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**Reprint**

*Ta'amey Hamikra: A Closer Look*

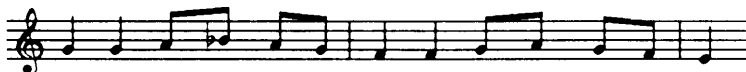
*Joshua R. Jacobson 76*

# TA'AMEY HAMIKRA: A CLOSER LOOK

JOSHUA R. JACOBSON

What's wrong with these tunes?

Example 1



ta - mid lo cha - sar la - nu, ve - al yech - sar la - nu

Example 2



ka - ka - tuv ve - a - chal - ta ve - sa - va - ta u - ve - rach - ta

Example 3



Sho - chen ad ma - rom vc - ka - dosh — she • mo. —

In the first example the word la-nu was changed by the composer' to la-nu. La-nu means "to us;" la-nu means "they stayed overnight."

In the second example the same composer changed the words ve-a-chal-ta and u-vey-rach-ta to ve-a-chal-ta and u-vey-rach-ta. Ve-a-chal-ta and u-vey-rach-ta mean "you shall eat" and "you shall bless;" ve-a-chal-ta and u-vey-ruch-ta mean "you ate" and "you blessed."

In the third example we see how the careless application of nusach to this text changes its meaning from "He who abides for eternity, exalted and holy is His name!" to "He who abides for eternity is exalted, and holy is His name!"

Well, whocaresabout such linguistic nit-picking?and what does all this have to do with ta'amey hamikra, anyway?

Ta'amey hamikra refers to the Jewish traditions of scriptural cantillation: the system of motifs that are assigned to the text and the

1 Moshe Nathanson

graphic symbols that represent those motifs. The three functions of ta'amey hamikra are (1) to enhance the aesthetic quality of public reading by providing the texts with melodies, (2) to indicate the syllabic stress of each word<sup>2</sup> and (3) to clarify the syntactical sense by parsing each verse.

As Jewish music professionals, we are most often concerned with the first two functions: how to chant the Torah, the haftarat and the megillot with appropriate allocation of the motifs.

According to traditional Jewish practice, one is obliged to be scrupulous about pronunciation when reading scripture in public. If a ba'al k'riyah makes an error in cantillation that results in a change of meaning, he is to be interrupted, the correct reading is to be pointed out and he is to repeat the phrase with the correction.

The ***Shulchan Aruch***, a sixteenth-century code of Jewish law compiled by Joseph Caro in Venice, stipulates:

In the first place, the reader is obligated to read with absolutely correct te'amim and pronunciation, so that he does not confuse voiced schwa with unvoiced schwa and so that he knows which letters take daggesh. . . . If he makes an error in the reading, even in the pronunciation of a single letter, he is obliged to repeat it and pronounce it correctly.-?

The ***Mishnah Berurah***, a nineteenth century commentary on the ***Shulchan Aruch*** by the Chafetz Chayyim, elaborates on this passage.

If the reader makes an error in the melody of the te'amim, and that error results in a change in the sense of the text (for example, if he chanted a word with a conjunctive ta'am in place of a disjunctive ta'am), he is obliged to repeat [the phrase] <sup>4</sup>

Unfortunately, many of those who are scrupulous about observing the correct word stress in cantillation are not always as careful when chanting the liturgy and singing hymns. As we saw in the first two examples cited above, a change in a word's stress can change a word's

<sup>2</sup> Most te'amim (except the prepositive, postpositive and interlogic signs) indicate where in the word we should sing the "body of the trope" (to borrow Prof. Binder's term). Those who are confused about where to place the proper stress on words which have prepositive and postpositive tropes should consult the Koren editions of the Bible. The editors have consistently adhered to the policy of placing a secondary topall sign on the stressed syllable of any word in which the trope falls on an unstressed syllable.

<sup>3</sup> *Shulchan Aruch, Orach Chnvyim*, §142 (the present author's translation).

