

# Recent Developments in Electronic Resources for LXX Studies

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Research software designed for biblical scholars who work regularly with Greek and/or Hebrew has been around since the early 1980s, when the GRAMCORD Institute first produced a morphologically tagged Greek New Testament for PCs then utilizing the MS-DOS operating system.<sup>1</sup> Within the next decade, through the work of other scholars, the Hebrew Masoretic Text was digitized and morphologically tagged<sup>2</sup> and, finally, a digitized and morphologically tagged (Rahlfs) LXX was made available.<sup>3</sup> Other Bible software developers besides GRAMCORD got into the act and supported these morph-tagged texts as well, by either licensing from an existing organization or producing their own morphologically tagged texts. Currently, the main software developers who are in the technical end of Bible research software for scholars include: OakTree Software, developers of *Accordance* (primarily for Macintosh),<sup>4</sup> BibleWorks, developers of

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<sup>1</sup> The GRAMCORD Institute maintains a website at [www.gramcord.org](http://www.gramcord.org). Initially, the first Macintosh version of this database was produced in connection with The GRAMCORD Institute by OakTree Software, so that *Accordance* for Macintosh ran the GRAMCORD morph-tagged Greek NT from 1994-2003. Subsequently, OakTree Software acquired a license for an alternative morph-tagged Greek NT, which is the GNT they have made available since 2003. The GRAMCORD morphological database copyright is managed and licensed through the non-profit Didasko Ministries of Portland, Oregon. The only two software publishers who currently use their GNT are Logos, and BibleSoft's *PC Study Bible* ([www.biblesoft.com](http://www.biblesoft.com)). BibleSoft has been attempting to broaden into the scholarly market in recent years, but to date only has a morph GNT (GRAMCORD's) and a morph LXX (Rahlfs with the Kraft/Taylor/Wheeler morph tagging) and an untagged Hebrew BHS. In addition, the handheld publisher OliveTree Software licenses it as one of two they use for their *BibleReader* software ([www.olivetree.com](http://www.olivetree.com)).

<sup>2</sup> The etiology of the e-text of the Hebrew Bible (the BHS text used with permission of the German Bible Society) may be traced to the Michigan-Claremont BHS produced originally under the direction of H. Van Dyke Parunak (a the time of the University of Michigan) and Richard E. Whitaker (of Claremont Graduate Schools), and funded by the Packard Foundation. This work was subsequently verified at Westminster Seminary in Philadelphia) under the direction of Emanuel Tov by Al Groves of Westminster Theological Seminary. The morphological tagging was funded by the Packard Humanities Institute and Westminster Seminary, building on the initial tagging of Dick Whitaker's automatic parsing program, and verified by Al Groves and his team over a four year period. With the passing of Al Groves, the managing of the morphology has been taken over by Dale Wheeler of Multnomah University, and is known therefore as the Groves-Wheeler Westminster Hebrew Old Testament, and is currently in electronic version 4.10. It is this Hebrew database that software publishers interested in OT research modules, currently license for use. The raw data in an earlier form is found on the CCAT (Center for Computer Analysis of Texts) gopher site at the University of Pennsylvania, managed by Robert Kraft.

<sup>3</sup> The original form of the LXX (Rahlfs) was prepared by the TLG (Thesaurus Linguae Graecae) Project under Theodore Brunner at the University of California, Irvine. It was verified and adapted by the CATSS (Computer Assisted Tools for Septuagint Studies) Project and its various teams. The morphologically analyzed text of the CATSS LXX was prepared by Robert Kraft and the Philadelphia team. This form of the text and morphology may be found on the CCAT gopher site.

<sup>4</sup> OakTree Software has their website at: [www.accordancebible.com](http://www.accordancebible.com)

*BibleWorks* for Windows (Windows, of course),<sup>5</sup> and *Logos Bible Software* (historically for Windows, but now trying to enter the Macintosh market).<sup>6</sup> Each of these tend to show up regularly at annual Society of Biblical Literature conferences (at least the national ones held in the US each November) in order to demonstrate the newest features and modules available for their software.<sup>7</sup> But in terms of Septuagint studies, it has been only in the last five years or so that a growing number of particularly useful electronic tools has begun to blossom, with more on the way. It is the aim of this paper to elaborate on these recent developments for Septuagint studies.

