

# HALACHIC AND HASHKAFIC ISSUES IN CONTEMPORARY SOCIETY

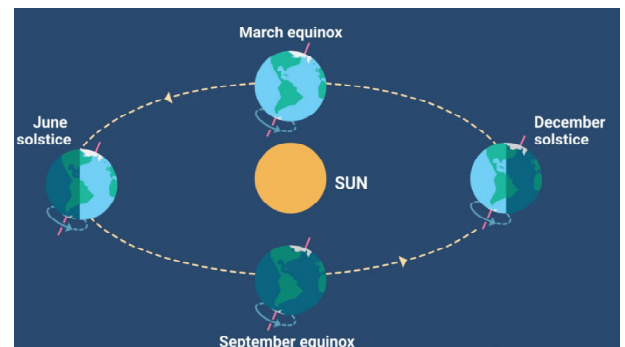
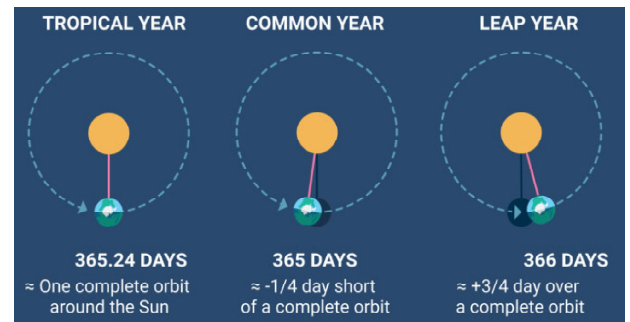
## SERIES 2: 27 - CALENDAR CONUNDRUMS PART 1 : FOUNDATIONS OU ISRAEL CENTER - SUMMER 2022

- Many people have noted that throughout this summer the Jewish calendar works in such a way that the parshiot in Israel are out of synchronization for months with those in chu'!! Why is this the case when they could have readjusted easily immediately after Pesach?
- This opens up more general questions about the Jewish calendar, including: (i) What are its origins and sources? (ii) How does it work in practice? (iii) How does it interface with the system of reading the parshiot haTorah through the year?; (iv) How does it interface with the secular calendar?
- Over the coming 3 shiurim we will be'H address these and other questions.

### A] BASIC ASTRONOMY

#### A1] THE SUN AND THE SOLAR YEAR

- The earth orbits around the sun at about 70,000 mph (108,000 km/h). Each complete orbit defines 1 year.
- The average length<sup>1</sup> of a tropical year<sup>2</sup> is 365 days, 5 hours, 48 minutes and 45 seconds (365.24219 days).
- The secular calendar adjusts by round down each year to 365 days and inserting a leap day every 4 years.<sup>3</sup>
- Since the Earth is spinning on a axis of rotation tilted by around 23.4 degrees as it orbits around the sun, it will face the sun differently throughout the year. This creates the seasons.
- For six months of the year, the North Pole is tilted toward the sun, and the sun lies in the northern hemisphere. For the other six months, the South Pole is tilted toward the sun, and the sun lies in the southern hemisphere.
- The equinoxes are the two moments when the sun lies directly above Earth's equator. The March equinox falls between March 19 and 21. The September equinox falls between September 21 and 24.
- The solstices are the two moments when the sun reaches its further north/south. The June solstice is between June 20 and 22, when the sun is



1. The length actually differs slightly each year. For instance, the year from March 2022-23 is 365 days, 5 hours, 50 minutes, 55 seconds. However, the year from March 2023-24 will be 365 days, 5 hours, 42 minutes, 8 seconds. Variation is from around 365:5:33 to 365:6:1.
2. A tropical year can be measured either from the vernal or autumnal equinox to the next one, or from the summer or the winter solstice to the next one.
3. This is the Julian Calendar introduced in Rome in 45 BCE. Before that the Romans had a complex lunar calendar with the first month of the year being March. This explains the names September, October, November and December as the 7th to 10th months! January and February were added later. Quintilis was renamed July in honor of Julius Caesar in 44 BCE and Sextilis was renamed August in honor of Roman Emperor Augustus in 8 BCE.

Since the Julian calendar slightly overadjusts, adding 6 hours per year, it gradually drifted away from astronomical events like the vernal equinox and the winter solstice. To make up for this error and get the calendar back in sync with the astronomical seasons, a number of days had to be dropped. As such, the Gregorian calendar was introduced in 1582. This adjusts the differential by missing a few leap years - most century years that are divisible by 100 are common years (with 365 days), whereas they are leap years in the Julian calendar. Where the century year is itself divisible by 400 (as in the year 2000) it IS still a leap year. The Julian calendar had a margin of error of around 11 minutes a year and so is inaccurate by 1 day in every 128 years. The Gregorian calendar has a margin of error of around 27 seconds a year and so is inaccurate by 1 day in every 3236 years.

Adjustment from the Julian to the Gregorian calendar required skipping a number of days. The papal bull issued by Pope Gregory XIII in 1582 decreed that 10 days be skipped when switching to the Gregorian calendar. However, only five countries adopted the new calendar system that year – Italy, Poland, Portugal, Spain, and most of France. Those countries that adopted the Gregorian calendar later had to skip more days. In North America and the United Kingdom, for example, the month of September 1752 had only 19 days, as the day count went straight from September 2 to September 14. Japan cut the year 1872 short by 12 days and some countries, such as Russia, Greece, and Turkey, switched calendars as late as the early 20th century, so they had to omit 13 days.

The shift in calendars impacted in a number of unexpected ways. For instance, in the old British calendar the tax year began on March 25 (the old New Year's Day). In order to ensure against losing revenue it was decided by the British Treasury that the tax year, which started on March 25 1752, would be of the usual length (365 days) and therefore it would end on April 4, the following tax year beginning on April 5. This worked until 1800, which was not a leap year in the new Gregorian calendar but would have been in the old Julian system. Thus the treasury moved the start of the UK tax year from the April 5 to the April 6 and it has remained there ever since!

directly above the Tropic of Cancer in the northern hemisphere. The Tropic of Cancer passes through Mexico, northern Africa, the Middle East, India, and China. The December solstice is between December 20 and 23, when the sun is directly over the Tropic of Capricorn in the southern hemisphere. Tropic of Capricorn runs through South America, southern Africa, and Australia.