<sup>4</sup> *Mishnah Berurah, Orach Chayyim*, §142 (the present author's translation).

meaning. Example four shows Louis Lewandowski's well-known setting of the verses included in the zichronot portion of the Rosh Hashanah service:

הַלֵּךְ וּקְרֵאתָ בְּאָזְנֵי יְרוּשָׁלַם לֵאמֹר כֹּה אָמַר ה' זָכַרְתִּי לְךָ חֶסֶד  
נְעוּרֶיךָ אֲהַבְתָּ פְּלוּלֵתֶיךָ לְכַתֵּךְ אַחֲרַי בְּמִדְּבַר בְּאֲרָץ לֹא זְרוּעָה:

Jer. 2:2

זָכַרְתִּי אֲנִי אֶת-בְּרִיתִי אֲוָתְךָ בְּיָמַי נְעוּרֶיךָ וְהִקְמֹתִי לְךָ בְּרִית  
עוֹלָם:

Ezek. 16:60

Note the difference in accentuation of the word זָכַרְתִּי. In the verse from Jeremiah, the word is za-char-ti. "I remembered." But in the verse from Ezekiel the word appears with "vav consecutive" (וַהֲפֹרֵךְ) as ve-zachar-ti, "I shall remember;" the accent has shifted and the tense is changed. Was Lewandowski aware of this distinction when he composed his setting?"

Example 4: Two excerpts from *Zacharti Lach* by Lewandowski.

The image displays two musical excerpts for four voices (T1, T2, B1, B2). The first excerpt is for the verse from Jeremiah (Jer. 2:2) with lyrics: Zo - char - ti loch che - sed n'u ra - vich. The second excerpt is for the verse from Ezekiel (Ezek. 16:60) with lyrics: ve zo - char ti a ru.

5 I realize that it is tremendously difficult to impose new rhythm on a hymn that the congregation has been singing in its own way for years (although I confess I

Ta'amey hamikra also function as an elaborate system of punctuation, indicating the placement of major and minor pauses in the reading, as well as groupings of words which are to be syntactically connected. Every word in scripture is marked with a masoretic accent, or "ta'am." Te'amim are either conjunctive or disjunctive. A conjunctive ta'am indicates that the word is joined in meaning to the word which immediately follows. A disjunctive ta'am indicates asyntactic separation following the word. The masoretes instituted the te'amim as a means of clarifying the meaning of the sacred texts at a time when the Jewish people were no longer fluent in the use of the Hebrew language.

Without punctuation, a verse could be open to more than one interpretation. For example, this short verse from Gen. 24:34, וַיֹּאמֶר עַבְדּוֹ אַבְרָהָם אֲנִי could be read in any of three ways:

- (1) with a disjunctive accent on עַבְדּוֹ:  
A servant said, "I am Abraham." וַיֹּאמֶר עַבְדּוֹ אַבְרָהָם אֲנִי:
  - (2) with a disjunctive accent on אַבְרָהָם:  
Abraham's servant said, "It is I." וַיֹּאמֶר עַבְדּוֹ אַבְרָהָם אֲנִי:
  - (3) with a disjunctive accent on וַיֹּאמֶר:  
He said, "I am Abraham's servant." וַיֹּאמֶר עַבְדּוֹ אַבְרָהָם אֲנִי:
- The third version is the masoretic punctuation.

Another verse from the same chapter serves to further illustrate the point. Observe this phrase from Gen. 24:65.

The servant said, "he is my master." וַיֹּאמֶר הָעֶבֶד הוּא אֲדֹנָי

One who is careless about the te'amim, making the "insignificant" error of confusing a mer'cha (a conjunctive ta'am) with a tipcha (a disjunctive ta'am), might easily pervert the sense of this verse, rendering it:

He said, "the servant is my master." וַיֹּאמֶר הָעֶבֶד הוּא אֲדֹנָי

Another interesting example is this enigmatic verse from 1Sam. 3:3.

am one of those noisy congregants who swims against the tide, bellowing out the correct pronunciation of ba-ruch. no-deh and a-tah in En Kelohehu). Out of respect for the composer's ideas and in the interest of correct performance practice, I reject the idea of changing "wrong" text rhythms in the classical compositions of Lewandowski and others. Would one consider correcting the playfully "incorrect" text rhythms in Stravinsky's *Symphony of Psalms* or Poulenc's *Gloria*? However, there is no excuse for incorrect pronunciation in rhythmically free nusach. And, furthermore, composers of the liturgy need to be scrupulous in the pre-compositional practice of ascertaining the correct pronunciation of the text about to be set.

