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[TL;DR](#)

Display of Hebrew bible with easy cross-references to translation, concordances, textual-variants, and details about cantillation marks

[Preface:](#)

Some synonyms for those funny squiggles: T'amim (s. Ta-am), Trup (pronounced like 'troop'. pl. Trupn -- Southern Yiddish), Trop (pronounced like 'trawp'. pl. Tropn -- Northern Yiddish), Cantillation Marks, Accents,

Signs. (Perhaps: 'trope', which appears in the name of a popular app 'TropeTrainer', but which at least in its early usage, denotes a (seemingly non-musical) [literary device](#), such as [metaphor](#), [metonymy](#), [synecdoche](#), or [irony](#).)

Relying on the (amazing, brilliant) OSHB...

... XML data and corresponding OSHB algorithms for processing the data -- e.g., including its tables for finding ta-am/trup names based on their Unicode values in the data:

OSHB's tables for looking up names cover four cases: First, what OSHB calls 'scope': 'Poetic' (Job, Psalms, Proverbs, the '3 Books') vs 'Prose' (the rest of Tanakh, '21 Books' (maybe '36' if you separately count each of the 12 minor prophets, as well as Kings et al. broken into parts, like #1 and #2)). Then, for each of the two scopes above, there are two sub-tables for what we call 'divisions': i.e., OSHB sub-tables for 'conjunctive' and 'disjunctive' trup. Disjunctive trup are like semi-colons, periods and such, indicating a (semantic) pause after their word. Conjunctives indicate that the word needs some following words to complete a phrase / thought.

To find the trup name for trup symbols on a given word, using OSHB's version of the word, and OSHB's tables, we look up the (Unicode of the) trup symbols in OSHB's tables, following OSHB's indication of scope and division.

The system was presumably intended for OSHB's XML data from the [Westminster Leningrad Codex](#) (WLC). However, OSHB also has XML data from [Miqra `al pi ha-Mesorah](#) (MAPM). Happily (and maybe not too surprisingly), the Unicode characters for trup that MAPM uses are mostly the same as those used by OSHB/WLC. So, with a fair amount of success, we can look up names for trup from MAPM texts, using OSHB's tables.

In the display, you can choose one or more books. If only one book, then you can choose a chapter. You can also choose whether to display verses

based on OSHB (WLC) data or MAPM data or both. (Or neither, if you enjoy mostly empty displays!)

OSHB's data includes Strong's numbers for the words. On their site, e.g., for the [beginning of Psalms](#), you can see the Strong's number (as well as the trup name) when you hover on a word. For our page, you can choose to have it displayed directly (as a link) with each word. Similarly, you can display the Unicode values and / or the trup name for each word.

Enhanced Name Lookup

We include an option for 'Enhanced' name lookup. With this option,

- We add one extra entry to the OSHB lookup tables, tentatively named 'Atnach Hafukh', since MAPM uses a Unicode for Atnach Hafukh (\u05A2) that OSHB/WLC does not accommodate. MAPM also uses the code that OSHB calls Atnach Hafukh (\u05AA), but perhaps MAPM thinks of that as Galgal (note that wherever 05AA occurs in a sequence with other symbols, OSHB calls it Galgal)?
- We also add one more code for Zarqa, \u0598, in the Prose table
- We also try to deduce whether a MAPM trup is disjunctive or conjunctive, by looking for its corresponding occurrence in OSHB/WLC data -- this OSHB data includes an "n" attribute which marks disjunctive trup / words, and which OSHB uses to produce the pretty, colored arcs indicating verse phrasing-divisions (E.g., see the [beginning of Psalms on their site](#))
 - This looking for corresponding occurrences will fail in the (very) few places where OSHB and MAPM disagree about verse numbers. (These disagreements get reported in 'Comments', see below)
 - It can also get confused, as in the first word of Psalms, which is hyphenated to a disjunctive in OSHB, but as a standalone in MAPM, 'ought' to be a (conjunctive) Merkha and not a (disjunctive) Yored