By way of preface, it should be borne in mind that there are two critical elements for electronic biblical research, Septuagint-oriented or otherwise: (1) the availability of the needed electronic *texts* for the software that one uses, and (2) the ability of the *software* to access and manipulate the data of the text in such a way that it quickly enables the scholar to do his work. It is the purpose of this paper to focus on the *first*, and let the arguments for and against the usability of a given software product to the ends needed, be left up to the reader's research and testing. To that end, I should note first off that I will be demonstrating texts and features using only one product and platform, OakTree's *Accordance* on a Macintosh. This is due to four factors (1) Macintosh is my computing platform of choice;<sup>8</sup> (2) I know this software the best, having used it since its earliest version; (3) OakTree has focused, since their earliest days, on software details and databases of particular use to biblical scholars. And, (4) as will be noted, I personally have prepared most of the morphological tagging of Greek texts for them.<sup>9</sup>

Nevertheless, I will attempt to indicate which of the three developers mentioned have, at present, the texts I mention in this paper. Naturally, the software interface and search/compare/display features will differ with each product, so users will need to decide for themselves which software has (1) the data modules they need for their work; and (2) which software most

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<sup>5</sup> Bible Works has its website at: [www.bibleworks.com](http://www.bibleworks.com)

<sup>6</sup> The Logos Bible Software website is [www.logos.com](http://www.logos.com).

<sup>7</sup> This is not to mention software for handheld computing devices and smartphones, where, for now, the best technical software available is available as *BibleReader* (from Olive Tree Software) for many devices. They include tagged GNT, LXX and Hebrew Bible that can be carried in one's pocket. In November of 2009, at the North American SBL meetings, a "Software Shootout" session occurred in which each of the three developers, plus Olive Tree Software for handhelds, and the *Stuttgart Electronic Study Bible* (a subset of Logos for Windows) were allowed to demonstrate how their software handles a pre-established set of research questions. Of course, each developer came away with their own take on how this went. A report and links to this session can be found on Rúbén Gomez' blog: <http://www.bsreview.org/blog/2009/11/sbl-bible-software-shootout.html>

<sup>8</sup> As should be noted, the platform issue has become less and less of an issue, as emulation software has been developed that enables Windows users to run Macintosh software on their machines, and vice-versa. This has especially been the case since Apple shifted to the Intel chip for their Macintoshes several years ago.

<sup>9</sup> The morphologically tagging I have done for them includes: the Nestle Greek NT (building on Bill Mounce's initial work), the WH, Tischendorf, Byzantine and TR Greek NTs, the Apostolic Fathers (both the Holmes and Lightfoot editions), the Greek Pseudepigrapha (with Marco Fabbri's assistance), the Apocryphal Gospels, the Swete LXX, NT Codices Bezae, Vaticanus, Washingtonensis, and Sinaiticus, the NT papyri, Eusebius' Ecclesiastical History, the Christian Apologists, and more that are as yet unreleased.

effectively manipulates and searches that data for their own purposes.<sup>10</sup> The software that has a given electronic text available for their users will be indicated with the abbreviations A, B, or L: A (if it is available for OakTree's *Accordance*), B (if it is available for BibleWorks for Windows), and L (if it is available for the Logos or Libronix system).

### **LXX Electronic Editions**

*Rahlfs, morph tagged.* The Rahlfs edition was the first electronic form of the LXX made available to scholars, originally based on the German Bible Society's 1935 edition, but initially offered since the late 1980s/early 1990s without formatting or punctuation. The electronic edition has been updated in the last few years to match the Rahlfs/Hanhart print edition of 2005, and, in its latest rendition, the electronic edition includes punctuation and formatting (though B does not have the latter yet).<sup>11</sup> The e-text was initially made available by the Deutsche Bibelgesellschaft for public use via Robert Kraft at the University of Pennsylvania gopher site (as well as a morphology). The derivative morphologically tagged edition most frequently licensed by software publishers is that which was developed through the leadership of Bernard Taylor of Loma Linda, California and is now maintained with the help of Dale Wheeler of Multnomah University. This Kraft/Taylor/Wheeler Septuagint Morphology Database is currently in version 4.10a. This database is licensed for use by *Accordance*,<sup>12</sup> and, with modifications, in *BibleWorks* and *Logos*. An alternative *tagging* of the same Rahlfs text is available for *BibleWorks* users. The tagging for that version was developed by Jean-Noel Aletti, A. Gienusz of the Pontifical Biblical Institute, under consultation with Michael Bushell.