## A2] THE MOON AND THE LUNAR MONTH

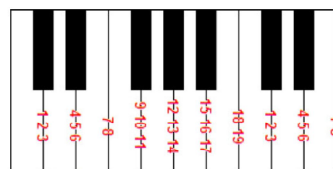
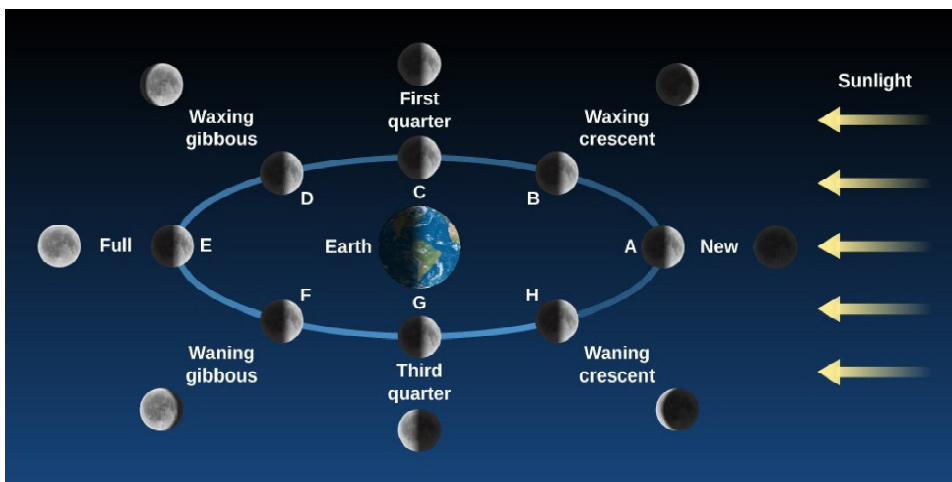
- The moon orbits around the earth. Each complete orbit defines 1 lunar month.

- The average length<sup>4</sup> of a lunar (synodic) month is 29 days, 12 hours, 44 minutes, and 2.8 seconds (29.53059 days).

- A lunar year - ie 12 lunar months - is 354 days, 8 hours, 48 minutes, 34 seconds (354.36707 days). This is 11-12 days shorter than a solar year. As such, in purely lunar calendars which do not make use of intercalation, like the Islamic calendar, the lunar months cycle through all the seasons of a solar year over the course of a 33-34 lunar-year cycle.

- Lunisolar calendars, like the Hebrew calendar, compensate for this by using the Metonic cycle<sup>5</sup>. This adds an intercalary month every two or three years<sup>6</sup>, for a total of seven times per 19 years.<sup>7</sup>

- The moon's orbit is actually tilted by 5 degrees. This means that the sun, earth and moon do not normally line up exactly at the new moon and full moon. However, they do occasionally line up, resulting in a solar eclipse at the new moon, and a lunar eclipse at the full moon.

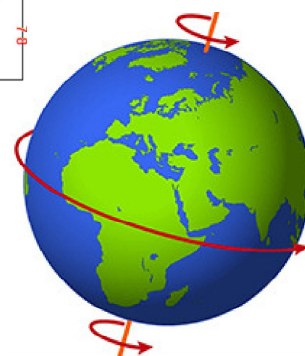


## A3] THE DAY, HOURS, MINUTES AND SECONDS

- The earth rotate on its axis at 1,040.4 mph (1,674.4 km/h)<sup>8</sup>. The rotational speed decreases as one approaches the poles.

- From ancient times the convention has been to divide the day into 24 hours<sup>9</sup> and to subdivide the hours in units of 60<sup>10</sup> - eg 60 minutes in an hour and 60 second in a minute.<sup>11</sup>

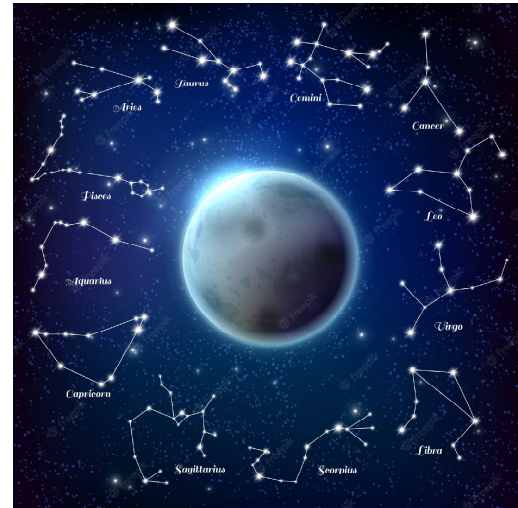
- The Hebrew calendar divides the hour into 1080 chalakim<sup>12</sup>. There are thus 18 chalakim per minute (each being 3.333 seconds).



- The length actually differs slightly each month due to the elliptical orbits of the earth around the sun and the moon around the earth, which results in variations in speed. For instance, Iyar 5782 (Apr 30 to May 30) was 29 days, 15 hours, 2 minutes. However, Tevet 5783 (Dec 23 to Jan 21) will be 29 days, 10 hours, 36 minutes. The variation is from around 29.18 to 29.93 days.
- The Metonic cycle (developed by Meton of Athens, in the 5th century BCE) recognized that 19 tropical years almost exactly equals 235 synodic months. The recurrence is not perfect, and 235 synodic months actually exceeds 19 tropical years by 2 hours, 4 minutes and 58 seconds. (Tropical year = 365.2422 days.  $365.2422 \times 19 = 6,939.602$  days. Synodic month = 29.53059 days.  $29.53059 \times 235 = 6,939.689$  days.)
- The extra months are added in the following years of the 19 year cycle (machzor): 3, 6, 8, 11, 14, 17, 19. This can be remember by comparison with the octave on a piano keyboard, where each tone in the scale represents 3 years culminating in a leap year, and each semitone represents 2 years culminating in a leap year.
- Even with this intercalation, the average Hebrew calendar year is longer by about 6 minutes and 40 seconds than the current mean tropical year, so that every 216 years the Hebrew calendar will fall a day behind the current mean tropical year.
- The Earth's rotation is actually slowing down by about 2.3 milliseconds per century. This means our days are getting longer. In the Cambrian period, 500 million years ago, the day was around 20 hours and 40 minutes, making 425 days in a solar year.
- The ancient Egyptians divided day-time into 10 hours which they measured with devices such as shadow clocks. They then added a twilight hour at the beginning and another one at the end of the day-time. Night-time was divided in 12 hours, based on the observations of stars.
- The subdivision of hours and minutes into 60 comes from the ancient Babylonians who had used numbers in base 60 because of its multiple divisors - 2, 3, 4, 5, 6, 10, 12, 15, 20, 30 and consequent ability to calculate in fractions. We have retained from the Babylonians not only hours and minutes divided into 60, but also their division of a circle into 360 parts or degrees.
- There was an idea in the 19th century to completely decimalize the calendar - 10 days in a week. 100 centidays in a day.
- This was also an ancient Babylonia time measurement. They divided the circle into 360 degrees and each degree into 72 she. A full circle was therefore 25,920 she. Since the day is 24 hours, each hour is  $25.920/24 she = 1080$ .

**A4] THE STARS**

- The stars are (effectively) fixed in the manner that they surround the planet, but as the earth rotates on its axis and orbits around the sun, the view of the stars changes. The stars also look different from the northern and southern hemispheres.
- The stars appear to us to rotate across the sky like the sun. This is due to the rotation of the earth.
- By day the stars are hidden due to the light of the sun, but they continue to rotate across the sky.
- From ancient times, the stars have been grouped into constellations, based on the type of shape they appear to form.



