts to develop a continuous weekly calendar, for example by the Essenes, failed to keep time with the moon and sun's orbits. As Genesis 1:14 tells us, the sun and moon were set in place to mark out the calendar, which is a remarkable design aspect of the solar system.

In the previous paper (part 1), a number of calendars from the Ancient Middle East were outlined. Of most relevance in this second part was that of the Babylonians. The phases of the moon were used in this ancient culture to divide each lunar month into approximate weekly periods. These were termed 'quasi-weeks' by Zerubavel because they are not exactly weeks of seven days.[1] The way in which the Israelites organized their calendar will be discussed in this part 2, particularly in relation to the requirements of the Law of Moses: for example, the Sabbath, the various seasonal feasts (Passover, Pentecost and Tabernacles), and the festive days of the new moon (Exodus 20:8–11, Numbers 28:11, Leviticus 23).

There are two notable views offered among Christians with regard to the way the Sabbath was kept in Old Testament Israel. Perhaps the more common view is the assumption that it was counted every seventh day irrespective of any connection to the lunar month.[2] The evidence suggests, though, that such a calendar only existed on the margins of Jewish society with the Essenes. Another view is that the Sabbath days occurred on specific dates in each lunar month (i.e., 8th, 15th, 22nd, and 29th), and these were connected to the four phases of the moon (figure 1). It was, however, similar to the Babylonian system, which raises suspicion for some believers.[3] This difference of opinion has previously been touched upon in the creation literature[4] and will be discussed more fully below.

There is evidence to show that the Israelite days of rest were connected to the moon's phases. The seven-day week follows the pattern of the Creation Week, is regulated in the Law of Moses, *and* is marked out by the moon's phases, as Genesis 1:14 implies. Most secular scholars agree that the Israelites made use of the Babylonian calendar following their Mesopotamian captivity.[2,5] Indeed, the books of Zechariah and Esther draw upon an equivalence between the numbered Hebrew months and those named of Babylon (for example, Zechariah 1:7 and Esther 2:16). This was possible because of close similarities between the two. Such use of the Babylonian calendar in Israel extended to the Second Temple period, with influence through the Persian and Seleucid periods.[6]

And yet the Israelites can trace their own calendar back to the Mosaic Law, with its detailed requirements for religious observance. The two calendars, those of Babylon and Moses, have similarities, both being luni-solar. In them the year was denoted by the sun (really the earth's orbit around the sun), while the new moon determined the start of each month. This raises the possibility that the Babylonians, who adopted the earlier Sumerian observance, were following a calendar ordination that had been passed down from Adam, through Noah, to those Patriarchs that settled in the Plain of Shinar, including Abraham's family. Later it was reconfirmed by the revelation given to Moses. This scenario was, for example, suggested by Rabbi Eliezer ben Hyrcanus.[7] But there are some differences between the Babylonian system and that of the Law of Moses.

In the Second Temple period, the Pharisees followed more closely the Babylonian calendar and oral traditions,[8,9] while the Sadducees were more committed to the teachings laid out in the written Mosaic Torah. The two groups were often in dispute and engaged in power struggles over control of the Temple practices. While the Sadducees were associated with