וְנֵר אֱלֹהִים. טָרַם יִכְבֶּה וְשִׁמּוֹאֵל שָׁכַב בְּהִיכַל ה' אֲשֶׁר שָׁם אֲרוֹן אֱלֹהִים:

At first glance we might translate this verse as "The lamp of the Lord had not yet gone out, and Samuel was sleeping in the Temple of the Lord where the ark of God was."<sup>6</sup> However, the masoretic interpretation is quite different, and takes into account the fact that the young Samuel would never have been allowed to sleep in the sanctuary. The ta'am etnachta on the word שכב indicates the main dividing point in the verse. The phrase ending with the etnachta must therefore be treated as a parenthetical phrase. The adverbial phrase "in the Temple..." modifies "gone out," not "sleeping."

וְנֵר אֱלֹהִים טָרַם יִכְבֶּה וְשִׁמּוֹאֵל שָׁכַב בְּהִיכַל ה' אֲשֶׁר שָׁם אֲרוֹן אֱלֹהִים:

"The lamp of the Lord had not yet gone out (while Samuel was sleeping) in the Temple of the Lord where the ark of God was ."

At times an improper inflection in the reading can lead to a heretical interpretation. In Isaiah 6:2 we encounter the following four words: מִמַּעַל לוֹ שְׂרָפִים עֹמְרִים מִמַּעַל לוֹ. Connecting the last two words מִמַּעַל לוֹ would result in the unacceptable translation, "Seraphim are standing above Him." Isaiah's vision surely would not have allowed any creatures to appear superior to the Deity. The masoretic interpretation places the disjunctive ta'am pashta on the word מִמַּעַל, separating it syntactically from the word לוֹ: שְׂרָפִים עֹמְרִים מִמַּעַל לוֹ: "Seraphim are standing on high for [to serve] Him."

In the liturgy for the High Holidays we frequently encounter the phrase: וַיִּקְרָא בְּשֵׁם ה'. In chanting this phrase, should we pause after the first word or after the second word? According to the masoretic interpretation, the latter would be more correct. The source of this phrase is Exod. 34:5. וַיִּרְדֵּה בְּעָנָן וַיִּתְחַצֵּב עִמּוֹ שֵׁם וַיִּקְרָא בְּשֵׁם ה': "The LORD came down in a cloud; He stood with him [Moses] there, and proclaimed the name LORD."<sup>7</sup> According to Ibn Ezra, ה' is the subject of the verb וַיִּקְרָא; God uttered His own name to teach Moses how to invoke Him.<sup>8</sup>

6 Note that this is how the verse is translated in the new JPS *Tanakh* (Philadelphia: Jewish Publication Society, 1985).

<sup>7</sup> *Tanakh*.

<sup>8</sup> Note that in this case Rashi disregards the masorctes and follows instead the Targum, interpreting the subject of וַיִּקְרָא as Moses.

Contrast this verse with Genesis 12%

וַיַּעֲתֶק מִשֵּׁם הַהָרָה מִקְרֵם לְבֵית־אֵל וַיֵּט אֱהֵלָה בְּיַתְּאֵל מִיָּם  
וְהָעֵי מִקְרֵם וַיִּבְן־שָׁם מִזְבֵּחַ לַיהוָה וַיִּקְרָא בְּשֵׁם ה':

Here the conjunctive ta'am mer'cha on the word **בשם** indicates that the 'word is in construct form (s'michut), implying that Abram is calling "in the name of the Lord." The disjunctive ta'am tipcha on the word **ויקרא** causes a daggesh to appear in the first letter of **בשם**.

Another commonly misread verse is, the quote from Jeremiah 3 1: 11 which we chant in the ma'ariv service **כִּי־פָדָה ה' אֶת־יַעֲקֹב וַיָּאֵלֵוּ** מִיַּד חֲזַק מִמֶּנּוּ: "For the Lord will ransom Jacob and redeem him from one too strong for him." The ta'am tipcha indicates a slight pause after the word **מיד**, while the mer'cha on **pm** indicates that it is connected syntactically **to** the word **ממנו**. The common practice of pausing between **pm** and **ממנו** contradicts the sense of the text.