- Actually, in most cases we do not need the "n", since most trup-symbols / Unicode-sequences occur only in one of the two OSHB sub-tables corresponding to the two categories: disjunctive ('d') or conjunctive ('c'). However, in the "poetic" tables, three sequences occur in both categories. Two of them have the same name in both conjunctive and disjunctive roles (which bothers us a bit: we think the same name should = the same trup = the same grammatical / semantic role). The third dual-c-d-occurring Unicode, \u05A5, gets different names in the two categories (perhaps a slightly bigger 'bother', if we're keeping score):
 - \u05AB --> both Ole(c) and Ole(d)
 - \u05A4\u05AB --> both Mahpakh_with_Ole(c) and Mahpakh_with_Ole(d)
 - \u05A5] --> Merkha(c) or Yored(d)
 - In the case of \u05A5, the enhanced options lets us declare it to be Yored if it comes right after an otherwise unrequited Ole. Actually, we believe that Ole-v'Yored is an atomic trup that just is spelled with two symbols. We then as go far as to hyphenate the separate Ole and Yored in this case. (As does Sefaria in all of the several such cases that we checked.) If the \u05A5 does not follow Ole, then we say it's a Merkha
- Speaking of unrequited trup, and Sefaria: All three of the isolated Geresh_Muqdam in MAPM's Psalms (I did not check all of the 50 in OSHB/WLC's version) are rendered as Revia_Mugrash in the online bibles of Sefaria. So we add the missing Revia and rename the trup in those cases
- If we are expecting a conjunctive trup but do not find one, we look in the disjunctive table as a backup -- and vice versa
- If there are exactly two Unicodes / symbols on a word, and the sequence does not appear in the tables, then we try them in reverse order -- often the two symbols on the word appear above and below the same letter, supporting a flexibility about order

- If there are three Unicodes, but no table match, then we try partitioning them as 1 + 2, or 2 + 1, to see if the smaller parts might match. If that fails, then we try each Unicode separately -- we might end up with a 'synthetic' name like 'Merkha with Munnach with Qadma', if we had the corresponding three Unicodes
- Otherwise, if there is more than one Unicode on a word, and none of the above yields trup names, we tackle one code at a time, trying for a result like 'Trup1 with Trup2 with...'

Comments, Analysis

Comments

The Comments option gives information about gross word / verse counts that might vary between OSHB and MAPM.

- (Ps: 1.1 is an example of a word count difference.)
- (Num: 25 is an example of a verse count difference.)

It also lists anomalies encountered, or interventions attempted (if in 'Enhanced naming' mode) when looking up trup names.

Comments include:

- noSym:
 - "The word is missing any trup"
 - Most (but not all!) of OSHB's tables have a 'None' entry for empty-string, i.e., no trup. we 'intercept' those empty values, and give them either this comment or 'ktiv' (below) rather than looking up the None
- noName:
 - "Could not get/derive trup name for this symbol from OSHB table for the prose / poetic 'scope' of the verse"
- dupKeys:
 - "Same trup symbol appears in both OSHB conjunctive / disjunctive tables"
- ktiv:
 - "Pay no attention to the ktiv behind the parens"

- Similar to noSym, but marked as Ktiv in the data
- synthName:
 - "OSHB table has no trup names for the sequence of symbols, trying for flips or sub-sequences"
- pairFlip:
 - "Found a name by switching the order in a two-symbol trup"

The above comments will show up at each pertinent word, as well as in a summary list.

Comments about verse- / word-counts appear as the first 'summary' section about the text, but do not show up on words or in the 'Analyze' output.

The word-counts can vary if, e.g., one text uses hyphen / Maqqef when another does not. Variance in verse-counts usually comes with a <note> tag in MAPM data. For now we do not display these notes, but here are a couple of examples from MAPM data -- they politely refer to WLC, which is the primary data-source for OSHB:

```
<verse osisID="Num.26.1" sID="Num.26.1" n="א"/>  
וְהָיָה אִתְּךָ הַמִּגְדָּל  
<note type="variant">The WLC has this segment as verse 25:19.</note>
```

```
<verse eID="Josh.21.35"/>  
<note type="variant">The WLC includes two extra verses at this point, from the parallel in  
Chronicles: 1 Chr 6:63-64.</note>
```

```
<verse eID="1Sam.23.29"/>  
<note type="variant">1 Samuel 23:29 in this text is 24:1 in the WLC.</note>
```

Analysis

The Analyze operation looks at the currently displayed chapter or book(s). It collates and lists each trup with its word-occurrences. Irrespective of whether 'Comments' are active, the comment-information shows up in this analysis. The display breaks down its list into Poetic and Prose trup, and then Used and Unused trup, where for Unused it checks whether some

entries in the pertinent OSHB tables were not used in the given text-selection.

