The Mechanics of Searching the Andersen-Forbes Phrase Markers[1]

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This document assumes that its readers have a working knowledge of Hebrew syntax.

I first describe how to set up the Libronix Digital Library System for searching the Andersen-Forbes phrase markers. I then explain the mechanics of searches involving segments, phrases, clause immediate constituents, and clauses. A companion paper discusses the logic of searching. Our tentative supra-clausal structures, shown dimmed and dashed in our phrase markers, will be taken up in a separate, later paper.

I. Downloading and Invoking a Workspace

Readers who prefer to learn the steps for creating a workspace should read the appendix at the end of this document instead of carrying out the instructions in section A. Those who are happy to let others do the building should follow these instructions.

A. Downloading the Workspace File
A predefined workspace file, designed to produce a workspace for using the Andersen-Forbes data, may be found on our web site. Proceed as follows:
1. Using your favorite browser, go to our web site at http://andersen-forbes.org.
2. Move to the "Miscellany" page.
3. Follow the instructions provided under "Workspace Creation."
    a. Download the file AFresources.
    b. Save the XML file as "AFresources.lbxwks."
    c. Move (or copy) this file to "My Documents/Libronix DLS/Workspaces."

B. Invoking the Workspace
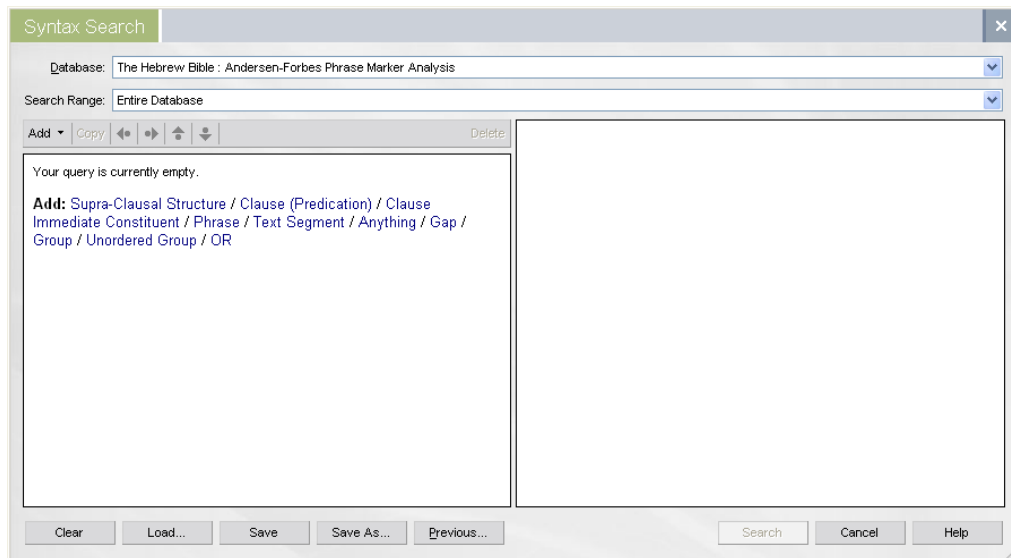There are two simple ways to call up the workspace configurations.
1. *Manual call-up:* Click "File → Load Workspace," click on the name of the workspace that you desire to load, and click "Load." The specified workspace should appear.
2. *Automatic call-up:* Suppose that you want the program always to come up with some workspace ready-and-waiting. To set up this behavior, click "Tools → Options → General." When the Options dialog pops up, click "General" in the list on the left. Then, under "At Startup:" select the radio button for "Load Workspace." Drop down the menu of possible workspaces, and select the name of the one that you want to get loaded whenever you start the program. Finally, click "OK."

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[1] My understanding of searching has benefited greatly from the helpful and patient guidance provided by Eli Evans of Logos Research Systems. Thank you, Eli!

II. The Mechanics of *Segment* Searches

A. Specifying a Search

1. To specify a search, load (or have already loaded) the AFresources workspace (or your equivalent).
2. Notice that there are two places where "Search" can be selected.
3. Clicking the one (labeled <u>S</u>earch) to the right of <u>F</u>ile and <u>E</u>dit drops down a menu which lists each of the kinds of search available on the Libronix platform. The one that we want from this list is "Synta<u>x</u> Search…." The other search launcher is immediately to the right of the simple magnifying glass, "Search." Clicking it brings up the search window appropriate to the data resource currently focused on. For example, if you click "My Library" and then specify as author "Andersen," and then click on "A Systematic Glossary of the Andersen-Forbes Analysis of the Hebrew Bible," that resource comes to the fore. If you then click on the lower of the two search launchers, a dialog tailored to allow search of a text file will pop up. If, however, you click to focus on the phrase markers, then a search click will launch the "Syntax Search" dialog. (If present, dismiss the glossary before proceeding with searching.)
4. The "Syntax Search" dialog looks like this:

5. The "Database" specification at the top left of the window should refer to the "Andersen-Forbes Phrase Marker Analysis."
6. The next decision point down involves specifying the "Search Range." Clicking on the down arrow at the far right drops down the search range options. When iteratively specifying and refining a search, the turn-around time for searching can be greatly reduced if one selects a small(ish) corpus. We have a weakness for the book of Ruth. The corpus specified must be large enough so that the phenomenon being searched for is likely (or known) to be present.
7. The next row of controls initially contains one active control ("Add ▾"), four grayed-out arrows, and a grayed-out "Delete." Clicking on the "Add ▾" drops down a list of

all of the constituents that ever may be searched for. The options thought *currently* available are written out in the left-hand pane below the controls. Initially, the two lists are naturally identical.