SPRING Nisan	טלה	Aries	Iyar	שור	Taurus
Sivan	תאומים	Gemini	SUMMER Tammuz	סרטן	Cancer
Av	אריה	Leo	Elul	בתולה	Virgo
FALL Tishri	מאזניים	Libra	Cheshvan	עקרב	Scorpio
Kislev	קשת	Sagittarius	WINTER Tevet	גדי	Capricorn
Shevat	דלי	Aquarius	Adar	דגים	Pisces

- In Figure 1 the person (P) is looking up just after sunset. He can see the stars in mazalot A (western horizon) B, C, D, E, F and G (eastern horizon) but not H, I, J, K, or L which are 'under the earth'.
- In Figure 2 the earth has rotated and person is looking up at around midnight. He can now see the stars in mazalot C (western horizon), D, E, F, G, H and I (eastern horizon) but not the others.
- As each mazal appears over the eastern horizon (even if it is daytime and cannot be seen) this is known as the mazal 'rising'.
- In this case the stars in mazal L will never be visible since these are hidden by the sun. We say that the sun is 'in' that mazal.
- As the year proceeds and the earth moves in its orbit around the sun, the sun appears to move each month to hide a different group of stars and be in that mazal. The mazal that was hidden the previous month but now becomes visible is called the mazal rising that month. So in Nissan the mazal of Dagim is rising, and in Iyar the mazal of Tleh is rising.

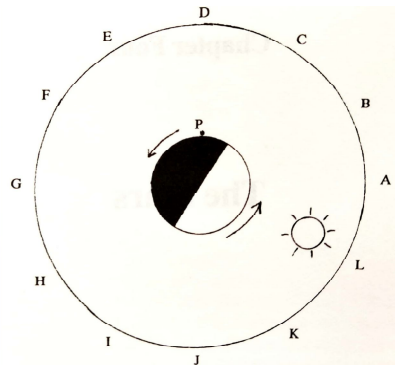


Figure 1

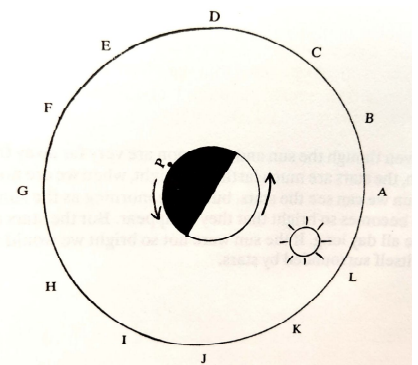


Figure 2

**B] THE CALENDAR IN CHUMASH<sup>13</sup>**

**B1] SUN AND MOON**

1. וַיֵּאמֶר אֱלֹקִים יְהִי מְאֹרֹת בְּרִקְעַת הַשָּׁמַיִם לְהַבְדִּיל בֵּין הַיּוֹם וּבֵין הַלַּיְלָה וְהָיוּ לְאוֹתוֹת וּלְמוֹעֲדִים וּלְיָמִים וּשְׁנָיִם.

בראשית א:ד

The creation of the sun and the moon are explicitly linked to their use for the purposes of calculating the calendar<sup>14</sup>.

2. ולמועדים - על שם העתיד, שעתידיש ישראל להכטוות על המועדות והם נמנים למועד הלצנה.

ולימים - שמוש החמה חלי יום ושמוש הלצנה חליו, הרי יום שלם.

ושנים - לסוף שלש מאות ששים וחמשה ימים יגמרו מהלכתם צשנים עשר מזלות המשרתים אותם והיא שנה.

רש"י שם

Rashi understands the 'moadim' as a reference to the future Torah holidays which will be calculated by the moon.

13. A detailed analysis of the Jewish calendar and its development can be found in Calendar and Community by Sacha Stern (Oxford, 2001). Stern wrote a shorter subsequent book - Time and Process in Ancient Judaism (Litmann, 2007) in which he argues that there was actually no abstract concept of 'time' in ancient Judaism or other Near Eastern cultures, in contrast to the Greeks, and that the concept of time only entered Jewish thought with Greek philosophy in the Middle Ages. See also Understanding the Jewish Calendar, R. Nathan Bushwick (Moznaim, 1989), Halakhic Times, R. Yehuda Levi (Rubin Mass, 2000)

14. This is also an anti-pagan statement - the sun and moon are there to be used for the calendar and not to be worshipped.

3. ולמועדים - מהילוך הלזנה שמתחדש לכ"ט ימים וחלי נועדים מועדי השנה וזמני השטרות כדכת' (תהלים קד:ט) עשה ירח למועדים. ולימים - שהרי מלאת הכוכבים עד ללאת הכוכבים יום א'. ושנים - ארבע תקופות השנה עושין שנה תמימה.

רשב"ם בראשית א:י

The Rashbam understands the 'moadim' is a direct reference to the lunar month. He also references the day beginning in the evening<sup>15</sup> and the four 'tekufot' - equinoxes and solstices - which determine the agricultural ie solar year.

## B2] THE WEEK

4. (א) ויכלו השמים והארץ וכל צבאם. (ב) ויכל אלהים ביום השביעי מלאכתו אשר עשה וישבת ביום השביעי מפל מלאכתו אשר עשה. (ג) ויברך אלהים את יום השביעי ויקדש אתו כי בו שבת מפל מלאכתו אשר ברא אלהים לעשות:

בראשית ב:א - ג

The Torah introduces a NON-ASTRONOMICAL calendar concept - Shabbat and week.

- The cycle of 7 days is not a natural cosmological event, unlike the day, month and year.
- In Jewish thought 7 = completion (6 physical directions + time) and wholeness (prime number).
- In the ancient world, the 7 days of the week were named after the planets: Sun, Moon, Mars, Mercury, Jupiter, Venus, Saturn.

Day	Planet	Latin	Spanish	French	Italian
Monday	Moon	Dies Lunae	lunes	lundi	lunedì
Tuesday	Mars	Dies Martis	martes	mardi	martedì
Wednesday	Mercury	Dies Mercurii	miércoles	mercredi	mercoledì
Thursday	Jupiter	Dies Jovis	jueves	jeudi	giovedì
Friday	Venus	Dies Veneris	viernes	vendredi	venerdì
Saturday	Saturn	Dies Saturni	sábado	samedi	sabato
Sunday	Sun	Dies Solis	domingo	dimanche	domenica

- The Torah breaks with that pagan approach and names the days of the week by reference to Shabbat - Day 1 (to Shabbat) etc
- Each time one states the day of the week in this way, one fulfills the mitzva of remembering Shabbat<sup>16</sup>.

## B3] THE LUNAR CALENDAR

5. (א) ויאמר ה' אל-משה ואל-אהרן בארץ מצרים לאמר: (ב) החדש הזה לכם ראש חדשים ראשון הוא לכם לחדשי השנה.

שמות יב:א-ב

The first mitzva given to the Jewish people is the lunar calendar<sup>17</sup> - that Nissan is the start of the year and the year comprises a whole number of months. It also explicitly requires a relationship between the months and the years - 'chodshei hashana'.

6. עד חדש ימים עד אשר יצא מאפכם והיה לכם לזרוע יען כי מאסתם את ה' אשר בקרבכם ותבכו לפניו לאמר למה זה יצאנו ממצרים.

