

Yehuda Leo Levi, Comments on Gidon Rothstein, "What does *Halakhah* Mean By Sunset?" (*B.D.D.* 14 [March 2004] pp. 5–24)

This extensively researched article deals with the end of halakhic day, and specifically with the dispute of Rabbeinu Tam, who places the halakhic "sunset" about an hour after the observed sunset, and the classical approach identified with the *geonim* of Babylon. There are major problems reconciling R. Tam's position with astronomical facts, and this problem is exacerbated by the fact that it was universally accepted by all subsequent generations of medieval authorities, with no objection extant for a period of about four centuries. One major difficulty with R. Tam's position is due to the difficulty of defining the later "sunset" precisely, i.e. as an astronomical event that takes place now and did not occur a minute ago. This makes the event indeterminate and presumably unfit as a halakhic determinant.

Among later authorities, many efforts were made to defend R. Tam's position.¹ One of these, R. David Shapira,² attempts to show that R. Tam did not dispute the opinion of the *geonim*, but simply proposed an additional astronomical event, termed *sheki'ath hachamah*, with relatively minor halakhic significance, occurring approximately an hour before the usual sunset. This is clearly a highly attractive suggestion, and already — over 40 years ago — I made great efforts to justify it, but unfortunately found it inconsistent with the statements of the *rishonim*.³ Lately, renewed efforts have been made in that direction, claiming that the early authorities understood R. Tam in that way. The subject article comes to endorse these efforts — certainly a very difficult, but praiseworthy effort.

The problem with this article is that it carries the suggestion even further, suggesting that none of the "sunsets" referred to really mean sunset, leaving them *all* indeterminate. Beyond this, the author does not even relate to the

1 Cf. Part 3, chap. 1, of my treatise on *beyn hashemashoth*, in *No'am* 5: 213–249 (Jerusalem, 1961; re-printed in my *Halakhic Times* [formerly *Jewish Chrononomy*], [Brooklyn, 1967; Jerusalem, 1992, 2000]).

2 *Binyan Tzion*, Part 2, ¶10.

3 Note 1 above, chap. 3.

4 *Vayikra Rabba* 26:4.

significant midrashic statement:⁴ “On the first day of spring and the first of fall, day and night are equal,” which is true when sunrise and sunset are taken in their literal sense, but not according to the author. This statement is quoted by a number of halakhic authorities, adding weight to its significance.⁵

Now to some specific points.

P. 12. R. Tam, in a passage quoted there, explains why he must interpret the term *tishka' hachamah* in a different way from *sheki'ath hachamah*, the usual term for sunset. From the wording, it is clear that R. Tam assumes that the reader knows that the definition of this latter term, which literally means “the immersion of the sun,” is identical with what our author calls “astronomical sunset,”⁶ and seems to be taken in that sense by all authorities up to the last century. In view of this, the author’s statements (p. 13): “To claim that this means astronomical sunset muddies the picture for little good reason. Astronomical sunset does not begin sunset, since the sun starts going down beforehand,” is surprising — especially since the second sentence implies that noon, when the sun starts going down, is the beginning of sunset.

On the same page, the author wishes to bring support from *Sefer Yereim* for the contention that *sheki'ath hachamah* does not mean astronomical sunset. In fact, *Yereim* simply holds that the term *tishka' hachamah* refers to a time occurring before *sheki'ath hachamah*, the latter obviously signifying astronomical sunset.

P. 15, bottom. The author correctly points out that R. Yosef Caro seems to equate two expressions for sunset, one ambiguous (“the **shining** of the sun has vanished from the earth”) and one unambiguous (“the sun has vanished from the earth”). However, his conclusion, that R. Caro therefore could not have meant the unambiguous one, seems strange — and the reverse seems far more reasonable.

P. 16. The author interprets the above phrase: “the shining of the sun has vanished from the earth.” Referring to a situation when the sun is still above the horizon, he writes: “... the sun’s having stopped shining, turned red, and begun its descent, means it is no longer immediately visible on the earth. While someone who looks can still find it, the sun is no longer ‘seen on the earth.’” Even though someone looking at it would be blinded by its light, because

⁵ Cf., e.g., Rashi (*Niddah* 65b s.v. *bitekufath*); Rashba (*Shabbath* 34b, s.v. *aval*); Resp. Maharyf (¶47 s.v. *besefer*); *Rav Pe'alim* (II, *Orach Chayim* ¶3, s.v. *vehineih*); *Yabya' Omer* (VII *Orach Chayim* 41:2).

⁶ P. 7: “When the disk of the sun dips (beyond) [below] the horizon,” i.e. when the sun’s disk disappears below the horizon for an observer on ground level.

someone who doesn't look won't see it, it is referred to as "not seen on the earth"!?

In the last paragraph on that page, the author argues that astronomical sunset, as the end of day, cannot be meant literally, since it is not a "meaningful change" in the sun's providing light to the earth. Rather, he feels, night must come when there is a meaningful change in solar irradiation on earth. Let us consider the implication of his suggestion. What is a "meaningful change"? When the irradiation has dropped by a readily noticeable amount, say 10%? Perhaps, when it has dropped by 50%? Or when it has dropped to 10%, or 1%, of its maximum value? At the equinox and the latitude of Jerusalem, these points correspond to elevation angles of 51° , 30° , 12° , and 4.5° respectively.⁷ These angles correspond to the following intervals after noon: 1h 35m, 3h 35m, 5h 3m, 5h 40m, respectively. This leaves a four-hour range of uncertainty when the end of day occurs; not a very objective criterion. Personally, I prefer astronomical sunset, with an uncertainty of a fraction of a second, as a more meaningful and practical criterion.

P. 17. The author is forced to admit that the *geonic* criterion, adopting astronomical sunset as ending the day, agrees with reality. But he tends to reject it in Gera's interpretation, because presumably Gera was not aware of this. Permit me to remind the reader that the only extant book, written by Gera himself, is *Ayil HaMeshulash*, a trigonometry book.

To allay the author's doubts as to the identity of "medium-sized stars," I refer him to my treatise,⁸ where I show that only stars visible before sunset are considered big; this excludes only the planets Venus, Mars, and Jupiter.

Of course, much of the criticism of the author's treatment of sunset applies equally to his treatment of sunrise. I hope the above will be taken in the spirit it was presented — strictly as constructive criticism.

7 Cf. my *Applied Optics* (New York, 1980); Table 126.

8 Note 1, above, Part 2, sec. 2.