8. Below the controls we read "Your query is currently empty." That is because we have not yet specified anything about the search that we will seek to have carried out.

9. The central portion of the dialog consists of two large panes. The left-hand pane holds the representation of the search that is being built up. The right-hand pane displays the constraints that any given constituent may be subjected to. The idea underlying a search is that one builds up as much of a phrase marker as is needed uniquely to specify what, and only what, we wish to search for.

10. To examine the array of constraints that are available to us, let us begin with a highly unconstrained search. Click "Search." Then in the "Syntax Search" dialog that is presented, click on "Text Segment."

    a. In the left-hand pane, the message that "Your query is currently empty" goes away, being replaced by "Segment 1" highlighted in yellow. We have to this point defined a search whose only constraint is that we seek any segment.

    b. In the right-hand pane, all but the first item are further constraints that can be imposed on the segment declared in the left-hand pane. Whether or not the first item, "Highlight this term in search results," is checked has no effect on the outcome of the search. It only determines whether the structure specified on the left-hand side should be highlighted by giving it a color other than black.

11. The constraints in the right-hand pane are divided into groups whose headings are located in gray rectangles. To the left of each heading is a solid black triangle which indicates whether the constraints subsumed under the heading are hidden (►) or on display (▼). The constraints visible at present are those that are applicable to *segments*. Other constituents, as we will see, will have other available constraints.

    a. ▼ Search Parameter—[The constraints are on display by default.] The only true constraint, as noted above, is "□ Must be an immediate child of parent." Note that the box is grayed-out, that is, the constraint is not available for selection. Why is this? Well, the search specified in the left-hand pane contains only one constituent, "Segment 1." Since no parent is in evidence, a constraint which refers to a parent is meaningless.

    b. ► Occurrence—[The constraints are hidden by default.] If one clicks on the rightward pointing black triangle, a list of three subsets of constraints (nine possibilities) will drop down. Note the default selections for the (normally hidden) constraints:

        i. ⊙ Must be present.
        ii. ⊙ Must occur only once.
        iii. ⊙ Can be anywhere within parent. (This constraint is unavailable, since "parent" is meaningless for the present search.)

    c. ▼ Text—[The constraints are on display by default.] **This is an advanced topic! Novices may prefer to omit it initially.** The final three sorts of constraints lodged under this heading share a somewhat abstruse layout as we explain below.

        i. Language: Set to "Either" by default and probably best left that way.
        ii. Text: One may copy and paste (CNTRL-C and CNTRL-V) Hebrew/Aramaic text and constrain the search thereby. Since we are constraining a *segment*,

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the text must consist only of a *segment*. **CRITICAL POINT:** Once the text has been copied into the rectangle to the right of "Text:", it must be exported by clicking on the white arrow in the (now) green box to the far right of the rectangle. Finally, if you want the pointing to be part of the constraint, put a check in "Match Marks."

    iii.   Lexeme: Here, one may type in a "root." To do this, one clicks on the black lowercase "a" in the white surround found in the tray. Then in the menu that pops up, one selects "Hebrew (Logos)." Now when one types anywhere in the Libronix window, the characters will be mapped into Hebrew ones. (To see what the correspondences are, click the "א" which is now in the surround, and then select "Show Keyboard." **CRITICAL POINTS:** 1. Be sure to export the root by clicking on the green-surrounded white arrow to the far right of the lexeme-containing rectangle.[2] 2. Be sure to change the keyboard correspondences back to the default. Otherwise, subsequent typing will produce gibberish…

    iv.   Gloss: Here, one can type in a gloss and search for its instances. Only instances of the complete gloss will be found. For example, typing in "terebinth" will yield no hits, "terebinths" will yield three hits, and "terebinths of" will yield one hit.

Apropos of these constraints, this screen shot may be helpful:

Text: The word list is empty. Match **only** the items in the word list. ☐ Match Marks

Lexeme: איל
איל פארן El-Paran
איל strength #1 (AF)
איל ram #2 (AF)
The word list is empty. Match **only** the items in the word list.

Gloss:
● terebinths ✕
Match **only** the items in the word list.

The statuses of the searches are in three distinct states above: 1. The "Text" search is totally vacant. 2. In the "Lexeme" search, the program has offered a set of possible lexemes based on the consonants typed in, but none has been selected and (automatically) exported. 3. In the "Gloss" search, "terebinths" has been typed in and exported.