במדבר יא:ב

The new lunar month (the molad) usually begins in the middle of a day but the new month may not start in the middle of a day since the halachic month must be made of complete days.

- As such, the months of the years alternate<sup>18</sup> between 29 and 30 days in order to achieve an average of 29.5 days.
- In the fixed Jewish calendar the month have the following number of days:

Tishri 30 days	Cheshvan 29/30 days	Kislev 29/30 days	Tevet 29 days	Shevat 30 days
Adar I 30 days	Adar II 29 days	Nisan 30 days	Iyar 29 days	Sivan 30 days
Tammuz 29 days	Av 30 days	Elul 29 days		

15. This is a major issue. A solar calendar focus indicates that the beginning of the day should be sunrise. A lunar focus indicates evening, when the new moon appears. The Rashbam's comments here should be contrasted with his pshat explanation of יהי ערב ויהי בקר which he explains as the day starting in the morning. The Ibn Ezra attacked this dramatically in his 'Igeret HaShabbat'. Note that the Temple day DID start in the morning - see also below regarding the ketoret.

16. See Ramban Shemot 20:8, Chayei Adam, Shabbat, Klal 1, Seif 1 and Shemirat Shabbat Kehilchata, Chelek 2, Chapter 42, note 11.

17. The Hebrew words for month are chodesh and yareach, both of which indicate the moon. See Ibn Ezra 25:9 who explains that the concept of month can only be lunar and year can only be solar. There is no concept of a 'lunar year'; the month could be multiplied by any number. So too, there is no concept of a solar month; the year could be divided in any way.

18. With some corrections for the discrepancy between 29.5 and 29.53059

## B4] THE SOLAR/AGRICULTURAL CALENDAR

7. היום אתם יצאים בחודש האביב.

שמות יג:ד

*Nissan is also called Chodesh<sup>19</sup> Ha'aviv - the month of spring/new buds.<sup>20</sup>*

8. את חג המצות תשמר שבעת ימים תאכל מצות פאשר צויתך למועד חודש האביב כיבו יצאת ממצרים ולא יראו פני ריקם. וחג הקציר בכורי מעשיך אשר תזרע בשדה וחג האסף בצאת השנה באספך את מעשיך מן השדה.

שמות כג:טו-טז

*The chagim have agricultural names relating to the solar calendar and agricultural cycle. Pesach is in Chodesh Ha'aviv - when the new buds are out, Shavuot is Chag Hakatzir - the grain harvest, Succot is Chag HaAsif - gathering the produce for the winter. The latter is at the 'end' of the year - ie of the agricultural year. This agricultural focus roots the Jewish People in the Land of Israel!*

9. The dual significance of the festivals is connected to the dual yearly calendar of the Torah – a calendar of lunar months adjusted to the seasonal calendar of the solar, agricultural year.

It is no coincidence that the Torah introduces the calendar of lunar months as the first commandment given to Israel: "This month shall be for you the first month (rosh chodashim)" (Shemot 12:2). Only the moon renews itself from one month to the next; only the lunar cycle has a new beginning (molad), such that one may point to it and say, "this month." ....

The Egyptians, in contrast, lived according to a fixed and orderly solar calendar, adapted to the pace of life in Egypt and to the regular overflowing of the Nile – they had 12 months of 30 days and a 5-day celebration of the new year. The sun has no renewal; it has no 30-day cycle, neither precisely nor approximately, and its cycle measures only years. Similarly, nothing was renewed in Egypt; everything was fixed and cyclical.

Hence, the Exodus from Egypt had to begin with the lunar month as the basis for the calendar; only then could the revolution of renewal begin. ...

It is, in fact, no coincidence that the Egyptian calendar was entirely solar, as the sun was awarded the most important place in the Egyptian pagan pantheon. In contrast, a solely lunar calendar was maintained by desert tribes, who were not concerned with sowing, reaping, and gathering. Many of them also worshipped the moon (until the appearance of Islam). At the same time, most Arabian tribes, who were also engaged in agriculture, added leap months to the year. This continued until Muhammad prohibited the practice<sup>21</sup>, thereby creating a barrier between Judaism and Islam in the realm of the calendar.

Only the Babylonians and the Greeks (until the Roman conquest) on the one hand, and the Jewish nation on the other, maintained a dual lunar/solar calendar, but they did so for opposite reasons. The Babylonians and Greeks, who were able to carry out astronomical calculations with great accuracy, worshipped both the sun and the moon (especially the Babylonians). Bnei Yisrael, in contrast, learned from the Torah not to attribute any reign or power of will to either the sun or moon .... They were commanded to follow a calendar that reflects all these phenomena insofar as the One Creator uttered His word by which both sun and moon were formed and commanded that no natural force should be worshipped.

The Exodus from Egypt would not have been possible without Bnei Yisrael turning their backs on the Egyptian solar calendar and accepting the lunar calendar. On the other hand, they could not have entered Eretz Yisrael and engaged in agriculture in the land, without adapting the lunar months to the seasons of the solar year.

This explains the fundamental difference between the mitzva concerning the calendar as it was first given preceding the Exodus (Shemot 12:1) and the second iteration of the commandment, which addresses the future generations living in the Promised Land: "Remember this day that you left Egypt, from the house of slavery... This day you are leaving, in the month of spring" (Shemot 13:4-5). The first focuses exclusively on the lunar renewal, the revolutionary concept that is to separate Bnei Yisrael from the Egyptian solar calendar. The second identifies the month of the Exodus with the agricultural season of spring, the time that the produce of Eretz Yisrael ripens, thereby preparing the nation for entry into the land of the forefathers. This confluence must be maintained through the concentrated effort of establishing the dual calendar and maintaining it: "And you shall observe this statute at its appointed time, from year to year" (Shemot 13:10).

The "Festival of Sukkot" and the "Festival of the Ingathering" Rav Yoel Bin Nun<sup>22</sup>

19. There is no mention of 'Chag Ha'Aviv'. This connects Pesach more deeply to the events of Yetziat Mitzrayim and avoids the pagan overtones of a spring renewal festival. Also, there was little festivity at this point in the year when the food had almost run out and only the shoots of future crops were visible (the spring barley harvest was for animal food). As such, the Torah does not mention simcha at Pesach, only once at Shavuot and twice at Succot.

20. This expression is also used in Shemot 23:15, Shemot 34:18 and Devarim 16:1,

21. Quran 9:36-7: "Surely the reckoning of months, in the sight of Allah, is twelve months, laid down in Allah's decree on the day when He created the heavens and the earth; and out of these months four are sacred. That is the true ordainment. .... The intercalation (of sacred months) is an act of gross infidelity which causes the unbelievers to be led further astray. They declare a month to be lawful in one year and forbidden in another year in order that they may conform to the number of months that Allah has declared as sacred, and at the same time make lawful what Allah has forbidden. Their foul acts seem fair to them. Allah does not direct those who deny the Truth to the Right Way." Islam has no homeland and needs no connection to the agricultural cycle!