*Swete, morph tagged.* OakTree Software has recently completed a five year project of morph-tagging a supplemental LXX text to that of Rahlfs-Hanhart, in the three-volume 4th edition (1909/07/05) of Swete's LXX. The tagging includes text formatting as well as the textual apparatus of Swete.(A)<sup>13</sup>

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<sup>10</sup> This is not the place to review the relative merits of the the three primary software products mentioned, their interfaces and design features. For that purpose there are many reviews both online and in print. Online, one example is the *Bible Software Review* website [[www.bsreview.org](http://www.bsreview.org)] and in print, the comparative review of BibleWorks 8 and Logos Bible Software 3 for Windows by Alec J. Lucas in *Themelios* 34.3 (2009): 446-50.). Furthermore, the platform issue (Mac vs. Windows, etc.) is becoming more of a moot point. It is relatively easy, through the use of software emulators to run Windows software on a Macintosh, and Macintosh software on a Windows machine. And a good share of scholars do just that. If the software they want or need was not designed for their machine, they simply invest in an emulator, purchase the software, and run it on their machine. That is much less expensive than purchasing another machine just to run the software you want, when it is designed for Macintosh and you use Windows, or designed for Windows, and you use Macintosh.

<sup>11</sup> Logos users have access to the the updated edition of Rahlfs-Hanhart in the SESB (Stuttgart Electronic Study Bible), which uses the Logos "Libronix" system.

<sup>12</sup> The Rahlfs morph-tagged LXX has been available for *Accordance* since 1995, with LXX1 (the variant parallel texts of Rahlfs) since 1997.

<sup>13</sup> The Pentateuch of Swete with Apparatus was released Fall 2007 for SBL in San Diego; the rest of volume one was released for those in Boston in Nov 2008; the second volume with apparatus was released in time for the meetings in New Orleans in Fall of 2009; the final volume tagging has been accomplished and is simply awaiting the completion of the apparatus. The full three volume Swete LXX is thus is on schedule for release for the SBL meetings in Atlanta in November of 2010.

*Göttingen, morph tagged.* After a long process of sorting out the legal rights involved, the publisher of the Göttingen LXX, Vandenhoeck and Ruprecht, have begun in the past year licensing the text to select software publishers. The long-awaited Göttingen LXX is now in the process of being released volume by volume upon their completion. OakTree software, publishers of *Accordance*, has recently completed and released the morph tagged editions of the Pentateuch volumes with full apparatus, and are busy preparing the other volumes for periodic release as the individual volumes are completed. Logos has promised the same but to date is only taking pre-pub subscriptions. It is not known whether Logos intends to morphologically tag the Göttingen text, but the released volumes of OakTree Software for *Accordance* indicate that they have morphologically tagged the Greek text of each volume before release. The expectation is that these Göttingen volumes will be released volume by volume just as the print edition has been (though, of course, not necessarily in the same order). Oaktree and Logos are the only two publishers to my knowledge to receive Göttingen licenses from V & R at present. (A, L)

### **LXX Textual Apparati**

The newest area of electronic tools for Septuagint studies has to do with the development of textual apparati. In electronic form, these offer distinct advantages in terms of hypertext linking to the abbreviation lists (which can be quite extensive in larger apparati) and the ability to search particular fields within a given apparatus (for example, to search for all instances of a given Greek word, or of a particular MS that is cited, or of Hebrew words within the apparatus, etc.). Recent releases include the following.

*Swete Apparatus.* OakTree Software has released the two volumes (in 2008 and 2009) of the three apparatus volumes that have had their text digitized and morphologically tagged. The final volume is on schedule for completion by November 2010. (A)

*Cambridge Larger Apparatus.* As of November 2009, the apparatus for Genesis through Ruth is complete and available, only at present through OakTree Software for *Accordance*. It is anticipated that I-IV Kingdoms and possibly 1-II Chronicles will be completed by November 2010 (A).

*Göttingen Apparatus.* This long-awaited apparatus is being released concurrently with each volume, currently only by OakTree for *Accordance*. It is still in pre-pub for the Logos system and the anticipated release sequence is unknown. (A)

*Rahlfs Apparatus.* The Rahlfs apparatus is not currently available through the three publishers as part of the Rahlfs-Hanhart modules, with the exception of the *Stuttgart Electronic Study Bible* (SESB), a subset of Logos' *Libronix* system.<sup>14</sup> It is expected that the updated Rahlfs-Hanhart apparatus will be released to licensing software companies in the Spring of 2011, with

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<sup>14</sup> See [www.logos.com/sesb](http://www.logos.com/sesb). This is the most scholarly of all of the Logos offerings, and includes the BHS, BHQ, GNT, NA27, LXX, and Vulgate with critical apparati, morphological searching, and the linguistic WIVU databases with Workgroep Informatica Constituency Tree Analysis, which allows for phrase and contextual analysis.