Two final points as regards these searches: 1. If one wishes to change one of the exported constraints, one must delete the item by clicking the black "X" to its

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[2] If you neglect to export a constraint, the search will labor mightily and return all 471,720 segments making up the *Kethiv* text of **L**. While waiting, one should repeat mantra-like: "Export, export, …" until the search has finished.

right and then type in the new item, exporting same. 2. Under each sub-specification panel, we see "Match <u>only</u> items in the word list." If one clicks on the red qualifier, one may reverse its sense to <u>anything</u> <u>except</u>.

d. ▼ Parts of Speech—[The constraints are on display by default.] One may constrain the search in terms of the identity and characteristics of parts of speech. The gray-rectangle contents default to "Anything." When one clicks on "Edit…", an "Add Reference" dialog will pop up. Its top portion looks like this:

Note that initially the "OK" at the bottom of the dialog is unavailable. This is because no constraint(s) has/have yet been selected. One may impose constraints on the segment in the obvious way. Two hints should make the use of this capability easier: 1. If a category/characteristic is unfamiliar to you, our glossary

entry for it will pop up if you hover the mouse cursor over it. 2. To define a constraint, you must check some item(s) from the lower parts of the dialog. THEN, you must select the corresponding "Part of Speech" from the very top of the dialog. Only then will the "OK" become "live" so that you can enforce the constraint(s) by clicking "OK." For example, if you select "modal" in the "Adverbial Options," then you must also select "Adverbial" from the part of speech choices at the top of the dialog.

When you do click "OK," the selected constraints will appear in the specification of "Segment 1" in the left-hand pane. If you want to change the POS specification and run a new search, it is best first to click "Clear" underneath the "Edit…" button; this avoids mistakes where you miss clearing some constraint and then add a further constraint.

e. ▼ Semantics—[The constraints are on display by default.] There are two sub-panels under this heading.

    i. Noun Semantics—By selecting one or more of the possibilities shown, one can find all places where given noun semantics appear. Since only one semantic label is presently given to each noun, figurative uses of terms typically cannot be searched for. For example, the "golden calf" is given "creature" semantics rather than "creature AND substance."

    ii. Verbal Semantics/Valence—Here we encounter a classificational embarrassment. The labels on verbs were originally installed to assist the computer in parsing the texts. When we licensed the database, we decided to give users access to them, even though they are a motley lot. For example, "passive" refers neither to semantics nor valence. Caveat usor!

f. ▼ Text Type—[The constraints are on display by default.] There are five self-disclosing sub-panels under this heading.

g. ▼ Source—[The constraints are on display by default.] There are seven sub-panels under this heading. The assignments for the Hexateuch are taken from Eissfeldt's classic work.

h. ▼ Agreement—[The constraints are on display by default.] This powerful set of constraints only applies to pairs of constituents and hence is inoperative in the current context. Its use is discussed in connection with the fourth search presented in our paper on the logic of search.

i. ▼ Parent/Child Counts—[The constraints are on display by default.] This powerful set of constraints only applies to situations where a parent and/or child is in evidence and hence is inoperative in the current context. Its use is discussed in connection with the first search presented in our paper on the logic of search.

12. The Final Row of Buttons in the Syntax Search—At the bottom of the dialog, we encounter eight buttons. Namely:

a. Clear—Clicking this removes all search constraints displayed in the left-hand pane.

b. Load…—Pops up the "Load Syntax Query" dialog. Selecting a previously named search and then clicking "Load" populates the left-hand pane with the details of the selected search. Alternately, one may select a named search and then delete it by clicking "Delete."

c. Save—Clicking this button causes the search presently defined in the left-hand panel to update a previously named and loaded search.

d. Save As…—Clicking this button enables one to save a newly specified search under a newly specified name.

e. Previous…—This is a handy if non-specific assist. Clicking it calls up the "Previous Searches" dialog. If one can remember how far back a search was executed, one can often recall it via this route even though it was not saved.

f. Search—Once a search has been defined, "Search" launches it.

g. Cancel—As the name implies.

h. Help—Clicking this causes a "Help" window to pop up. If one is focused on the Syntax Search dialog, the popped-up text provides an alternate explanation of what various controls accomplish.

B. Examining Search Results

1. When one launches a search, all of the resources of the Libronix program are seized and the program is not responsive until the results have been found and announced. When the search is launched, a new panel labeled "Search Results" comes up on the left of the screen.

2. In the upper right of the results panel appears a starting count stating "0 Occurrences." This stays in place until finally updated with the count of hits found.

3. Just what information is displayed in the body of the "Syntax Search Results" panel is determined by the choices that the user makes by clicking "Current View" and choosing one of the available options. I choose "References with Hits in Full Verse Context."

4. On the upper left of the panel, the specifications of the search are provided.

5. On the right are "Other Tools." We shall not go into the working of these tools.

6. Scrolling down to the bottom of the results panel, the apparatus for advancing through the results is found.

III. The Mechanics of *Phrase* Searches

A. Specifying a Search

1. Carry out II. A. 1-9.

2. To examine the array of constraints that is available when searching for a phrase, let us again begin with a highly unconstrained search. Click "Search." Then in the "Syntax Search" dialog that is presented, click on "Phrase."

a. In the left-hand pane, the message that "Your query is currently empty" goes away, being replaced by "Phrase 1" highlighted in yellow. Up to this point, we have defined a search whose only constraint is that we seek any phrase.

b. In the right-hand pane, all but the first item are further constraints that can be imposed on the phrase declared in the left-hand pane. Whether or not the first item, "Highlight this term in search results," is checked has no effect on the outcome of the search. It only determines whether the structure specified on the left-hand side should be highlighted by giving it a color other than black in the search results.