22. <https://www.etzion.org.il/en/holidays/sukkot/%E2%80%9Cfestival-sukkot%E2%80%9D-and-%E2%80%9Cfestival-ingathering>. R. Yoel Bin Nun's extensive treatment of the



## C] THE CALENDAR IN TANACH

- In Biblical times the calendars of most Mesopotamian cultures - particularly Babylon and Persia - were lunisolar.
- However, the Egyptian calendar was purely solar. The Egyptian year consisted of three seasons of 120 days each, plus an intercalary period of five epagomenal days<sup>23</sup> treated as outside of the year proper. Each season was divided into four months of 30 days.

10. עֲשֵׂה יָרַח לְמוֹעֲדִים שְׁמֵשׁ יָדַע מְבוֹאָו.

תהלים קד:יט

*This verse in Tehillim seems to point to a lunar calendar but with a solar addition.*<sup>24</sup>

11. לְמוֹעֲדִים - לַמָּנוֹת צוֹ זְמַנִּים וּרְגִלִים. שֵׁשׁ יָדַע מְבוֹאוֹ - אֲזַל יָרַח לֹא יָדַע מְבוֹאוֹ פְּעָמִים שָׂזָא בְּאֶרֶץ כְּנָעַן.

רש"י תהלים קד:יט

*Rashi quotes Chazal<sup>25</sup> who explain that the moon defines the calendar but it needs 'guidance' from the sun since sometimes it is 'long' or 'short'. Chazal connect this to the 'sod haibur' and the need to intercalate the year and maintain a lunisolar calendar.*

## C1] THE OLD NAMES .....

12. וַיְהִי בְּשִׁמוֹנִים שָׁנָה וָאַרְבַּע מֵאוֹת שָׁנָה לְצֵאת בְּנֵי־יִשְׂרָאֵל מֵאֶרֶץ־מִצְרַיִם בַּשָּׁנָה הַרְבִּיעִית בְּחֹדֶשׁ זֶה הוּא הַחֹדֶשׁ הַשֵּׁנִי לַמֶּלֶךְ שְׁלֹמֹה עַל־יִשְׂרָאֵל וַיְבֹן הַבַּיִת לָהּ.

מלכים א ו:א

*Melachim<sup>26</sup> refers to the second month as Ziv<sup>27</sup> .....*

13. וַיִּקְהָלוּ אֶל־הַמֶּלֶךְ שְׁלֹמֹה כָּל־אֵיֶשׁ יִשְׂרָאֵל בְּיָרַח הָאֵתָנִים בַּחֹג הוּא הַחֹדֶשׁ הַשְּׁבִיעִי.

מלכים א ח:ב

*..... to the seventh month as Eitanim<sup>28</sup> .....*

14. וּבַשָּׁנָה הָאֵחָת עָשְׂרָה בְּיָרַח בּוֹל הוּא הַחֹדֶשׁ הַשְּׁמִינִי כָּלָה הַבַּיִת לְכָל־דָּבָר וּלְכָל־מִשְׁפָּטוֹ מִשְׁפָּטָיו וַיְבַנְהוּ שִׁבְעַת שָׁנִים:

מלכים א ו:לח

*..... and to the eighth month as Bul<sup>29</sup>.*

- Chazal explain that these were the original names<sup>30</sup> for these months before the Babylonian exile. The currently names - Nissan, Iyar Sivan etc brought with them from Bavel<sup>31</sup>.

## C2] ..... AND THE NEW NAMES

15. בְּחֹדֶשׁ הָרִאשׁוֹן הוּא־חֹדֶשׁ נִסָּן בְּשָׁנַת שְׁתַּיִם עָשְׂרָה לַמֶּלֶךְ אַחְשֵׁרֹשׁ הַפִּיל פּוֹרֵה הוּא הַגּוֹרָל לַפְּנֵי הַמֶּן מִיּוֹם לְיוֹם וּמִחֹדֶשׁ לְחֹדֶשׁ שְׁנַיִם־עָשָׂר הוּא־חֹדֶשׁ אָדָר.

אסתר ג:ז

*Nissan<sup>32</sup> and Adar<sup>33</sup> are mentioned in Megilat Esther.*

Jewish calendar is set out in his book *Zachor VeShamor*. In that book he explains how all the chagim fit into the solar and lunar calendar. He also sets out his understanding of the period from Rosh Hashana to Shemini Atzeret as 'Reishit HaShana'. Rosh Hashana is the end of the lunar year, Yom Kippur (10 days later) is the end of the solar year, and Shemini Atzeret is the end of the agricultural year.

23. Because this calendric year was nearly a quarter of a day shorter than the solar year, the Egyptian calendar lost about one day every four years relative to the Gregorian calendar. Ptolemy III's Canopus Decree attempted to correct this through the introduction of a sixth epagomenal day every four years but the proposal was resisted by the Egyptian priests and people and abandoned until the later introduction of the Coptic calendar by Augustus.
24. Some academics suggest that the Kingdom of Israel observed a lunar calendar starting in Nissan and the Kingdom of Yehuda observed a lunar calendar starting in Tishrei. (Edwin Thiele, *The Mysterious Numbers of the Hebrew Kings*).
25. Pesikta Zutra Shemot 12:2.
26. See also Melachim 1 6:37.
27. Ziv means radiance, possibly because of the blossoms on the trees in this month.
28. Eitanim means 'strong ones', possibly because the ripe fruit are at the height (strength) of their goodness. Chazal (Rosh Hashana 11a) attribute the names Ziv (assuming this is in fact Nissan) and Eitanim to the births of Avraham, Yitzchak and Ya'akov - the radiant and strong ones - in these months.
29. Perhaps connected to the word for withering, since the leaves and plants begin to wither in that month.
30. These are also the Caananite or Phoenician names for these months.
31. The names of the months in the Babylonia calendar were: Nisannu, Ayyaru, Simannu, Du'uzu, Abu, Ululu, Tasritu, Arahsamna, Kisilimu, Tebetu, Sabatu, Addaru.
32. Nissan is also found in Nechemia 2:1.
33. Adar is mentioned frequently in Megilat Esther - 3:7, 13, 8:12, 9:1, 15, 17, 19, 21. See also Ezra 6:15.

16. וַיִּקְרְאוּ סִפְרֵי-הַמִּלֵּךְ בְּעֵת-הַהִיא בַחֲדָשׁ הַשְּׁלִישִׁי הוּא-חֲדָשׁ סִיּוֹן ...

אסתר ח:ט

17. וַתִּלְקַח אֶסְתֵּר אֶל-הַמֶּלֶךְ אֶחְשׂוּרוֹשׁ אֶל-בֵּית מַלְכוּתוֹ בַחֲדָשׁ הַעֲשִׂירִי הוּא-חֲדָשׁ טֵבֵת בְּשָׁנָת-שֶׁבַע לְמַלְכוּתוֹ.

אסתר ב:טו

*Sivan and Tevet are also found in Megilat Esther.*

18. דַּבְּרֵי נְחֻמְיָה בְּוַחֲכַלְיָה וַיְהִי בַחֲדָשׁ-כִּסְלוֹ כִּסְלוֹ שְׁנַת עֶשְׂרִים וָאֶנִּי הָיִיתִי בְּשׁוּשַׁן הַבִּירָה.