In the Torah service, we often hear the fourth verse from Psalm 34 chanted as:

#### Example 4

Ga-de - lu la-do-shem... i - ti u-ne-ro-me-ma she-mo... yach-dav

But observe the biblical text: **גְּדֹלוֹתַי וְגִבּוֹרֹתַי וְנִמְנָמָה שְׁמוֹ יְחִיָּו:** The presence of a disjunctive ta'am on the word **mm-m** might suggest the following alteration<sup>9</sup>:

#### Example 5

Ga-de - lu la-do-shem... i - ti u-ne-ro-me-ma she-mo... yach-dav.

Note that Sulzer's original setting of the text shows that he was quite sensitive to the correct accentuation and phrasing.

<sup>9</sup> Note that the te'amim for the book of Psalms are different from those of the twenty-one prose books.

Example 6, Salomon Sulzer, Gad'lu

Ga-de - lu la - doshem i - ti u - ne-ro-me - mo shemo yach - dov.

We would also do well to follow more closely Sulzer's original setting of the "Yehalelu" from the Shabbat Torah service. From an examination of the te'amim<sup>9</sup> we observe that there should be a slight pause after (not before) the word שְׁמוֹ,

יְהַלְלוּ אֶת־שֵׁם ה' כִּי־נִשְׁנַב שְׁמוֹ לְבָרֵךְ הוֹדוּ עַל־אֲרִצּוֹ וְשִׁמּוֹ:  
 "Let them praise the name of the Lord, for His name is sublime-His alone."

Example 7: Salomon Sulzer, Yehalelu

Ye-ha - le - lu es shem A-do - shem ki nis gov - she-mo le - va - do.

\* \* \*

Up until this point the emphasis has been on demonstrating how the te'amim can serve as a guide to the correct pronunciation of individual words and the proper inflection of verses. But we can also reverse the process. By applying the principle of "continuous dichotomy"<sup>10</sup> to a verse of scripture we can analyze the sentence structure and thereby predict the ta'am for each word.

Let us examine a simple verse: ותבט אשתו מאחרי ותהי נציב מלח  
 "His wife looked back and she became a pillar of salt." (Gen. 19:26)

The main syntactic division of the verse separates the two predicates ותבט and ותהי.

<sup>9</sup> Note that the te'amim for the book of Psalms are different from those of the twenty-one prose books.

<sup>10</sup> Continuous dichotomy refers to the process of dividing a scriptural verse into two parts according to the syntactical structure. then further subdividing each part into two smaller parts, and continuing until the smallest indivisible syntactic unit is reached. While this process was probably originally derived from the parallel structure of Biblical poetry, it was later applied to the prose books as well.

ותהי נציב מלח	ותבט אשתו מאחריו
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Each of the two halves of the verse can then be further subdivided. According to one of the basic rules of syntactic subdivision, a phrase that begins with a verb is subdivided before its final complement.<sup>11</sup>

מאחריו	ותבט אשתו
modifier	subject verb

In the second half of the verse we apply the principle that two words in construct state must remain together as a syntactic unit. Since נציב and מלח must remain together, the division must come before the word נציב.

ותהי נציב מלח	ותבט אשתו
compound noun	verb

Now that we have successfully parsed the verse down to its smallest possible units, we next insert the te'amim appropriate to each syntactic position. The disjunctive ta'am marking the last word in a verse is siluk.

ותהי נציב מֶלַח	ותבט אשתו מאחריו
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The disjunctive ta'am marking the last word in the first half of a verse is etnachta.

ותהי נציב מֶלַח	ותבט אשתו מאַחֲרָיו
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The disjunctive ta'am marking the next subdivision is tipcha.

ותהי נציב מֶלַח	ותבט אַשְׁתּוֹ מאַחֲרָיו
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The conjunctive ta'am "serving" tipcha is mer'cha.

<sup>11</sup> A complement (משלים) can be subject, object or modifier.

וּתְבִשׁ אֶשְׁתּוֹ מֵאַחֲרָיו | וְתִהְיֶינָּה נְצִיב מֶלֶח

The conjunctive ta'am serving siluk is also mer'cha.

וּתְבִשׁ אֶשְׁתּוֹ מֵאַחֲרָיו | וְתִהְיֶינָּה נְצִיב מֶלֶח:

The verse is now fully accented.

Let us examine a slightly more complex verse.