3. The constraints in the right-hand pane are divided into groups whose headings are located in gray rectangles. To the left of each heading is a solid black triangle which indicates whether the constraints subsumed under the heading are hidden (►) or on display (▼). The constraints visible at present are those that are applicable to *phrases*. Other constituents, as we will see, will have other available constraints.

   a. ▼ Search Parameter—[The constraints are on display by default.] The only true constraint, as noted above, is "☑ Must be an immediate child of parent." Note that the box is grayed out, that is, the constraint is forced.

   b. ► Occurrence—[The constraints are hidden by default.] If one clicks on the rightward pointing arrow, a list of three subsets of constraints (nine possibilities) will drop down. Note the default selections for the (normally hidden) constraints:
      i. ⊙ Must be present.
      ii. ⊙ Must occur only once.
      iii. ⊙ Can be anywhere within parent. (This is unavailable, since "parent" is not defined for the present search.)

   c. ▼ Phrase—[The constraints are on display by default.] There are seven sets of phrases that exist in the phrase markers and so might be selected to constrain a search. It is crucial to understand that phrases, not segments, are being specified.
      i. Verbal
      ii. Substantival
      iii. Conjunctive
      iv. Prepositional
      v. Adjectival
      vi. Adverbial
      vii. Other Phrasal Constituents

   d. ▼ Phrase Body—[The constraints are on display by default.] There are eleven kinds of phrases ("preposition or noun/participle followed by:" X) that can be specified.

   e. ▼ Semantics—[The constraints are on display by default.] Only noun semantics are available when specifying the nominal portion of phrases. (This panel is identical to the one provided for constraining segments.)

   f. ▼ Syntactic License—[The constraints are on display by default.] As our glossary has it, a *licensing relation* is "the grounds upon which a syntactic construction is identified. For example, a CONSTRUCT NOMINAL PHRASE has a syntactic license of 'construct,' indicating that the phrase is licensed to be formed on the basis of the presence of the construct state." The relation identifiers for phrases divide into these five subsets, each having a glossary entry:
      i. CONJOINED CONSTITUENTS: SEMANTIC
      ii. CONJOINED CONSTITUENTS: FORM
      iii. SIMPLE (UNCONJOINED) PHRASES
      iv. TIGHTLY JOINED PHRASES
      v. OTHER.
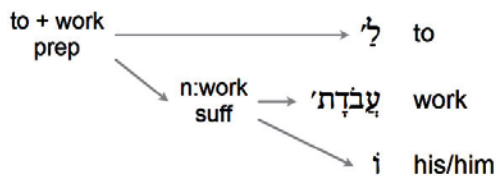   Brief definitions of the licensing relations subsumed under each heading will pop up if the mouse cursor hovers over the name of the relation.

   g. ▼ Parent/Child Counts—[The constraints are on display by default.] Two kinds of constraint are available under this heading:

      i. Parent Count: The overwhelming majority of phrases has a single mother node. Using the parent count constraint, one may search for unusual phrases having, say, ten mother nodes. (There is one instance of this, at Esther 9:7-10a.)

     ii. Child Count: One may also constrain the result by specifying the number of daughters that a phrase node has.

B. Specifying More Complex Searches

Up to this point, all of the searches that we have referred to have involved constraints placed on single nodes. In general, however, search constraints involve more complex structures. In this section, we discuss the mechanics of specifying more complex searches.

1. We shall address this topic by taking up a specific search. Suppose that we wish to find all instances akin to this phrase marker fragment from Psalm 104:23:

    When we say "akin," we mean that we want to find all prepositional phrases whose preposition is some form of לְ- 'to' and whose nominal portion is a *suffixed noun* having *work* semantics. We will need to build up a search structure that incorporates these constraints.

2. We click "Search" and "Clear" to start with a blank slate.

3. From the list of available constituents that follows "Add:", we select "Phrase."

4. We next need to add a segment and constrain it to be the desired preposition.

    a. Click on "Seg" Note that "Segment 1" appears and that a line (an "edge," in "tree-speak") runs from "Phrase 1" pointing down to "Segment 1." Note further that the formerly grayed-out left-pointing arrow now is "active" (green). Clicking on it raises the segment to be a sister of "Phrase 1" and makes available for clicking the right-pointing and the up-pointing arrows. Since we want "Segment 1" to be the daughter of "Phrase 1," we click the right-pointing arrow to restore the mother-offspring relation.

    b. To constrain the segment to be the daughter of the phrase, while "Segment 1" is highlighted in yellow, we check off "Must be an immediate child of parent."

    c. To constrain the segment to be the specified preposition, we click "Edit…" under the "Parts of Speech" heading, and then in the "Add Reference" dialog, we check "Preposition" toward the top, check "to" (לְ) from the "Preposition Options," and then click "OK" to export our constraints. Note that in the left-hand pane, "Segment 1" is now followed by a specification of the constraints that we have just imposed.

5. Next, we need to install the noun phrase node and impose the necessary constraints upon it.

    a. Under "Add:", "Phrase" is not shown. Hence, to install a phrase node, we click the "Add ▾" button just above the left pane and select "Phrase." A new node,