נחמיה א:א

19. וַתִּשְׁלַם הַחוּמָה בְּעֶשְׂרִים וַחֲמִשָּׁה לְאַלּוּל לַחֲמִשִּׁים וְשָׁנַיִם יוֹם: פ

נחמיה ו:טו

*Elul and Kislev<sup>34</sup> appear in Nechemia<sup>35</sup>.*

20. בַּיּוֹם עֶשְׂרִים וָאַרְבָּעָה לַעֲשִׂי-עֶשֶׂר חֲדָשׁ הוּא-חֲדָשׁ שֶׁבֶט בְּשָׁנָת שְׁתַּיִם לְדַרְיָוֶשׁ הִנֵּה דָבַר-ה' אֶל-זְכַרְיָה בֶן-בְּרַכְלָהוּ בֶרֶעֱדוּא הַנְּבִיא לֵאמֹר.

זכריה א:ז

*Shevat appears in Zecharia.<sup>36</sup>*

21. ... והא דלא אשכחן בלשון הכתוב שמות לימי השבוע כמו לשאר לשונות מפורש במדרש הטעם כדי שזכור תמיד יום השבת כשנמנה כל ימי השבוע. וכן אמר במכילתא זכור את יום השבת ר' יצחק אומר לא תהא מונה כדרך שאחרים מונים אלא תהא מונה לשם השבת! ומזה הטעם אין לנו שמות לחדשים אלא שאנו אומרים חודש ראשון וחודש שני לפי שחשבון החדשים הוא לזכור מלכים לדברי הכל כדכתיב החדש הזה לכם ראש חדשים כדאיתא לקמן (ז). והטעם כדי שזכור תמיד יזכור מלכים כדכתיב למימר קמן. וזהו שאמרו צ"ר (פי מ"ח) שמות החדשים עלו מצבל – פי שלא תמלא שמות ניסן אייר וחזיריו נזכרין בכתוב אלא אחר שירדו לצבל, ושמות פרסיים הם. ואפי"ה לעולם מייחס אותם לזכור מלכים צדקת הראשון הוא חדש ניסן (אסתר ג), וצשנים עשר חודש הוא חודש אדר (שם ט), וכן כולם, כדי להזכיר גלות צבל עם יציאת מלכים. וא"ת והרי מלינו שמות חדשים בתורה ירח האיתנים (מלכים א' ח) חודש זיו (שם ו) וי"ל דהנהו אינם שם עולם אלא שם תואר על מה שאירע, ירח האיתנים או דתקיף במלות או שגולדו בו איתני עולם. וחדש זיו על שם שגולדו בו זיותני עולם או דאית זיה זיותא לאילנא (לקמן יח), וזה טעם נכון וצדוק.

חזושי הריטב"א ראש השנה ג.

*The Ritva understands that there is indeed a mitzva to count the months from Nissan, to commemorate the Exodus, and that this was kept alongside the new Babylonian names for the months.*

### C3] WHY WERE THE NAMES OF THE MONTHS CHANGED?

22. וכבר הזכירו רבותינו זה הענין ואמרו 'שמות חדשים עלו עמנו מצבל' (ירושלמי ר"ה א:ב, צ"ר מח:ט) כי מתחלה לא היו להם שמות אללנו. והסבה בזה, כי מתחלה היה מניינם זכר לזכור מלכים. אבל כאשר עלינו מצבל ונתקיים מה שאמר הכתוב (ירמיה טז:ד-טו) וְלֹא-יִחַמְרָ עוֹל-מִי-הִ' אֲשֶׁר הֶעֱלָה חֵת-צִיָּי יִשְׂרָאֵל מֵאֶרֶץ מִצְרַיִם לָפָן חֲזַרְנוּ לִקְרַח הַחַדְשִׁים בְּשֵׁם שִׁקְרָאִים צָרָן צָבַל, להזכיר כי שם עמנו ומשם העלנו הש"י. כי אלה השמות ניסן אייר וזולתם שמות פרסיים, ולא ימלא רק צספרי נביאי צבל (זכריה א:ז, עזרא ו:טו, נחמיה א:א) ובמגילת אסתר (ג:ג). ולכן אמר הכתוב צְחָדָשׁ הָרִאשׁוֹן הוּא-חֲדָשׁ נִיסָן כִּמוֹ הַפֶּיֶל פּוֹר הוּא הַגּוֹלָל (סג). ועוד היום הגויים בארצות פרס ומדי כך הם קוראים אותם ניסן ותשרי וכלם כמונו. והנה נזכיר בחדשים הגאולה הַשְּׁנִית כִּאֲשֶׁר עָשִׂינוּ עַד הַנֵּה צְרָאשׁוּבָה.

רמב"ן שמות יב:ב

*The Ramban<sup>37</sup> writes that the Babylonian names for the months were adopted to commemorate the redemption from Bavel and return to Eretz Yisrael.*

34. Kislev also appears in Zecharia 7:1

35. Interestingly, the book of Nechemia simply names the month whereas the Esther also retains the numbering system alongside the new names. This may indicate a transitional phase as the new names were being introduced (see also Ritva below). The respective dating of the books of Nechemia and Esther (and later Apocryphal works) will clearly be relevant.

36. Many of these new names for the months also appear in Sefer Makabim 1 and 2 and other Apocryphal books. The following names do not appear in the Tanach or the Apocrypha – lyar, Tammuz (although see Yechezkel 8:14), Av, Tishrei, Cheshvan.

37. This reason (in slightly different forms) is also given by Rabbeinu Bachya and the Abarbanel in their commentaries there, as well as by R. Yosef Albo in Sefer Halkarim 3:16.

שאז בודאי לא יצליח העם להשאר בזהותו המיוחדת ושוב לא יהיה את מי לגאול, ולכן חמל ה' על עמו והוציאם מבבל והחזירם, כאופן זמני, לארץ ישראל, ובנה להם את בית הבחירה, והכל בכדי שישבו ויתחזקו ביסודות האמונה ויהיו מחוסנים לקראת תקופת הגלות המרה<sup>17</sup>. בכדי להדגיש ולהמחיש לעם שעדיין הם לא נגאלו וכי כעצם עדיין הם בגלות, לא העלו את הארון, מקור הקדושה בבית הראשון, ממקום שנגנו והשאירוהו במקומו, כי עדיין אין הגאולה שלמה<sup>18</sup>.

