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Frank W. Nelte

## **THE ORIGIN OF THE JEWISH CALENDAR**

Since it is not spelled out in the Bible, exactly where DOES the present Jewish calendar come from?

The calculations employed in the Jewish calendar can be traced back via Moses Maimonides to rabbis Samuel and Hillel II.

Here is some historical information.

THE JEWISH ENCYCLOPEDIA states the following on page 500, Volume 3, article "CALENDAR, HISTORY OF":

"One of the important figures in the history of the calendar was Samuel (born about 165, died about 250), surnamed "Yarhinai" because of his familiarity with the moon. He was an astronomer ... he was director of a school in Nehardea (Babylonia), and while there arranged a calendar of the feasts in order that his fellow-countrymen might be independent of Judea. He also calculated the calendar for sixty years. HIS CALCULATIONS GREATLY INFLUENCED THE SUBSEQUENT CALENDAR OF HILLEL. According to Bartolocci his tables are preserved in the Vatican. ... Mar Samuel reckoned the solar year at 365 days and 6 hours, and Rab Adda (born 183) at 365 days, 5 hours, 55 minutes, and 25 seconds and 25/57th of a second."

From the testimony of rabbi Hai Gaon [Gaon means "Illustrious" and it is a title of honour], who lived in the 11th century, it is known that the calendar can be traced back to these two men ... Samuel and Hillel II. However, there is NO RECORD at all that the leap year sequence of 3, 6, 8, 11, 14, 17, 19 (as used today and supposedly fixed by Hillel II) was a part of the canon until about 1200 A.D., at the time of the Jewish scholar Moses Maimonides.

ENCYCLOPEDIA JUDAICA (Vol. 5, page 48) mentions that until the 10th century variations of the "ordo intercalationis" in the form of the sequences (1,4,6,9,12,15,17) and (3,5,8,11,14,16,19) and (2,5,7,10,13,16,18) existed alongside the sequence (3,6,8,11,14,17,19). These other sequences obviously also had different starting molads, going back to 3762 or 3761 or 3760 or 3759 B.C.. As we today clearly know, NONE OF THOSE starting dates are close to the time of the creation of Adam.

Scholars know this information about the calendar from a very detailed and authoritative manuscript called "Al-Biruni, Athar-ul-Bakiya", which was written around 1000 A.D., and which was translated into English by Dr. C. E. Sachau under the title "The Chronology of Ancient Nations, or Vestiges of the Past", and published for the Oriental Translation Fund in London in 1879. It has a detailed discussion of the Hebrew calendar. But it TOTALLY OMITTS any reference to a fixed sequence of leap years.

When explaining the calculation of the calendar, it seems inconceivable that the author would have omitted any reference to a fixed cycle of leap years if such a fixed cycle was already a part of the calendar. However, Moses Maimonides, who lived at 1200 A.D., and who also wrote very extensively about the calculations of the calendar, makes clear references to this cycle of 3, 6, 8, 11, 14, 17, 19 in his work "Kiddusch hachodesh", which was translated into Latin as early as 1683 by L. de Compiegne de Veil and then published in London. Therefore it is quite understandable that Sachau felt that this sequence of 3, 6, 8, 11, 14, 17, 19 did not really become fully accepted until the time of Maimonides.

So then where does the idea of a 19-year cycle come from?

Around 432 B.C. the Athenian astronomer Meton found that 235 lunations are very nearly equal to 19 solar years. Thus 19-year cycles are normally referred to as metonic cycles. The Jewish calendar is clearly based on these metonic cycles. The Greeks considered this to be such an important discovery, that this information was engraved in letters of gold on a marble tablet and placed in one of the temples in Athens. But Meton's calculations for the length of the solar year were still out by about 25 minutes or so. Meton's discovery was shortly after the time when Ezra and Nehemiah were in Jerusalem.

So did the Jews adopt Meton's cycle?