"Phrase 2," is added to the search specification. Its mother is "Phrase 1," as we desire, so we do not need to alter its position in the search tree using the set of arrows. Note that "Must be an immediate child of parent" has been enforced by default, a situation that is also appropriate to our desires.
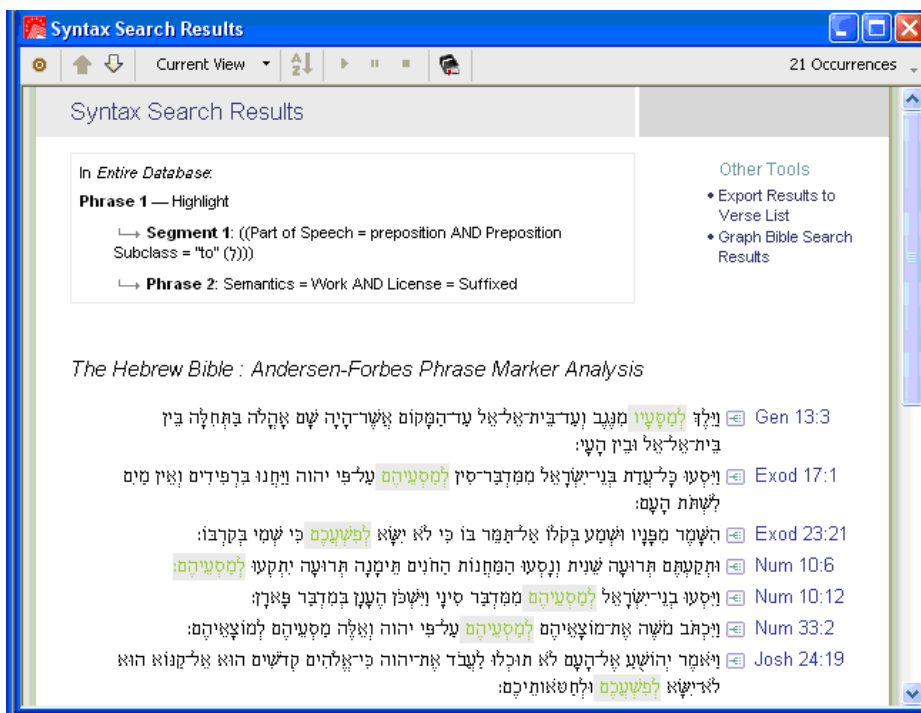
b. Next we must enforce the constraint that "Phrase 2" has *work* semantics. We scroll down in the right-hand pane until we reach the "Semantics" heading. Then, from among the options, we check "Work," the final option.

c. Finally, we scroll all the way to the bottom of the right-hand pane, locate "Tightly Joined Phrases" under the "Syntactic License" heading, and check "Suffixed."

d. As a further constraint, we click on "Phrase 1" to select it (highlight it) and click "Highlight" is the right-hand pane. (This is so that the phrases that are found will be highlighted in the "Syntax Search Results.") We then scroll all the way to the bottom of the right-hand pane, and adjust "Child Count: Anything　" so that it reads "Child Count: = 2." This imposes the constraint that "Phrase 1" only has the two daughters shown in the search specification. At this point, our search specification looks like this:

Phrase 1 — Highlight
Add: Phr / Seg / Any / Gap / Group / Unordered Group / OR
⊢→ **Segment 1:** ((Part of Speech = preposition AND Preposition Subclass = "to" (לְ)))
└→ **Phrase 2:** Semantics = Work AND License = Suffixed

e. We launch the search by clicking "Search." Across the entire database, twenty-one hits are returned. The "Syntax Search Results" panel looks like this:

Syntax Search Results　　　　　　　　　　　　　　　　　　21 Occurrences

Syntax Search Results

In *Entire Database:*
Phrase 1 — Highlight
　　⊢→ **Segment 1:** ((Part of Speech = preposition AND Preposition Subclass = "to" (לְ)))
　　└→ **Phrase 2:** Semantics = Work AND License = Suffixed

Other Tools
• Export Results to Verse List
• Graph Bible Search Results

The Hebrew Bible : Andersen-Forbes Phrase Marker Analysis

Gen 13:3　וַיֵּלֶךְ לְמַסָּעָיו מִנֶּגֶב וְעַד־בֵּית־אֵל עַד־הַמָּקוֹם אֲשֶׁר־הָיָה שָׁם אָהֳלֹה בַּתְּחִלָּה בֵּין בֵּית־אֵל וּבֵין הָעָי׃

Exod 17:1　וַיִּסְעוּ כָּל־עֲדַת בְּנֵי־יִשְׂרָאֵל מִמִּדְבַּר־סִין לְמַסְעֵיהֶם עַל־פִּי יהוה וַיַּחֲנוּ בִּרְפִידִים וְאֵין מַיִם לִשְׁתֹּת הָעָם׃

Exod 23:21　הִשָּׁמֶר מִפָּנָיו וּשְׁמַע בְּקֹלוֹ אַל־תַּמֵּר בּוֹ כִּי לֹא יִשָּׂא לְפִשְׁעֲכֶם כִּי שְׁמִי בְּקִרְבּוֹ׃

Num 10:6　וּתְקַעְתֶּם תְּרוּעָה שֵׁנִית וְנָסְעוּ הַמַּחֲנוֹת הַחֹנִים תֵּימָנָה תְּרוּעָה יִתְקְעוּ לְמַסְעֵיהֶם׃

Num 10:12　וַיִּסְעוּ בְנֵי־יִשְׂרָאֵל לְמַסְעֵיהֶם מִמִּדְבַּר סִינָי וַיִּשְׁכֹּן הֶעָנָן בְּמִדְבַּר פָּארָן׃

Num 33:2　וַיִּכְתֹּב מֹשֶׁה אֶת־מוֹצָאֵיהֶם לְמַסְעֵיהֶם עַל־פִּי יהוה וְאֵלֶּה מַסְעֵיהֶם לְמוֹצָאֵיהֶם׃