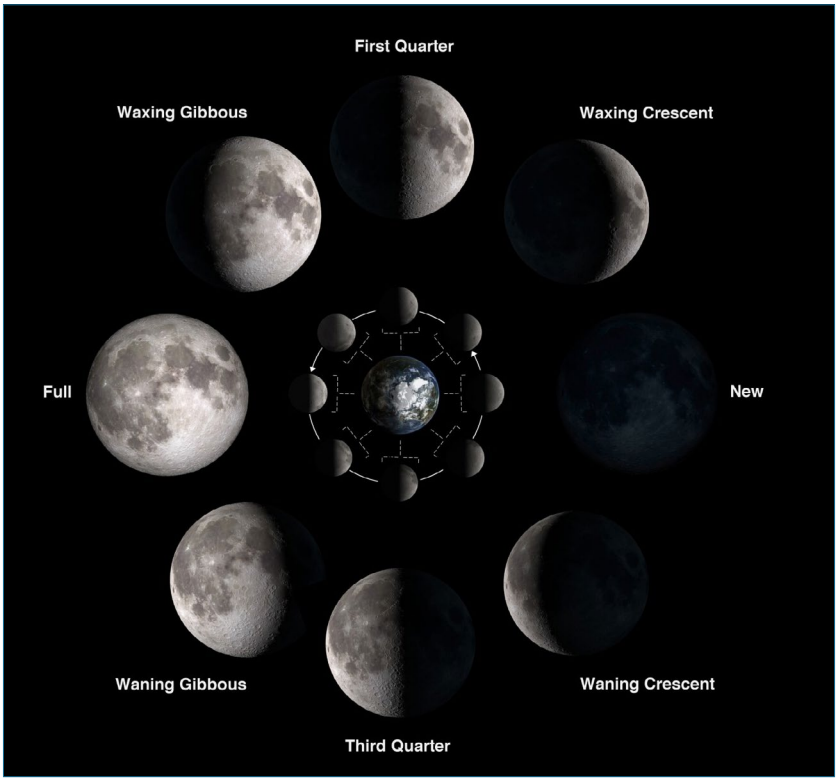

Image: NASA/Bill Dunford

Figure 1. Phases of the moon

the Jewish elite and maintained the Temple, the Pharisees had the better support of the people[10] and were well represented in the priesthood. Much of our knowledge of the Sadducees is lost as the sect disappeared after the destruction of the Temple, and that information which is presented was often written by their political foes, Josephus being one of the major Pharisaic sources. Overall, the differences in the calendar regulations appear quite small, with the lunar–solar calendar observed by both.[11]

To add to disputes between the Pharisees and Sadducees, a third calendar was developed by the sect of the Essenes, or Qumran community.[12] This presented a marked departure from the one used for Temple sacrifices. The Essenes thought that the other two religious sects were in error. As far as we know they had little influence in the wider Jewish society, even though much of their writing survived to the present day, mainly thanks to the discovery of the Dead Sea Scrolls.

The Mosaic calendar

It is relevant to consider the structure of the Israelite calendar from the Old Testament writing. We read in Genesis that the sun *and* moon were set as lights in the heavens on Day 4 of the Creation Week, and also established to signify the appointed times, for special days, seasons and years.

> "And God said, 'Let there be lights in the expanse of the heavens to separate the day from the night. And let them be for signs and for seasons [*moedim* מוֹעֲדִים = appointed times], and for days and years, and let them be lights in the expanse of the heavens to give light upon the earth.' And it was so. And God made the two great lights—the greater light to rule the day and the lesser light to rule the night—and the stars" (Genesis 1:14).

The sun is the greater light (*gadal maor*) and the moon the lesser light (*qatan maor*) in this passage, which mark the seasons. The Hebrew word for seasons or appointed times, *moedim*, is used elsewhere in Moses' writing to reference the appointed time of the feast of Passover in the *month* of Abib (Exodus 23:15). In Psalm 104:19 we find a lunar reference: "He made the moon to mark the seasons [*moedim*]; and the sun knows its time for setting." And in Psalm 81:3–4, "Blow the trumpet at the new moon, at the full moon, on our feast day. For it is a statute for Israel, a rule of the God of Jacob." This speaks of the sacred appointed times in the Israelite calendar that are established by the cycles of the moon and sun.

The revelation of Scripture also provided the Israelite nation with a number of commands relating to observance of the Sabbath. The ordering of community life for the Israelites into the weekly cycle mirrored God's act of creation in six days, with a rest day on the seventh.

> "And on the seventh day God finished his work that he had done, and he rested on the seventh day from all his work that he had done. So God blessed the seventh day and made it holy, because on it God rested from all his work that he had done in creation" (Genesis 2:2–3).

Because of this designed weekly period of rest, the Israelites were called to cease activity on the Sabbath after six days of work. Exodus 20: 8–11 reads as follows:

> "Remember the Sabbath day, to keep it holy. Six days you shall labour, and do all your work, but the seventh [Hebrew = shebii or shebiith; שְׁבִיעִי] day is a Sabbath [Hebrew = shabbath; שַׁבָּת] to the Lord your God. On it you shall not do any work, … For in six days the Lord made heaven and earth, the sea, and all that is in them, and rested on the seventh day. Therefore the Lord blessed the Sabbath day and made it holy."[13]

God also instituted other sacred days through Moses' Law; of relevance here is the observance of the new moon, or Rosh Hodesh. This occurred at the beginning of each month; that is according to Numbers 28:11, 14–15 (NIV).[14]

> "'On the first of every month, present to the Lord a burnt offering of two young bulls, one ram and seven male lambs a year old, all without defect. … This is the monthly burnt offering to be made at each new moon during the year. Besides the regular burnt offering with its drink offering, one male goat is to be presented to the Lord as a sin offering."[15]

Following the pattern of the lunar period, Hebrew months were either 29 or 30 days long. The first month of the year was set as Abib or Nisan. In Exodus 12:1–2 God commands Moses and Aaron that

> "This month [Abib] shall be for you the beginning of months. It shall be the first month of the year for you."