מחמת הכרתם זו, שעדיין לא הגיעה הגאולה השלמה, הנהיגו עולי בבל כמה וכמה ענינים שיהיו עושים כמו שהיו נוהגים בתקופת הגלות, להראות שבאמת תקופת גלות בבל עדיין נמשכת והבנין הנבנה אינו אלא ארעי ועתיד להחרב. מחמת זה כשעלו מבבל חזרו לקרוא את שמות החדשים בשם שנקראו בבבל, וכמו שכתב הרמב"ן: "להזכיר כי שם עמדנו ומשם העלנו הש"י", כלומר, כדי לזכור שבאמת לא נגאלו באופן

נראה שעולי בבל, שכנו את הבית השני, ידעו כי לא זה הבנין אשר יעמוד לעולמים, ואין חזרתם לארץ ישראל בתקופה זו הגאולה השלמה. דעתם היתה כי בנין הבית בתקופה הזאת לא נועד אלא להכין את העם לתקופת הגלות הארוכה. על פי שורת הדין היו הם צריכים לישאר בכבל עוד זמן רב, אלא שראתה ההשגחה שכבר לאחר שבעים שנה של גלות בבל כבר נטמע ונתערב רוב העם עם הגויים, וברור כשמש היה כי אם יתעכבו בני ישראל בגלות מאות ואלפי שנים

מושלם. ולכן גם לשונם נשאר בלשון הגלות – לשון ארמי, ולא חזרו לדבר בלשון הקודש, מה שהיה מראה כאילו הם נגאלו באופן סופי<sup>19</sup>. ונראה שזה גם הטעם מדוע נכתב התלמוד הירושלמי בארמית, דבשלמא הבבלי שנכתב בכבל נכתב בשפת המדינה, אבל הירושלמי שנכתב בארץ ישראל מדוע נכתב בארמית, אבל לדברינו נעשה זה מהטעם הנ"ל.

#### אמת ליעקב שמות יב"ב

R. Ya'akov Kaminetsky quotes the Ramban but actually gives an opposite explanation! The people adopted the Babylonian names for the months (and other similar 'galut' practices) to reinforce the reality that they were not actually living in a redemptive state, but were still in galut, even though they had returned to Eretz Yisrael.

24. ויעוין גם בספר בני יששכר במאמרי חדש ניסן מאמר א' אות ו' מ"ש לומר דודאי שמות החדשים נתקבלו ג"כ מסיני רק שהיו בבחינת תורה שבע"פ דהרי נזכרו השמות של חדשים בתרגום והתרגום נתקבל בסיני כידוע. אבל התרגום הוא תורה שבע"פ אבל לא ניתנו לכתוב בכתב עד שבאו לבבל ע"ש. ומה שמסמך לזה דברי הירושלמי שכרכו יחד ואמרו שמות החדשים ושמות המלאכים עלו עמהם מבבל ....

#### ש"ת ציץ אליעזר חלק ח סימן ח

The Bnei Yisaschar understands that the names of the months were known earlier but were considered Oral Torah which could not be recorded. Once the people returned from Bavel and began the process of crystallizing the Oral Torah, the names of the months were also adopted.<sup>38</sup>

## C4] THE CONSTELLATIONS

25. עֲשֶׂה־עֵשׂ כְּסִיל וְכִימָה וְחֲדָרֵי תַמָּן:

איוב ט"ט

Iyov describes God as the maker of the constellations - Ash (Ursa Major), Kesil (Orion), Chima (the Pleiades) and the 'Constellations of the South'.

38. R. Yerucham Fishel Perlow (Sefer Mitzvot of Rasag, end of Aseh 56) appears to say that we should not read too much into this practice; it was borne merely out of convenience that the Jews were in Babylonia, so they used Babylonian names, and it was just easier to keep those names even after leaving. In fact, historically speaking much of the Jewish people remained in Babylonia anyway, and it was probably easier if everyone used the same dating system. He also rejects the idea that there is a specific mitzva to use the Jewish/Babylonian names for the months, as there had been to use their numbering in order to connect the months to Yetziat Mitzrayim.



**D] THE CALENDAR IN SECOND TEMPLE TIMES**

26. וגם ירח ירח עתות שבות, ממשלת קץ ואות עולם. בם מועד וזמני חוק, וחפץ עשיו בתקופתו. חדש בחדשו הוא מתחדש, מה נורא בהשתנותו.

בן סירה מגי'ח

6. It is the moon that marks the changing seasons, governing the times, their lasting sign. 7. By it we know the sacred seasons and pilgrimage feasts, a light which wanes in its course. 8. The new moon like its name renews itself; how wondrous it is when it changes.

*The book of Ben Sira (2nd century BCE) appears to indicate that the Jewish calendar should be lunar.*

- The book of Chanoch (Enoch) Chapter 72-82 (late 3C BCE) describes the movement of the sun and moon in detail. It indicates that the calendar should be solar and describes months of 30 days with four months of 31 days, making a solar year of 364 days.
- It is not clear however if the book is recording actual 2nd Temple practice or a theoretical system<sup>39</sup>.

27. 23. And on the new moon of the first month, and on the new moon of the fourth month, and on the new moon of the seventh month, and on the new moon of the tenth month are the days of remembrance, and the days of the seasons in the four divisions of the year. These are written and ordained as a testimony for ever. 24. And Noah ordained them for himself as feasts for the generations for ever, so that they have become thereby a memorial unto him. 25. And on the new moon of the first month he was bidden to make for himself an ark, and on that (day) the earth became dry and he opened (the ark) and saw the earth. 26. And on the new moon of the fourth month the mouths of the depths of the abysses beneath were closed. And on the new moon of the seventh month all the mouths of the abysses of the earth were opened, and the waters began to descend into them. 27. And on the new moon of the tenth month the tops of the mountains were seen, and Noah was glad. 28. And on this account he ordained them for himself as feasts for a memorial for ever, and thus are they ordained. 29. And they placed them on the heavenly tables, each had thirteen weeks; from one to another (passed) their memorial, from the first to the second, and from the second to the third, and from the third to the fourth. 30. And all the days of the commandment will be fifty two weeks of days, and (these will make) the entire year complete. 31. Thus it is engraven and ordained on the heavenly tables. And there is no neglecting (this commandment) for a single-year or from year to year. 32. And command the children of Israel that they observe the years according to this reckoning - three hundred and sixty-four days, and (these) will constitute a complete year, and they will not disturb its time from its days and from its feasts; for everything will fall out in them according to their testimony, and they will not leave out any day nor disturb any feasts. 33. But if they do neglect and do not observe them according to His commandment, then they will disturb all their seasons, and the years will be dislodged from this (order), and they will disturb the seasons and the years will be dislodged] and they will neglect their ordinances. 34. And all the children of Israel will forget, and will not find the path of the years, and will forget the new moons, and seasons, and sabbaths, and they will go wrong as to all the order of the years. 35. For I know and from henceforth shall I declare it unto you, and it is not of my own devising; for the book (lies) written before me, and on the heavenly tables the division of days is ordained, lest they forget the feasts of the covenant and walk according to the feasts of the Gentiles after their error and after their ignorance. 36. For there will be those who will assuredly make observations of the moon - now (it) disturbs the seasons and comes in from year to year ten days too soon. 37. For this reason the years will come upon them when they will disturb (the order), and make an abominable (day) the day of testimony, and an unclean day a feast day, and they will confound all the days, the holy with the unclean, and the unclean day with the holy; for they will go wrong as to the months and sabbaths and feasts and jubilees. 38. For this reason I command and testify to you that you may testify to them; for after thy death thy children will disturb (them), so that they will not make the year three hundred and sixty-four days only, and for this reason they will go wrong as to the new moons and seasons and sabbaths and festivals, and they will eat all kinds of blood with all kinds of flesh.