Josh 24:19　וַיֹּאמֶר יְהוֹשֻׁעַ אֶל־הָעָם לֹא תוּכְלוּ לַעֲבֹד אֶת־יהוה כִּי־אֱלֹהִים קְדֹשִׁים הוּא אֵל־קַנּוֹא הוּא לֹא־יִשָּׂא לְפִשְׁעֲכֶם וּלְחַטֹּאותֵיכֶם׃

IV. The Mechanics of *Clause Immediate Constituent* Searches

A. Specifying a Search

1. Carry out II. A. 1-9.
2. To examine the array of constraints that is available when searching for a clause immediate constituent (CIC), let us again begin with a highly unconstrained search. Click "Search." Then in the "Syntax Search" dialog, click on "Clause Immediate Constituent."
   a. In the left-hand pane, the message that "Your query is currently empty" goes away, being replaced by "Clause IC 1" highlighted in yellow. Up to this point, we have defined a search whose only constraint is that we seek any CIC.
   b. In the right-hand pane, all but the first item are further constraints that can be imposed on the phrase declared in the left-hand pane. Whether or not the first item, "Highlight this term in search results," is checked has no effect on the outcome of the search. It only determines whether the structure specified on the left-hand side should be highlighted by giving it a color other than black in the search results display.
3. The constraints in the right-hand pane are divided into groups whose headings are located in gray rectangles. To the left of each heading is a solid black triangle which indicates whether the constraints subsumed under the heading are hidden (►) or on display (▼). The constraints visible at present are those that are applicable to *CICs*.
   a. ▼ Search Parameter—[The constraints are on display by default.] The only true constraint, as noted above, is "☑ Must be an immediate child of parent." Note that the box is grayed out, that is, the constraint is forced.
   b. ► Occurrence—[The constraints are hidden by default.] If one clicks on the rightward pointing arrow, a list of three subsets of constraints (nine possibilities) will drop down. Note the default selections for the (normally hidden) constraints:
      i. ⊙ Must be present.
      ii. ⊙ Must occur only once.
      iii. ⊙ Can be anywhere within parent. (This is unavailable, since "parent" is not defined for the present search.)
   c. ▼ Constituent—[The constraints are on display by default.] These fourteen sets of CICs exist in the phrase markers and so can be selected to constrain a search:

Predicators	Space
Subjects	Time
Objects	Scoped Operators
Other Participants	Enriching Constituents
Complements	Phrasal "Discourse Units"
Aspectualizers	Miscellany
Movement	Mixed-Level Constituents

Brief definitions of these CICs pop up if the mouse cursor hovers over the CIC name. The CICs are a mixed lot. Some specify grammatical function (predicators, subjects, objects, and complements). Some are "impermanent" (underspecified

'and' cue phrases = clause-initial coordinating conjunctions, nebulous constituents, and *lapsi calami*). Some are "syntactically isolated" (vocatives, exclamatives, and labels). Some are operators (many instances of "also", interrogatives, modals, and negatives). The rest specify semantic roles. LIMITATION: If a constituent has a grammatical function (other than bland "adjunct"), then no semantic role is shown.

    d. ▼ Syntactic License—[The constraints are on display by default.] The relation identifiers for CICs divide into these four subsets, each having a glossary entry:

        i. Grammar Determined
       ii. Grammar Determined and Suspended
      iii. Grammar Determined and Resumed
      iv. First-in-Clause Coordinating Conjunction

Brief definitions of these licensing relations pop up if the mouse cursor hovers over the name of the relation.

    e. ▼ Parent/Child Counts—[The constraints are on display by default.] Two kinds of constraint are available under this heading:

        i. Parent Count: The overwhelming majority of CICs have a single mother. Using the parent count constraint, one may search for CICs having more than one mother. For example, if we constrain a finite-verb predicator to have more than one mother, we harvest a sizable crop of instances of verb ellipsis. We find two instances of twenty-three clause ellipsis: 1 Chr 24:7 and 1 Chr 25:9!

       ii. Child Count: One may also constrain results by specifying the number of daughters that a CIC has.

V. The Mechanics of *Clause (Predication)* Searches

Specifying a Search

  1. Carry out II. A. 1-9.
  2. To examine the array of constraints that is available when searching for a clause or predication constituent, let us again begin with a highly unconstrained search. Click "Search." Then in the "Syntax Search" dialog, click on "Clause (Predication)."

    a. In the left-hand pane, the message that "Your query is currently empty" goes away, being replaced by "Clause 1" highlighted in yellow. Up to this point, we have defined a search whose only constraint is *seemingly* that we seek any clause. We say "seemingly" because, in fact, we recognize three different kinds of predication structures.

    b. In the right-hand pane, all but the first item are further constraints that can be imposed on the clause declared in the left-hand pane. Whether or not the first item, "Highlight this term in search results," is checked has no effect on the outcome of the search. It only determines whether the structure specified on the left-hand side should be highlighted by giving it a color other than black in the search results.