וּכְסָף אַחֵר הוֹרְדָנוּ בִידְנוֹ לְשֶׁבֶר אֶכֶל לֹא יָדְעָנוּ מִי שֶׁם כִּסְפָנוּ בְּאִמְתַּחַתֵּינוּ.  
 “We have brought in our hands other monies with which to buy food: we do not know who put the money in our bags.” (Gcn. 43:22)

The primary dichotomy separates the two predicates הוֹרְדָנוּ and יָדְעָנוּ.

וּכְסָף אַחֵר הוֹרְדָנוּ בִידְנוֹ לְשֶׁבֶר אֶכֶל | לֹא יָדְעָנוּ מִי שֶׁם כִּסְפָנוּ בְּאִמְתַּחַתֵּינוּ

In the first half, we mark the primary subdivision before the final complement.

וּכְסָף אַחֵר הוֹרְדָנוּ בִידְנוֹ לְשֶׁבֶר אֶכֶל  
 modifier modifier verb subject

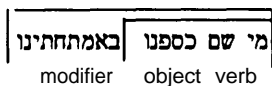
We can now sub-divide the inner phrase; the dichotomy is before the predicate.

וּכְסָף אַחֵר | הוֹרְדָנוּ בִידְנוֹ  
 modifier verb subject

The second half of the verse subdivides before the compound complement.

לֹא יָדְעָנוּ | מִי שֶׁם כִּסְפָנוּ בְּאִמְתַּחַתֵּינוּ  
 object verb

The object itself is a phrase which further subdivides before its final complement.



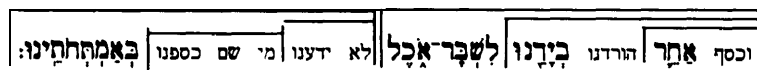
We now apply the te' amim according to the hierarchical structure of the parsed verse. The final word of the verse is marked with the disjunctive siluk, and the final word of the first half of the verse is marked with the disjunctive etnachta.



In the first half-verse we mark the last word of the first sub-division with the disjunctive tipcha.



The last word in a phrase which is subordinate to tipcha is marked with the subordinate disjunctive, t'vir.



We can now mark the conjunctives which “serve” the disjunctives. Before tipcha-mer'cha.



Before t'vir, since there are two intervening unstressed syllables-darga.



The second half-verse is accented in a similar fashion. The final phrase before siluk must end with the disjunctive, tipcha.



The first subdivision, since it is on a higher level than tipcha, must be the disjunctive, zakef.



The conjunctive which serves tipcha is mer'cha.



The conjunctive which serves zakef is munach.



The verse is now fully accented.

With knowledge of the rules of parsing scripture and of the hierarchy of the te'amim, one can apply this method to any verse in the Bible. Although this procedure may seem complex when revealed in such a cursory fashion, a practiced reader studying the subject with a step-by-step approach can become rather proficient.

Regrettably, this method of analysis is not well known outside of Israel, where it is taught to young children in many schools. The benefits of this knowledge to a ba'al k'riyah should be obvious. The ability to predict patterns of te'amim can greatly facilitate the process of what often seems to be rote memorization. The introduction of this method of analysis into the curriculum of our day schools and Hebrew high schools could potentially improve the students' ability to understand the Hebrew Bible and could even increase the number of skilled ba'aley k'riyah in the next generation. Ta'amey hamikra does not have to be taught as a purely musical pre-confirmation exercise. It can and should be integrated into the curriculum of Bible study.

Unfortunately, there are no textbooks in English that adequately treat this subject. Binder's text is an excellent resource but is limited to

musical interpretation of the motifs.<sup>12</sup> Cantor Samuel Rosenbaum's books on Torah and Haftarah chanting reflect an earnest attempt to present the techniques of cantillation in a logical manner, but contain a number of errors.<sup>13</sup> Pinchas Spiro has a sound pedagogical approach, but his book is riddled with inconsistencies. "Maurice Gellis and Dennis Gribetz's book presents many grammatical rules which are extremely helpful to the ba'al k'riyah.<sup>15</sup> Yet none of these authors explains the relationship of the te'amim to the grammatical structure.