But while the new moon determined the start of the year and each new month, the warmth of the sun determined the cycle of the annual harvest, which was so important to community life. The year began on the first of Abib if the first fruits of the barley harvest were ripe. This was important so that the priests could complete the wave sheaf offering on the 16th. If not, another month, a 13th leap or intercalary month, would be added to the end of the previous year.[16] There were twelve months in most years, making 354 days, together with an intercalary month of 30 days approximately every third year, leading to occasional years being 384 days in length. Traditionally, the sighting of the new moon was required for the declaration of the new month, but this was later codified by the Rabbis according to the Metonic cycle; i.e., seven times in 19 years.

Was the day of the new moon a type of Sabbath?

There is an apparent difficulty here with fitting the Sabbath cycle of seven days with the monthly period of 29 or 30 days, especially as the Hebrews were required to work six days followed by a rest day. It might imply that some weeks would require seven days of work. One solution would be to treat the new moon festival as an additional rest-day, or monthly 'Sabbath'. If so, there would be no work on the first of the month, and then weekly Sabbaths could fall on days 8, 15, 22, and 29 of each month. In addition, a second day of the new moon would be necessary when months were of 30 days length—supporting evidence for this is provided by the account of David, Saul, and Jonathan in 1 Samuel 20, which speaks of two days of feasting for the new moon.[17] As such, there would be two or three days of rest at the transition from one month to the next, but this would give six-day work periods between rest days.

Image: André Thevet, Wikimedia / Public Domain

Figure 2. Impression of Philo by André Thevet (1584)

This lunar pattern would have the advantage of overcoming a problem of the alternative position; that is, if weekly Sabbaths were not tied to the moon's phases. This is because the main feasts of Unleavened Bread and Tabernacles were connected to rest days on the 15th and 22nd of the first and seventh months. So, some weeks would contain two Sabbaths and break the six-days-of-work pattern. A movable Sabbath may also have fallen on set days of preparation.

However, it is not clearly written in the Law of Moses that the new moon feasts were strictly days of rest. There are, however, some Old Testament references related to Israel's practice that indicate that the days were treated as such; for example, a statement in Amos 8:5 suggests no work was anticipated on the day of the new moon; "When will the New Moon be over that we may sell grain, and the Sabbath be ended that we may market wheat?" Other Scriptures also speak of the days of the new moon and Sabbath in terms of shared worship and feasting. Isaiah 66:23, "From new moon to new moon, and from Sabbath to Sabbath, all flesh shall come to worship before me, declares the Lord" and the prophecy of Ezekiel 46:1, "Thus says the Lord God: The gate of the inner court that faces east shall be shut on the six working days, but on the Sabbath day it shall be opened, and on the day of the new moon it shall be opened."

An inscription on the pottery shard Arad Ostraca (no. 7), which is dated to around 600 BC and so before the Babylonian exile, also strongly implies that the day of the new moon was treated as a day of feasting and rest.[18] In the post-Exile period a statement in 1 Maccabees 10:34 suggests that new moons were days of rest as the people were exempt from taxation on that day.[19] One Rabbinical commentary further suggests that while the Temple was established in Jerusalem the new moon days were respected as days of rest because of the sacrificial proceedings on behalf of the people.[20]

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Figure 3. Archaeological remains of part of the main building at Qumran

Support from Philo

In addition to regulations given in the Law of Moses, external evidence stems from the writing of Philo of Alexandria (figure 2), who was contemporaneous with the New Testament period (20 BC to AD 50). The writing of Philo gives us the strongest indication of the structure of the Jewish weekly calendar. He was a well-respected Jewish philosopher and connected to a ruling priestly family in Jerusalem. As such, he was entrusted to lead the defence of the Jews of Alexandria before the Roman Emperor Gaius Caligula in a time of trouble. In his wider writing, elaborating on Jewish religious practices, Philo clearly linked the phases of the moon to the seven-day week. In his *Allegorical Interpretation* (of Genesis 1), Philo commented that

> "… the periodical changes of the moon, take place according to the number seven, that star having the greatest sympathy with the things on earth. And the changes which the moon works in the air, it perfects chiefly in accordance with its own configurations on each seventh day."[21]