  3. The constraints in the right-hand pane are divided into groups whose headings are located in gray rectangles. To the left of each heading is a solid black triangle which

indicates whether the constraints subsumed under the heading are hidden (►) or on display (▼). The constraints visible at present are those that are applicable to *clauses*.

a. ▼ Search Parameter—[The constraints are on display by default.] The only true constraint, as noted above, is "☑ Must be an immediate child of parent." Note that the box is grayed out, that is, the constraint is forced.

b. ► Occurrence—[The constraints are hidden by default.] If one clicks on the rightward pointing arrow, a list of three subsets of constraints (nine possibilities) will drop down. Note the default selections for the (normally hidden) constraints:

   i. ⊙ Must be present.
   ii. ⊙ Must occur only once.
   iii. ⊙ Can be anywhere within parent. (This is unavailable, since "parent" is not defined for the present search.)

c. ▼ Structure—[The constraints are on display by default.] There are two sets of constraints on the structures that exist in the phrase markers and so might be selected to constrain a search:

   i. Type of predication:
       a. Clause
       b. Nominalized Infinitive Predication—To gain a sense of our representational approach to infinitives construct see, for example, the **nom inf / oblq** node at the end of the phrase marker for 2 Chr 32:14.
       c. Nominalized Participle Predication—To gain a sense of our representational approach to noun-verb participles see, for example, the **nom ptc / oblq** construction in the final clause of Amos 5:10.
   ii. Embedded or not:
       a. Embedded
       b. Not Embedded

d. ▼ Parent/Child Counts—[The constraints are on display by default.] Two kinds of constraint are available under this heading:

   i. Parent Count: Constraining the parent count is most useful with nominalized predications.
   ii. Child Count: One may also constrain results by specifying the number of daughters that a predication structure has.

APPENDIX: Defining a Workspace from Scratch

At the outset of this paper, I provide instructions for downloading a workspace for use with the Andersen-Forbes data. For readers with a "do-it-yourself" outlook, this appendix goes through all the details of defining the workspace. The actions here described are done *once* to set up the program for searching the Andersen-Forbes data.

A. Displaying the A-F Resources
   1. Start the Libronix Digital Library System.
   2. Dismiss any windows in the main display, revealing an empty gray "canvas."

3. In the upper left of the window, click "My Library" or simply type "CNTRL-L."
4. In the dialog that pops up, make sure that the "Collection:" is "All Known Resources" and that the radio buttons select "Author."
5. Below "Find:", type "Andersen" (with two e's).
6. Click "The Hebrew Bible: Andersen-Forbes Phrase Marker Analysis."
7. At this point we must go through the following obscure steps designed to link the phrase marker and text panels to the search results panel:

[**Beginning of strange series of actions**…]
   o Move the Phrase Marker panel to the far left of the canvas.
   o Click the lower "Search" (closest to the PM panel, the one lacking the underlined <u>S</u>).
   o In the "Syntax Search" dialog that appears, click "Clear" and then click "Text Segment" in the left-hand pane.
   o In the right-hand pane, scroll down until you see a heading "Verb Semantics/Valence" and then select (check) "Temporal Locative."
   o Click "Search."
   o When the "Syntax Search Results" panel appears, grab its upper edge and resize the panel downward so that the underlying "Andersen-Forbes Phrase Marker…" panel's upper border is visible.
   o Click any of the little phrase marker icons. (They look like a chicken footprint heading east in a rectangle.) A new A-F Phrase Marker panel will be displayed.
   o Dismiss the original phrase marker panel that lurks behind the "Syntax Search Results."
   o Dismiss the search results panel.
[**End of strange series of actions**…]

8. Stretch the new, remaining A-F PM window so that it fills the canvas side-to-side.
9. Grab the top of its upper blue bar and move it down from the top of the canvas by about the width of the blue bar. Similarly, move the lower border up by the same amount. (These resizing operations make space for other items.)
10. In the upper left of the window, click "My Library" or simply type "CNTRL-L."
11. Find and then click "The Hebrew Bible: Andersen-Forbes Analyzed Text." The text window should fill the left half of the canvas.
12. Grab the right margin of the text pane and move it left about a centimeter, exposing the far right edge of the underlying A-F PM panel.