Solomon Rosowsky's revered tome<sup>16</sup> is many things. It is an extremely thorough treatise on every possible permutation of the ta'amey hamikra as they would appear in Western notation. It even presents a method for cantillating the Bible in Swedish translation. While Rosowsky does deal with grammatical aspects of the te'amim, he does so primarily from the antiquated concept of the "chain of command" (emperors, kings, dukes, and so forth). There is no attempt to correlate the te'amim to grammatical parsing of the text.

The best (and only) book on the subject in the English language remains William Wickes' *Treatise on the Accentuation of the Prose Books of the Old Testament*, available now in a reprint edition.<sup>17</sup> Wickes gives a thorough explanation of the relationship of te'amim to the syntax, including the rules for parsing scriptural verse. But his book is better suited to scholars than to young students.

In Israel, many scholars have delved into the complex functions of the te'amim. Rabbi Mordecai Broyer has written a thorough explication of the subject in his *Ta'amey HaMikra*.<sup>18</sup> There is one author, however, who, until his untimely death last year, stood alone in his single-minded dedication and his ability to present the complexity of ta'amey hamikra in a clear and understandable way. Michael Perlman, of K'vutsat Yavneh,

<sup>12</sup> Abraham Binder, *Biblical Chant*. (NY: Sacred Music Press, 1959).

<sup>13</sup> Samuel Rosenbaum. *A Guide to Torah Chanting* and *A Guide to Haftarah Chanting*. (New York: Ktav Publishing, 1973).

<sup>14</sup> Pinchas Spiro. *Haftarah Chanting*. (New York: The Board of Jewish Education, 1964).

<sup>15</sup> Morris Gellis, and Dennis Gribetz. The *Gay of Torah Reading* revised 1983 ed. ( Jersey City: M.P. Press, 1982).

<sup>16</sup> Solomon Rosowsky, *The Cantillation of the Bible*. (New York: The Reconstructionist Press, 1957).

<sup>17</sup> William Wickes. *Two Treatises on the Accentuation of the Old Testament*. 2 vols. 1881-1887. (reprinted., New York: Ktav Publishers, 1970).

<sup>18</sup> Mordecai Broyer. *Ta'amey HaMikra*. (Jerusalem: 1982. Reprint ed. Jerusalem: Chovev. 1989).

had written more than twenty books on this subject. His seven-volume *Dapim LeLimud Ta'amey HaMikra* <sup>19</sup> presents the subject in a series of fully-explained graduated lessons, with exercises for the student at the end of each lesson. His six-volume *Chug LeTa'amey HaMikra* <sup>20</sup> is a collection of lectures on various topics related to cantillation, including fascinating parshanut based on the te'amim. He has also initiated a series displaying the text of the Bible grammatically parsed with his own system of analytical symbols. Always concerned with the practical application of his work, Mr. Perlman has issued pamphlets for the shaliach tsibbur which display liturgical texts with the parsing symbols, a tremendous boon to those who are concerned with the correct rendering of the prayers.<sup>21</sup>

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This article represents an attempt to stimulate interest in an area of study which is largely unknown in this country and to raise the banner for correct pronunciation and inflection of the sacred texts. Many performers are extremely careful about consulting an authoritative ur-text score in order to discover a composer's original intentions regarding the notation, phrasing **and** articulation of a particular passage: yet these same musicians are ignorant of the phrasing and articulation of the text of a Biblical passage.

If we believe that Hebrew is a language meant to be understood, not merely a gobbledygook of meaningless sounds to be spun out, then we must make every effort to speak and chant the language correctly. Would we respect a professional actor who constantly mispronounces words, destroys syntax and evidences only a minimal understanding of a script? Certainly we, as Jewish music professionals, should hold to the same standards in both performance and teaching.

The fact that most congregants can't tell the difference should not be a determining factor. דע לפני מי אתה עומד. Acknowledgement of the

19 Michael Perlman, *Dapim LeLimud Ta'amey HaMikra*. 7 vols. (Jerusalem: HaMachon HaYisra'eli LeMusikah Datit, 1962).

20 Michael Perlman. Chug *LeTa'amey HaMikra*. 6 vols. (Tel Aviv: Zimrat, 1971).

21 To my knowledge, there has been only one attempt to translate Mr. Perlman's work into English. Alan Smith, a student of Perlman's, has put together a booklet entitled, *Removing the Mystery from Ta'amey HaMikra*. a lucid and entertaining introduction to the subject. Copies may be obtained directly from Mr. Smith at 27 Bet Zayit, Harey Yehudah. 908 15, Israel.