**Book of Jubilees 6:23-38**

*The Book of Jubilees (second century BCE) roots the Jewish calendar ('Luach haShamayim') in the story of Noah and the flood and clearly structures it according to the solar cycle - 52 exact weeks making 364 days, divided into 4 seasons of 13 weeks each. It warns stridently against using the lunar calendar<sup>40</sup>!*

- The Book of Jubilees however may reflect the position of the Sadducees and other 2nd Temple breakaway groups.<sup>41</sup> As such, part of the sectarian battle was the lunar or solar nature of the calendar, which in turn determines the focus on the Exodus and Matan Torah.
- The tone of this piece suggest a strong polemic against the people who were using a lunar (or lunisolar) calendar.

39. The book of Chanoch was preserved only in Ethiopic, although Aramaic fragments were discovered with the Dead Sea Scrolls. The book contains many statements that were not accepted in halachic Judaism. Enoch 2 (or Slavonic Enoch) also focuses on a predominantly solar calendar.

40. Sefer Yovlim changes the verse in Genesis 1 to read that ONLY the sun is called the *or hagadol*!!

41. For instance it places Shavuot on 15th Sivan and ensures that it always falls on a Sunday. This was one of the great calendar battles of the 2nd Temple!

28. ובחדש השני בשבועה ועשרים יום לחדש יבשה הארץ. (רש"י – וירידתן בחדש השני צ"ז – חלו אחד עשר ימים שכחמה יתירה על הלזכה, שמשפט דור המזול שנה תמימה היה).

בראשית ח"ד

*Chazal also point out that the flood was a full solar year of 365 years, but work that into the lunar calendar<sup>42</sup>!*

- The Dead Sea Scrolls sect also largely promoted the solar calendar<sup>43</sup>, based on the passages from Enoch and Jubilees.
- The destruction of the Temple in 70CE saw the end of most sectarian groups and there are almost no further references to solar calendars within Jewish practice. From the writings of Philo it is clear that the Jewish calendar was lunar.

**E] THE EMPIRICAL CALENDAR IN TEMPLE AND MISHNAIC TIMES**

- The Jewish calendar continued to work as an empirical calendar until it was fixed in the Talmudic period (see Part 2).
- The empirical nature of the calendar rested on two principal platforms - (i) the declaration of the new moon; and (ii) the decision to add the extra month in the leap year.

**E1] KIDDUSH HACHODESH**

29. ה אין ראית הירח מסורה לכל אדם כמו שבת בראשית שכל אחד מונה ששה ושלבת בשביעי. אלא לבית דין הדבר מסור עד שיקדשוהו בית דין ויקבעו אותו היום ראש חדש הוא שיהיה ראש חדש. שנאמר (שמות יב ב) החדש הזה לכם - עדות זו תהיה מסורה לכם.

ו בית דין מחשבין בחשבונות כדרך שמחשבים האיטלקים שידעו מקומות הכוכבים ומהלכם וחוקרים ומדקדקים עד שידעו אם אפשר שיגאח הירח בזמנו שהוא ליל שלשים או אי אפשר. אם ידעו שאפשר שיגאח יושבין ומצפין לעדים כל היום בלו שהוא יום שלשים. אם באו עדים ודקרום כהלכה ונאמרו דבריהם מקדשין אותו. ואם לא נראה ולא באו עדים משלימין שלשים ויהיה חדש מעבר. ואם ידעו בחשבון שאי אפשר שיגאח אין יושבים יום שלשים ואין מצפין לעדים. ואם באו עדים יודעין בודאי שהו עדי שקר או שגאחית להם דמות לבנה מן העבים ואינה הלבנה הודאית.

ז מצות עשה מן התורה על בית דין שיחשבו וידעו אם נראה הירח או לא נראה. ושידעו את העדים עד שיקדשו את החדש. וישלחו וידעו שאר העם באי זה יום הוא ראש חדש כדי שידעו באי זה יום הן המועדות. שנאמר (ויקרא כג) אשר תקראו אתם מקראי קדש ונאמר (שמות יג) ושמרת את החקקה הזאת למועדה.

ח אין מחשבין וקובעין חדשים ומעברין שנים אלא בארץ ישראל שנאמר (ישעיה ב) כי מציון תצא תורה ודבר ה' מירושלים ...

רמב"ם הלכות קידוש החודש פרק א

30. ח ואחר כך אחר שתתקיים העדות ראש בית דין אומר 'מקדש' וכל העם עונים אחריו 'מקדש מקדש'. ואין מקדשין את החדש אלא בשלשה. ואין מחשבין אלא בשלשה. ואין מקדשין אלא חדש שנראה בזמנו. ואין מקדשין אלא ביום ואם קדשוהו בלילה אינו מקדש. ....

רמב"ם הלכות קידוש החודש פרק ב

**E2] IBUR HASHANA**

31. א שנה מעברת היא שנה שמוסיפין בה חדש. ואין מוסיפין לעולם אלא אדר ועושין אותה שנה שני אדרין אדר ראשון ואדר שני. ומפני מה מוסיפין חדש זה? מפני זמן האביב כדי שיהא הפסח באותו זמן שנאמר (דברים טו) שמוך את חדש האביב - שיהיה חדש זה בזמן האביב. ולולא הוספת החדש הזה הפסח בא פעמים בימות החמה ופעמים בימות הגשמים.

ב על שלשה סימנין מעברין את השנה. על התקופה ועל האביב ועל פרות האילן. כיצד? בית דין מחשבין ויודעין אם תהיה תקופת ניסן בששה עשר בניסן או אחר זמן זה מעברין אותה השנה. ויעשו אותו ניסן אדר שני כדי שיהיה הפסח בזמן האביב. ועל סימן זה סומכין ומעברין ואין חוששין לסימן אחר.

ג וכן אם ראו בית דין שעדין לא הגיע האביב אלא עדין אפל הוא. ולא צמחו פרות האילן שדרךן לצמח בזמן הפסח. סומכין על שני סימנין אלו ומעברין את השנה. ואף על פי שהתקופה קדם לששה עשר בניסן הרי הן מעברין. כדי שיהיה האביב מצוי להקריב מפני עמר התנופה בששה עשר בניסן. וכדי שיהיו הפרות צומחין כדרך כל זמן האביב.

רמב"ם הלכות קידוש החודש פרק ג

- In Part 2 we will be'H look at the final fixing of the Jewish calendar in the Talmudic period. We will look at the interface of the Jewish and secular calendars and whether there is a halachic problem with using the secular calendar. We will also examine the perplexing issue of beginning *veten tal u'mataron* Dec 4th according to the secular calendar.
- In Part 3 we will be'H address the origin of the parasha readings and the specific challenges faced this year (5782).

42. Some Qumran texts alter Br 8:14 to read that the rain ended on the 17th. The Septuagint reads that the rain began on the 27th! Both of these changes promote the solar calendar!  
 43. Note their self-designation as the 'Children of Light'.  
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