Yes and no! Yes, they DID adopt Meton's 19-year cycle. But NO, they did NOT adopt Meton's calculations. Around 146 B.C. another Greek astronomer, named Hipparchus, made some more accurate calculations of the synodic (lunar) months. Hipparchus calculated the 235 lunations at 6939 days plus 16 hours plus 33 minutes plus 3,3 seconds. This is the EXACT figure which is employed in the calculation of the Jewish calendar!

Thus it seems quite clear that the calculations which Hillel II made public in the 350's A.D. are based EXACTLY on the calculations of Hipparchus (via Mar Samuel). This should become quite clear when we realize that 235 lunations are in fact equal to 6939 days plus 16 hours plus 30 minutes plus 57,97 seconds. The Jewish (really Greek) calculation for 235 lunations is in fact 2 minutes and 5,3 seconds too long, the exact same error as embodied in the calculations of Hipparchus.

Clearly the Jews themselves did NOT devise their own calculations. They simply copied the most accurate calculations that were known to anybody at that time. Similarly, the Jews did NOT get their calculations from God! It is inconceivable that God would have given them a calculation that contains an error of over 2 minutes for every 19-year period. It would mean that we today are able to determine more accurate data than God supposedly gave to Israel; and that cannot be.

It is well-known amongst teachers that the easiest way to detect that a pupil was copying answers from someone else during an examination, is when the WRONG answers are copied verbatim. That always stands out quite glaringly. Hipparchus' calculations were really quite good; they were the best available at that time; and so it makes perfect sense that the Jews would make use of those calculations. There is nothing wrong with that at all! But that is not the same as saying that the Jewish calculations were "INSPIRED"! And Hillel II had no way of knowing that those calculations still contained a small error.

Now, as I have already mentioned, this error of 2 minutes and 5,3 seconds per 19 years does not really cause any problems. The error will only amount to one full day in 13101 years, hardly something to worry about. But it is an error!

Let's now examine some statements by Jewish authors.

### THE WITNESS OF JEWISH AUTHORITIES

In the book "Studies in Hebrew Astronomy and Mathematics" Shlomo Sternberg wrote in the introduction:

"The second Hillel and his court enacted the fixed calendar which is still enforced today. THE ONLY PROBLEM OF A LEGAL NATURE which we have in regard to this calendar, is a theoretical one, namely, ON WHAT BASIS WAS THE ENACTMENT OF THIS CALENDAR VALID? It is a generally accepted legal principle {Comment: that is not the same as a binding law!} that the central court, being representative of the people {Comment: democracy or leadership from God?}, had the right to determine

the years, months, and therefore the festivals. THE QUESTION IS WHETHER THE COURT IS EMPOWERED TO DETERMINE THE MONTHS AND THE YEARS FAR INTO THE FUTURE OR NOT. According to the opinion of Maimonides, the legal basis of the court's power is not so much judicial or legislative (NOTE!!) as it is that the court acts as the instrument representing the community as a whole {Comment: does that sound like making something SACRED?}. AS SUCH, IT IS NOT EMPOWERED TO ENACT CALENDRIAL DECISIONS INTO THE FUTURE." (pages XXV-XXVI)

Do you grasp what this Jewish author is saying? Do you understand that he is saying that Hillel II did NOT really have the power to make his calendar binding on future generations? The next sentence reads:

"Our current calendar is based LEGALLY on the fact that all Jewish residents of Israel, IN FACT, follow this calendar in practice."

He is saying: it is legal NOT because Hillel II decided on it, but because we, the residents of Israel, CHOOSE to accept it!

Sternberg continues to say:

"As we have mentioned already, the nineteen-year cycle goes all the way back to the old Chaldean (i.e. Babylonian!) tables, at the least."

On page XXVII Sternberg writes:

"The nineteen-year cycle with its selection of thirteen month and twelve month years is found in ancient Babylonian tablets dating to the fifth century before the common era (i.e. 400's B.C.), as we have already mentioned. To the best of my knowledge, this cycle is not mentioned explicitly in the Talmud. However, it is related to the figure of 29 days 12 hours and 793 parts (i.e. 44 minutes and 3,3 seconds) for the mean motion of the moon, and this figure is mentioned in the Talmud (cf. Tractate Rosh Hashana 25a)."