The seventh day here being the Sabbath, so that the moon marks out the week. He had a high regard for the Sabbath, seeing it as given for all people; "For that day is the festival, not of one city or one country, but of all the earth; a day which alone it is right to call the day of festival for all people, and the birthday of the world."[22] In a further passage, on the fourth commandant, Philo commented that the regulation includes all the laws related to holy days and festivals, including that of the new moon. He points out that

> "… the seventh day of the week he has assigned the greatest festivals, those of the longest duration [around the vernal and autumnal equinox in each year]; each lasting seven days."[23]

These are the feasts of Unleavened Bread and Tabernacles that begin on the 15th day of the month according to the Mosaic Law, which are days of cessation of work (Leviticus 23:4–8, 33–36). This means that the 8th, 15th, 22nd, and 29th of each month are rest days, given the first of the month is the new moon feast. Philo comments, "On the fifteenth day, at full moon, the feast which is called 'the feast of booths' is celebrated …",[24] which is declared a day of rest.

Fixing the Sabbaths to specific days in the month fitted with the requirements of the major Old Testament feasts. With the Passover, a lamb was to be selected and prepared on day 10, and kept until day 14, when it was killed as the sun was setting (Exodus 12:3–6). Day 10 could not be a Sabbath as it was a day of work. Then, on day 15, the week-long Feast of Unleavened Bread began; the first day was a Sabbath, as was day 22. The wave sheaf offering was also always carried out the day after the Sabbath; i.e., on the 16th day of the month, after which work was permitted. It also began the count towards Pentecost.

Philo noted that the moon's orbit marks out 28 days through four periods of seven days each, 28 being a perfect number. The cycle consists of the waxing half-moon, the full moon, the waning half-moon, and then disappearance after the last crescent at the end of the month.

> "For she increases from her first crescent-shaped figure, to that of a half circle in seven days; and in seven more, she becomes a full orb; and then again she turns back, retracing the same path, like a runner of the diaulos [a two-way race in the Greek games]."[25]

Philo thus evidently linked the commemoration of the Sabbath with the phases of the moon.

Support from the Essene calendar

Further evidence of the presence of a lunar–solar calendar arises from the Qumran community (figure 3) because of their criticisms of the official sacrificial practices. They criticized the calendar that was used for Temple worship because they believed the sacred days would be commemorated on the wrong dates. Instead, their calendar was one where weeks *were* to flow consecutively: the year contained 364 days, 52 weeks, divided into twelve 30-day months, with an intercalary day added every quarter (i.e., every third month would have 31 days). The additional day marked the two equinoxes and the winter and summer solstices. The 364-day year was divisible by seven into 52 weeks (and by 13 weeks into quarters). Thus, it was claimed to enable the community to keep the weekly Sabbath and feasts on the same day each year.[8] They also recorded the Sabbath as occurring on day four of the week; the day on which the sun and moon were formed according to the creation account.[26]

The calendar system of the Essenes is recorded in the pseudepigrapha *Book of Enoch*,[26] specifically chapters 72 to 82, and the *Book of Jubilees* 6:36–38.[27] Both works were valued by the Qumran community, evidenced by the literature discovered among the Dead Sea Scrolls. The claimed justification for this calendar in the *Book of Enoch* (1 Enoch 74), is an instruction given to Enoch by the angel Uriel, which also criticized the alluring teaching of the fallen angels; Sariel, one of the fallen, had allegedly taught men the course of the moon (1 Enoch 8). The *Book of Enoch* clearly favours the solar calendar, noting that the lunar cycle falls behind the solar year by 10 days (364 minus 354 days), with the phases of the moon being seven or eight days long (1 Enoch 74), and a month 30 days.[28] However, it is evident that, given the lunar month is nearer to 29.5 days in length, over the period of a year, the alignment with the moon's orbit would be lost in a 30-day cycle. It also would run out of step with the solar cycle, which is 365.25 days long. Thus, it would lose 1.25 days per year, which would quickly run ahead of the harvest periods. Such a calendar could not be used in practice for any length of time, although the Essenes saw the move of the seasons as divine judgment, not erroneous time-keeping. One gets a sense of frustration here within the community in seeking to harmonize the lunar orbit with the solar year in this way.[29]

The book of *Jubilees* offers a pseudepigraphal account of Noah, and criticizes those who "will assuredly make observations of the Moon", which disturbs the seasons, with the year being ten days too short (354 days). It tells the reader to beware of the calendar that would "confound all the days" and make "an unclean day a feast day", going "wrong as to the months and sabbaths and feasts and jubilees" (Jubilees 6:36–38).[17] And yet, rather confusingly, in *Jubilees* 6, the Flood year is described in terms of months that began with the new moon.