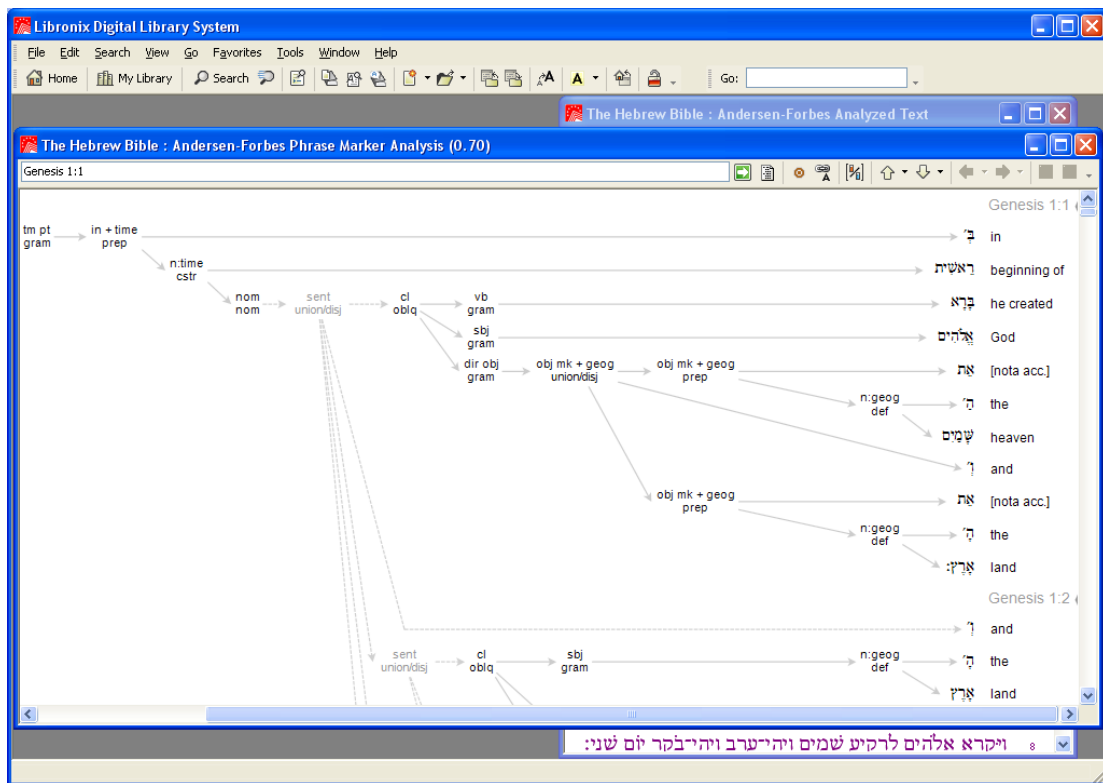**B. Customizing the A-F Phrase Marker Analysis (AFPMA) Window**
   1. Click anywhere in the Phrase Marker ("PM") window to give it the focus.
   2. Scroll down until you see a phrase marker tree.
   3. Examine which information is included in the display.
   4. Click "View → Interlinear…"
   5. In the "Interlinear Configuration" panel that pops up, put checks on the items that you want included in the PM display. Click "OK." I check all except "Lexeme" and "Part of Speech." Your preferences may differ from mine.
   6. Click "View → Zoom" and then select the font zoom that you prefer. (I select "90%.")

7. At the top right of the PM window, just to the right of the red "bullseye," is a gray-black icon of a few chain links. Click it, and then click "Set A" in the revealed menu.

C. Customizing the A-F Analyzed Text (AFAT) Window

1. Click in the blue "Andersen-Forbes Analyzed Text" bar to give its window the focus.
2. Scroll down until you see some Hebrew text.
3. Click "View → Visual Filters."
4. In the "Visual Filters" box, make sure that the radio buttons "point" to "The Hebrew Bible: Andersen-Forbes Analyzed Text."
5. Use the "Add →" and "← Remove" buttons to populate the right-hand side of the "Visual Filters" box with "Color by Eissfeldt Source" and "Insert Andersen-Forbes Genre Tags." To select which of these are displayed, if any, put check marks in the appropriate boxes. Click "Close." If some part of the Hexateuch is being displayed, the Eissfeldt sources should be shown color coded, if you requested that. And, if you requested display of the "genre" (aka, "text types"), then they should appear.
6. Click "View → Zoom" and then select the font zoom that you prefer. (I select "75%.")
7. At the top right of the text window, and just to the right of the red "bullseye" is a grey-black icon for a few chain links. Click it, and then click "Set A." (Having done this maneuver for both displays insures that they are linked and so will track each other.)
8. The application should now look like this:

My "AFresources" Workspace

D. Specifying the "Keylinked Reference"

It is very useful to have your favorite lexicon accessed directly from any displayed Hebrew word. To arrange this:

1. Click Tools → Options → General → Interface. The list shows the operations that you can control from this dialog. To make it so that a double-click on a Hebrew word will cause the program to "execute a keylink," check the appropriate box and then click "OK".
2. To select which resource will be accessed, click:

   Tools → Options → Keylink → Keylinking

   For "Data <u>T</u>ype:" select "Hebrew." Then in the list showing "Default Order of Resources and Actions:" select (click on) "Enhanced Brown-Driver-Briggs…" and then click "Promote" so that it appears in the top list.
3. If you have access to HALOT and want it also to be displayed, select it in the lower list, and then click "Promote" to place it in the upper list. Change the count following "Number of Windows to Open on a Keylink:" from "1" to "2."
4. Finally, click "Close."
5. To test your latest handiwork, double click on a Hebrew item in the PM display or in the AFAT (text) display.
   a. A window containing the HALOT entry for the Hebrew item that you clicked will be displayed, as will a BDB window (one on top of the other). Read the upper entry and dismiss it. Then read the lower entry and dismiss it. (Or move the upper window to the left and read both side-by-side, finally dismissing both.)
   b. COMPLICATION: If the double-clicked item consists of multiple segments, the reference works will "open" to the first segment when you double click. To get at each of the segments, right click on the "word," and then move down in the newly displayed menu to "Execute keylink:" and select the segment for which you seek enlightenment. **NOTE WELL:** This capability does not currently work for me!

E. Saving the Workspace

1. Now, click anywhere in the PM display, bringing it to the foreground.
2. Next, click "File → Save Workspace."
3. The "Save Workspace" dialog will pop up.
4. Into the space to the right of "Name:", type the name that you wish to give to this configuration that you have just created. I call my main workspace "AFresources."
5. Click "Save."
6. You may define workspaces to facilitate various sorts of research. For example, I have one named "AFPMAhoriz" that tiles two unlinked copies of the PMs one above the other. This facilitates comparing the representations in parallel texts.