Divine Presence demands that our public prayers and reading of scripture be formulated in the ancient sacred language. We now have the opportunity and the sacred obligation to lead our communities with this knowledge.

### Select Bibliography

- Avenary, Hanoch. The Ashkenazi **Tradition of Biblical Chant between 1500 and 1900**. Tel Aviv: Tel Aviv University Press, 1978.
- Binder, Abraham W. **Biblical Chant**. New York: The Sacred Music Press, 1959.
- Broyer, Mordecai. **Ta'amei HaMikra**. Jerusalem: 1982. Reprint ed. Jerusalem: Chorev, 1989.
- Davis, Arthur. The **Hebrew Accents**. London: Myers and Co., 1900.
- Gellis, Morris, and Dennis Gribetz. **The Glory of Torah Reading**. Revised 1983 ed. Jersey City: M.P. Press, 1982.
- Encyclopedia Judaica, S.v. "Masoretic Accents,"** by Avigdor Herzog
- Encyclopedia Judaica, S.v. "Music,"** by Hanoch Avenary
- Kadari, Yehudah. **VeShinantam Le Vanecha: Limud Ta'amei HaMikra**. Jerusalem: HaMachon LeMusikah Yehudit, 1989.
- Ne'eman, Yehoshua L. Tseliley **HaMikra**. 2 vols. Jerusalem: Israel Institute for Sacred Music, 1971.
- Perhnan, Michael. **Chug LeTa'amei HaMikra**. 6 vols. Tel Aviv: Zimrat, 1971.\*
- Perlman, Michael. **Dapim LeLimud Ta'amei HaMikra**. 7 vols. Jerusalem: HaMachon HaYisra'eli LeMusikah Datit, 1962.\*
- Perlman, Michael. **K'lalei HaTe'amim Shel Sifrei Emet**. 4 vols. Tel Aviv: Zimrat.\*
- Perlman, Michael. **Sefer BaMidbar**. Tel Aviv: Zimrat, 1981.\*
- Perlman, Michael. **Sefer B'reshit**. Tel Aviv: Zimrat, 1979.\*
- Perlman, Michael. **Sefer Devarim**. Tel Aviv: Zimrat, 1981.\*
- Perlman, Michael. **Sefer HaHaftarot**. Tel Aviv: Zimrat, 1987.\*
- Perlman, Michael. **Sefer Shemot**. Tel Aviv: Zimrat, 1981.\*
- Perlman, Michael. **Sefer Tehillim**. Tel Aviv: Zimrat.\*
- Perlman, Michael. **Sefer Vayikra**. Tel Aviv: Zimrat, 1980.\*
- Perlman, Michael. **Sefer Yehoshua**. Tel Aviv: Zimrat.\*
- Rosenbaum, Samuel. **A Guide to Torah Chanting**. New York: Ktav Publishing, 1973.
- Rosenbaum, Samuel. **A Guide to Haftarah Chanting**. New York: Ktav Publishing, 1973.
- Rosowsky, Solomon. **The Cantillation of the Bible**. New York: The Reconstructionist Press, 1957.

- Schachter, Hershel. "Lesser Known Laws of Torah Reading." *Journal of Jewish Music and Liturgy* VII (1984/85).
- Sperber, Alexander. *A Historical Grammar of Biblical Hebrew*. Leiden: E.J. Brill, 1966.
- Spiro, Pinchas. *Haftarah Chanting*. New York: Board of Jewish Education, 1964.
- Talmudic Encyclopedia*, S.v. "Te'amim," (Volume 20)
- Wickes, William. *Two Treatises on the Accentuation of the Old Testament* (2 vols. originally published 1881- 1887). New York: Ktav Publishers, 1970.
- Yeivin, Israel. *Introduction to the Tiberian Masorah*. Scholars Press, 1980.
- Zeitlin, Shneur Zalman and Haim Bar-Dayan. *The Megillah of Esther and Its Cantillation*. Jerusalem: Kiryat Sefer, 1974.

\*All of Michael Perlman's books and tapes are available through Zimrat Publications, K'vutsat Ma'aleh Gilboa, Doar Na Gilboa 19145, Israel.

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