

DARCHAI NOAM - דרכי נועם

“Its ways are ways of pleasantness”

(Mishlei 3:17)

Parashat Bo
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How can the Parasha help us grow this week?

Parashat Bo – Lessons from the Jewish Calendar

In this week's Parsha of Bo, Moshe receives the mitzvah of Rosh Chodesh. This mitzvah is the foundation of the Jewish calendar, and it is the first mitzvah that was given to the whole nation.

In the Rambam's introduction to the laws of the Jewish calendar he says that any school child can understand how the calendar works. But in reality many people find the Jewish calendar very confusing. (School children in the time of the Rambam must have been quite intelligent! Or we must have fallen quite low since those times!)

The following is a very brief summary of how the Jewish calendar works.¹ The Jewish calendar is unique in that it is based on both the sun and the moon. The months follow the moon. That is why we always have a new moon at the beginning of the Jewish month and a full moon in the middle of the month. But the festivals follow the seasons which are regulated by the sun. That is why Pesach is always in the spring (in the Northern Hemisphere) and Tishrei is always in the autumn. In contrast, the secular calendar is based only on the sun. That is why a new moon can occur at any time of the month. The Muslim calendar is based solely on the moon. That is why Muslim festivals like Ramadan can occur at any time of the year.

The cycle of the moon is caused by the moon's rotation around the earth which takes approximately 29 and a half days. However, a month must be a complete number of days. Therefore, Jewish months generally alternate between 29 and 30 days. This ensures that the new moon will always appear at the beginning of the month. A 12-month lunar year is thus 354 days long. However, a solar year is 365 days long (i.e., 11 days longer than a lunar year). This means that a particular date in the lunar calendar will be 11 days earlier each year. For example, if Rosh Chodesh Nissan fell on 12 March one year, it would fall on 1 March in the following year. Rosh Chodesh Nissan would get earlier and earlier each year. However, the Torah requires Pesach to be celebrated in spring. To solve this issue, and to prevent Pesach from falling too early, we add an extra month to the calendar approximately once every three years. The extra month is called Adar Sheni and it ensures that Pesach always occurs in the spring.²

Rosh Chodesh, the beginning of the new month, can only be proclaimed by the Bet Din after receiving testimony from two witnesses that have actually seen the new moon. Historically, witnesses would travel to Jerusalem each month to provide their testimony. After the destruction of the second Bet Hamikdash, there was no longer a qualified Bet Din that could receive testimony and declare the new months. To ensure the continuity of Rosh Chodesh and the festivals, about 1600 years ago the court of Hillel II³ calculated the calendar for succeeding centuries based on mathematical calculations. We are still using the calendar calculated by Hillel II to this very day. And we will continue to do so until the third Bet Hamikdash is built.

When the new moon first appears in the sky, that night (and the next day) is Rosh Chodesh, the first day of the new month. If the new moon appears on the 30th night (i.e., the night before the 30th day) then the old month is 29 days long. If the new moon appears on the 31st night, then the old month is 30 days long.

¹ Based loosely on the description in the footnote to Chapter 12 of Sefer Shmot in the Artscroll Stone edition Chumash. If you find this description confusing, you could probably skip to the top of the next page. But if you can make the effort to understand, I believe it is worth it.

² There are other factors that are also taken into account when deciding whether or not to add Adar Sheni in a particular year, but they are beyond the scope of this article.

³ A descendent of the more well-known Hillel the Elder.

At the time when witnesses would arrive to give testimony about the new moon, the Sages had remarkably accurate mathematical models which could predict precisely when the new moon was due to appear each month. However, the Beit Din decided what day was Rosh Chodesh based on witnesses who actually saw the new moon and came to Jerusalem to testify. So why then did the Sages need their mathematical models? There are at least 3 reasons.

Firstly, in our time we do not have a Beit Din that is qualified to receive the testimony of witnesses. Therefore, as mentioned above, we are forced to rely on the fixed calendar that was calculated by Hillel II about 1600 years ago based on those mathematical models.

Secondly, the Beit Din would use their mathematical models to test the witnesses by asking them various questions. Using the mathematical models, the Beit Din could calculate at what time the new moon would appear, where it would be located in the sky and which way the crescent would be facing. By asking each witness some basic questions about the moon's appearance and location, the Beit Din could establish the veracity of the witness.

Thirdly, as the Rambam explains, the mathematical models were used to ensure that the calendar remained in sync with the actual phase of the moon. As explained above, the phase of the moon is slightly more than 29.5 days long. A calendar month can only be 29 or 30 days long. Slightly more than half of all months should have 30 days and slightly less than half should have 29 days (thus averaging out to slightly more than 29.5 days per month i.e., the length of the phase of the moon).

If valid witnesses saw the new moon on the 30th night and they testified in time, the Beit Din would declare that day to be Rosh Chodesh and the old month would be a short month of 29 days. If witnesses did not turn up in a particular month, then that month would automatically be a long month of 30 days. If witnesses did not turn up for a number of consecutive months (e.g., if the moon was not visible due to cloud coverage) then each of those months would by default be 30 days long and after a short while the calendar would no longer be synchronised with the phase of the moon. In order to avoid this outcome and to keep the calendar in sync with the moon, the Beit Din would sometimes designate short months of 29 days even if witnesses did not turn up. This was done if the new moon was not sighted for a number of months in a row. These short months were inserted based on calculations using the mathematical models.

Given the accuracy of the mathematical models, it seems that we can pose the reverse question. Instead of asking why the Beit Din needed the mathematical models, we could ask - why was the Beit Din required to rely on witnesses at all? The journey to Jerusalem to testify could be dangerous and witnesses were even given permission to desecrate Shabbat in order to testify. Why couldn't the witnesses just stay at home and leave the Beit Din to simply rely on their mathematical models to determine when Rosh Chodesh should be?

We can suggest as follows. The process of sanctifying the new moon allows the Jewish people to determine the dates of Rosh Chodesh and therefore the dates of the festivals. Hashem wants us to be his active partners in fixing the dates of the festivals and bringing kedusha into the world. When the witnesses embarked on the journey to Jerusalem to testify, they were actively participating in this partnership. Even a simple Jew could be a witness and play a part in this sanctification. What an awesome responsibility and privilege!

Let's try something this week:

1. Remember that Hashem wants us all to be his active partners in bringing kedusha to the world. These days we can't do that through testifying that we saw a new moon and sanctifying the new month. However, we can find many other ways to add holiness to the world.
2. We can learn about how the Jewish calendar works. If there are mitzvot that we are unable to perform, we can still get reward for the mitzvah by learning about it.
3. When dealing with other Jews, remember that they are also important enough to be Hashem's partner in bringing kedusha to the world. For that reason alone they deserve respect.