So, the writing of the Qumran community infers that there was an official practice in use in Israel that was different from their own that entailed that the weeks of seven days *were* to run consecutively. The Temple practice was considered erroneous and not synchronized with their own weekly version. But their calendar was idealistic and impracticable if implemented for more than a few years, running out of sequence with both the sun and moon. Attempts at harmonization were unconvincing. The sectarian Essenes lacked influence as they lived on the margins of Jewish society, and their calendar was not implemented beyond their own narrow sphere.

Summary

The evidence supports the view that the Israelite nation was following the Babylonian calendar in the Second Temple period, thanks to the influence of the Pharisees. But there is no reason to believe that this was not also harmonious with the Law of Moses, if the festival of the new moon was treated as a rest day (sometimes two rest days). The weekly Sabbaths then occurred with the four phases of the moon. If so, the people could work six days, and have a day of rest at the end of each week. It would, however, entail a rest period of 2 or 3 days at the transition of each month. Advantageously, this would mean that the Sabbaths occurred with the days of rest required by the feasts of Unleavened Bread and Tabernacles. As such, it is a more efficient organization than allowing the weekly Sabbaths to cut across these major festivals, thus breaking across the six-day working week.

It is appreciated that this view may be controversial for some Christians who hold to the position that the weekly Sabbaths occurred every seventh day, irrespective of the day of the month. However, the only evidence for a continuous Sabbath cycle in the Second Temple period was in the thinking and writing of the Qumran community. But if it was enacted officially, it would have meant that the months would be misaligned with the lunar cycle, and the year would move out of step with the sun.

While the six-day working week, followed by one day of rest, is mandated in the Mosaic Law, its origin stems back to Creation Week. The passage in Genesis 1:14 informs us that the sun and moon are there for seasonal time-keeping. The weekly Sabbath can be marked out by the four lunar phases, with intercalary days to keep the new moon in phase with the month.

There is an important design aspect revealed here, which is that the orbit of the earth around the sun, and moon around the earth, have been so ordered to mark out weeks, months, and years. Before the invention of mechanical time-keeping devices, pre-industrialized people could accurately observe the times and seasons. That is remarkable!

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11. Although small, it could mean that sacred days were held a month out. Disagreements arose between Pharisees and Sadducees as follows: in which years should intercalary months be added, where in the year should the additional month be placed, what criteria should be used to determine the beginning of the year (i.e., before or after the equinox), and when does the day start and end? Doig, K.F., *New Testament Chronology,* Edwin Mellen Press, Lewiston New York, 1990.
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13. See also Leviticus 23:3 "For six days shall work be done, but on the seventh day is a Sabbath of solemn rest, a holy convocation. You shall do no work. It is a Sabbath to the Lord in all your dwelling places."
14. See also Numbers 10:10: "On the day of your gladness also, and at your appointed feasts and at the beginnings of your months, you shall blow the trumpets over your burnt offerings and over the sacrifices of your peace offerings."
15. Numbers 28:12–14 "With each bull there is to be a grain offering of three-tenths of an ephah of the finest flour mixed with oil; with the ram, a grain offering of two-tenths of an ephah of the finest flour mixed with oil; and with each lamb, a grain offering of a tenth of an ephah of the finest flour mixed with oil. This is for a burnt offering, a pleasing aroma, a food offering presented to the Lord. With each bull there is to be a drink offering of half a hin of wine; with the ram, a third of a hin; and with each lamb, a quarter of a hin."
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25. Philo, *On the Creation* XXXIV; in: Yonge, ref. 21. "The number seven when compounded of numbers beginning with the unit, makes eight-and-twenty [1 + 2 + 3 + 4 + 5 + 6 + 7 = 28], a perfect number [1 + 2 + 4 + 7 + 14 = 28] … And the number so produced, is calculated to reproduce the revolutions of the moon, bringing her back to the point from which she first began to increase in a manner perceptible by the external senses, and to which she returns by waning. For she increases from her first crescent-shaped figure, to that of a half circle in seven days; and in seven more, she becomes a full orb; and then again she turns back, retracing the same path, like a runner of the diaulos receding from an orb full of light, to a half circle again in seven days, and lastly, in an equal number she diminishes from a half circle to the form of a crescent; and thus the number before mentioned is completed."
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