Minimizing the Tweaking of OSHB / MAPM data

Despite some accommodations mentioned above, and identified in comments and the analysis, we have mostly refrained from changing the underlying data, tables, scope-indications and so-on from OSHB. Of course our display / results (if we got our own treatment right), could serve OSHB or MAPM contributors in identifying and correcting potential errors in their data.

Our XML data for both OSHB/WLC and MAPM comes from the OSHB project, and seems to be dated as: 2022 for MAPM, 2021 for OSHB/WLC.

Note that with MAPM data we needed to add a couple of closing tags so that the XML would load without errors -- we include links to the 'original' XML, so you can see the 'defective' XML -- e.g., see Eccl.12.15 and Isa.66.25 .

(However, e.g., MAPM's Jer.3.7 has an apparent Ktiv (Q'ri - K'tiv) that isn't tagged as such, so it appears as simply missing a trup.)

123 Output

Part of the motivation for displaying trup was so that one could extract notes (as supplied by 'macros', that is sequences of notes that we have assembled), along with corresponding words, to appear as trup-names, Western-notation notes and Hebrew-word lyrics in (for us) 'standard' sheet-music PDFs. We can get that benefit without too much effort:

This bible page, i.e.,

<https://cwoolf.neocities.org/my123/oshb> ,

being on neocities, integrates with the 'sister-page' (or maybe 'cousin-', since they are not that closely related in original intent) for 123-Notation, also on neocities:

<https://cwoolf.neocities.org/my123/>

So, if you:

- Select, as an example, the book Psalms and (the default) "1 chapter at a time" with (default) Chapter 1
- Then (using default values) just click Send to 123 Page

Then

- A new 123 page/tab should open
- That page has various options for displaying, playing and editing music
- However, if you simply scroll down a bit, you can see a music chart for your chosen bible chapter
- NB: Haftarah system is used for books not yet set up with their specific tunes -- Ruth, Eikhah, etc. These will be provided once funds are received from Nobel prizes, Guggenheim grants, etc.

Bracketed notes in the Western notation

Note that in the sheet-music for bible texts, bracketed notes are quasi-optional -- they depend on the number of syllables in the current or adjacent word.

Initial notes, whether bracketed or not, may need to be repeated if the current word has syllables preceding its stressed syllable.

Bracketed notes may also be 'borrowed' / 'stolen' by an adjacent word (as in the word Bam in the V'ahavta paragraph).

You can remove (and restore) the bracketed notes with provided buttons. The 'removed' version may play (on the page-player) better if most of the

words are short. Alternatively, with the bracketed version, you can click individual notes on the word to hear which optional ones really fit that word.

In the 'gold-premium-customized' version of the page (coming soon after the Nobel / Guggenheim funds), we might be able to adjust the notes to best fit the particular words.

Stressed syllables

We show an accent-mark (which looks a bit like '>') under the note which should scan to the stressed syllable of a word. This (we hope) helps determine which optional notes to use.

Further trup-name computation

Note that beyond Enhanced name-lookup (see above), the output for the 123 page makes some (further) adjustments. E.g., trup-names such as Munnach_with_Revia get separated into the separate Munnach and Revia, so that we end up with the corresponding two separate macros for consumption / display by the 123 parser. Also, that versatile, tofu-like Munnach splits into a contextual name: e.g., Munnach-21c_b4Atnch means Munnach (a conjunctive trup in the 21 books realm) coming before ('b4') an Atnach.

Discussion:

(Send cwoolf an email at gmail to request 'editing' permission!)

- There may be some 'bugs' to shake out still -- these two pages might be considered a Beta or Alpha release. E.g., it recently started to handle multi-word Ktiv nicely, as in Ch. 1 of Lamentations and end of Ch. 66 of Isaiah. Please LMK if you
 - Find bugs
 - Have better algorithms for 'enhancing' names
 - Have any other ideas for improvements