This figure which is mentioned in the Talmud is the exact calculation Hipparchus came up with in 146 B.C.. That was well before the reference in the Talmud was written. Hipparchus' calculations represented the most accurate calculations available to anyone. Therefore it is logical that anyone who was trained in astronomy would make use of those figures.

So Sternberg confirms the facts we have seen: that the knowledge of the metonic cycles goes back to the fifth century B.C., but that the calculations used with such cycles go back to the second century B.C..

Regarding postponement rule #1 Sternberg mentions that The Babylonian Talmud mentions that:

"... the calendar is to be adjusted so as to avoid Yom Kippur falling on Friday or Sunday BECAUSE OF THE INCONVENIENCE THIS MIGHT CAUSE. This means that Rosh Hashana must not fall on Wednesday or Friday. The Jerusalem Talmud also mentions that the calendar must be adjusted so that the seventh day of Succoth does not fall on the Sabbath. Thus Rosh Hashana may not fall on Sunday. (The implication from the Babylonian Talmud Rosh Hashana 20a is that the Babylonian Talmud did not have any such rule.) R. Nissim, in his commentary to Alfasi, Succah noticed this discrepancy and observed that "WHOEVER FORMULATED OUR FIXED CALENDAR CHOSE TO FOLLOW THE JERUSALEM RATHER THAN THE BABYLONIAN TALMUD IN THIS MATTER". In any event, the source we have in the Talmud for rule 1 indicates A UTILITARIAN REASON FOR THE RULE." (pages XXVII - XXVIII)

Notice several things here: first of all, the different Talmuds contain contradictory information. For that

matter, within the same Talmud you commonly find contradictory opinions. Next, the comment from R. Nissim acknowledges that whoever formulated the fixed calendar (perhaps Hillel II) did so based on consulting the existing Talmuds!

Understand the significance of this admission!

There are people in the Church of God who want to claim DIVINE INSPIRATION for Hillel II and his decision, out of desperation to have some authority to fall back on. At the same time there are Jewish authors who freely admit that Hillel's decision was based purely on what was written in SOME TALMUD OR OTHER! They equally freely admit that he didn't really have any authority to make decisions which would be binding on future generations.

The same people who want to claim a "sacred" status for Hillel's decision will at other times readily and quickly TOTALLY REJECT the contradictory and confusing claims and statements which are found in the Talmud. So understand this:

IF you want to claim divine inspiration and a "sacred" status for the decision which Hillel II made (and which was based on the Talmuds he had access to), THEN you should also extend that same status to THE REST OF THE TALMUD!

By the way, Maimonides realized that "inconvenience" might not seem like much of a valid reason for postponing "Rosh Hashana". And so Maimonides tried to justify postponement rule #1 on astronomical grounds. But that justification is clearly flawed!

Sternberg writes:

"Maimonides, in Chapter VII, H.7 gives a different explanation: "Why does this method of calculation eliminate days 1, 4, and 6 from being declared New Moon Days (of Tishri)? Because this method reckons with the conjunction of the moon and the sun based not on their true position but only on their mean position as we have pointed out above. Therefore, days of declaration are made to alternate with days of postponement in order to hit upon the day of true conjunction." (page XXVIII)

This is clearly nothing more than an attempt to justify the postponement away from "inconvenient" days. It is on the same level as Maimonides' reasoning about the new moon before the creation of Adam; it is without foundation. The point is this: the calculation of the molads is in fact so accurate that it is only out by 1 day over a period of 13100 years, which represent over 162000 new moons. The error is in fact barely over one half of a second per lunar cycle. But it is only the mean (or average) position of the molad which is calculated. However, when applied to specific new moon conjunctions, then that error may be up to 15 hours. The location for which the molad is calculated is unknown. It is assumed to be Jerusalem, but that cannot really be proved. As Sternberg writes:

"The fixed calendar gives a starting epoch for molad or mean conjunction. For purposes of computing the calendar, it doesn't matter to us where this time is based. HISTORICAL EVIDENCE SEEMS TO INDICATE THAT THE TIME IS SET IN BABYLONIA AND NOT AT JERUSALEM. In any event, it comes as no surprise that the mean time of conjunction given by Maimonides in the astronomical section of his 'Laws of Sanctification of the New Moon' differs by over an hour from the 'molad' as computed from the calendrical rules." (page XXIX)

The facts make clear that Maimonides' justification for postponing from Days 1, 4, and 6 has no basis in astronomy. His argument is artificial. That is why other authors have not appealed to Maimonides' explanation; instead they freely acknowledge that the real reason behind the postponement rules is to avoid inconvenient days of the week.

In the Talmud Bezah 4b we find the reason why Jews are to keep TWO days when God says we are to keep ONE day, even after an accurately calculated calendar is available. The Talmud says:

“And now that we know the determination of the months, why do we observe TWO DAYS? Because they sent word from there [Israel]: ‘BE CAREFUL TO RETAIN THE CUSTOM OF YOUR FOREFATHERS; at times the government might issue a decree and difficulties might ensue’.”

Again, what this highlights is the importance placed on “the traditions of the fathers”, which Jesus Christ soundly condemned!

The motivation for pronouncing the Jewish calendar in its present form as binding on the Church of God clearly needs to be examined. Is the decision based on a careful examination of the calendar, its origin, strong points and weak points, or is it a desire to retain the status quo? Clearly, people who vigorously defend the use of the present Jewish calendar are not willing to acknowledge the very real problems with that calendar.

Also, note again the contrast between the Jewish scholar quoted above, who said: “WHOEVER formulated OUR fixed calendar ...”, implying that the answer to this question is not totally clear-cut, and the zealous people in the Church of God who confer UNQUALIFIED DIVINE INSPIRATION on every facet of the Jewish calendar! Here are people in the Church of God who without question attribute far more divine inspiration on the Jewish calendar than the Jewish authorities themselves are prepared to claim.

HOWEVER, it is the Jewish authorities who happen to be fluent in Hebrew and who are familiar with all the Jewish writings about the calendar, with all of the Jewish authors who have written about the calendar during the past 1800 years! By contrast, we in the Church of God battle just to correctly identify a few Hebrew words with the help of a Strong’s Concordance and we are mostly totally unaware of what Jewish scholars through the centuries have written about the Hebrew calendar, but we will without hesitation pronounce the Hebrew calendar “sacred” and “inspired”.

If the Jewish authors, who are proud of their calendar, and who have read what Maimonides and the other Jewish scholars of the past centuries have to say about the Jewish calendar, feel that they should make allowance for a degree of uncertainty in deciding exactly who it was that formulated the fixed calendar, shouldn’t we, in our condition of a certain amount of ignorance (relatively speaking), proceed a little cautiously before claiming “divinely inspired status” for their calendar?

The 19-year cycle goes back to the fifth century B.C. to the Greeks (and perhaps even to the Babylonians?). The calculations of the Hebrew calendar are clearly based on the calculations of Hipparchus, a Greek astronomer. The calculations were not somehow revealed to the Jews under inspiration. The starting molad in 3761 B.C. is totally mythical and has no bearing on what actually DID occur in 3761 B.C.. The postponement rules have no biblical justification of any kind; and in view of all the other days observed by the Jews they are hypocritical. Hillel II did not have the right to make a decision that would be binding on future generations. The decision Hillel II DID make was based on what others before him had written in the Talmud. This makes clear that Hillel’s decision was guided by “traditions”. Attempting to bind the fixed calendar on future generations does not take the unavoidable shift of 1 day for every 216,3 years into account.

There is no evidence of any kind that the present Jewish calendar, with its postponements rules and its fixed sequence of leap years, was used before the time of Hillel II in the 350’s A.D.. Specifically, it is well documented that during the first century A.D. the Jewish authorities in Jerusalem pronounced the start of every new month based on the reports of witnesses who testified that they had seen the new crescent.

There is nothing sacred and nothing “inspired” about the present Jewish calendar.

Frank W. Nelte