processing and development of appropriate modules some time thereafter in software packages suitable for the German Bible Society to market. (L; later A)<sup>15</sup>

### **LXX Supplementary Tools**

*LXX/MT Parallels*. Emanuel Tov and Frank Polak's *CATTSS Hebrew/Greek Parallel Text* was released initially for *Accordance* in 1997 (and subsequently by BibleWorks), and the revised edition was released in 2009. The raw, original version of this tool, which shows the *word by word* correspondences between the Michigan-Claremont BHS consonantal Hebrew text with the TLG LXX [=Rahlfs] is available on the CCAT gopher site (A,B).

*Grammars*. Coneybear & Stock's classic *Grammar of LXX Greek* was digitized in summer of 2004 and was placed in the public domain. Several publishers have created modules out of this to work with their LXX texts (A, B; unreleased but "prepub" in L). It is hoped that before too long, this will be joined by H. St. J. Thackeray's *A Grammar of the Old Testament in Greek, According to the Septuagint* as a module, but none of the software publishers yet have this available.<sup>16</sup>

*Lexica*. The only currently licensable electronic edition of an LXX-specific lexicon is for Johan Lust, Erik Eynikel, and Katrin Hauspie's *Greek-English Lexicon of the Septuagint*,<sup>17</sup> now electronically following the revised 2004 edition. (A,B,L)<sup>18</sup> Of course, BDAG is available in electronic form (A, B, L)<sup>19</sup> as well as various editions of Liddell-Scott (A, B, L).<sup>20</sup>

### **LXX Translations.**

The *Lancelot C. L. Brenton English translation* of the LXX of 1844. This is an English translation of Vaticanus except when Vaticanus is broken. This rather dated and public domain translation is available through all three major software publishers (A, B, L).

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<sup>15</sup> OakTree has produced for the German Bible Society *Die Mac StudienBible* CD-ROM, which includes the critical apparatus for both the latest Nestle Greek NT and the Stuttgart Masoretic Text, but not, in its current edition, the apparatus for Rahlfs, even though the Rahlfs *text* is included. An updated version is expected for 2011 to include the apparatus of Rahlfs-Hanhart. The apparatus of *Die Mac StudienBible*, of course, install and work with other *Accordance* texts and modules as well, whether in English or other language base.

<sup>16</sup> Vol. I., Introduction, Orthography and Accidence. Cambridge: University Press, 1909.

<sup>17</sup> Initially the first edition of the LEH LXX Lexicon was released for licensure to software publishers by the German Bible Society in 1997/98.

<sup>18</sup> It is hoped at this point that Peeters, publishers of the Muraoka LXX lexicon, will begin to license the electronic version of the Muraoka lexicon as well in the not-too-distant future. As of November, 2009 they were not yet prepared to do so. But they know software publishers are ready and willing to license when they are prepared to do so. Some publishers are cautious to license their texts to e-publishers until they are certain their hard copy inventory is not by scholars choosing the e-text instead. So it takes some time for them to weigh the cost so that this does not occur.

<sup>19</sup> The University of Chicago began licensing the latest edition of BDAG to electronic publishers in 2002.

<sup>20</sup> Only BibleWorks and Logos have the "big" Liddell-Scott lexicon at present. *Accordance* users so far have had to content themselves the the "middle" or Intermediate LS lexicon, although they have been pursuing both text and license from Oxford University Press for several years.

*The New English Translation of the Septuagint* (NETS) as a searchable module was released by OakTree Software for *Accordance* in San Diego for the SBL meetings there in 2008 and is at present only available for *Accordance* (A).<sup>21</sup>

### **Supplementary Morph Tagged Texts Useful for LXX Studies.**

Besides the long-available Hebrew morphological Bible, other electronic e-texts of value to Septuagintalists for linguistic comparison and analysis include the following:

#### **Greek E-Texts<sup>22</sup>**

*Greek NT.* Normally these are based either on the Nestle<sup>27</sup> text or the UBS<sup>4</sup> text licensed from the German Bible Society. The first morphologically-tagged edition, the GRAMCORD NT, was the only show in town in the early 1980s, but this has been supplemented as other developers tagged the GNT for themselves or found alternatives.<sup>23</sup> So in due time *BibleWorks* licensed Friberg's Morphologically Analyzed Greek NT (UBS text), and have produced their own Aletti/Gieniusz/Bushell Morphologically analyzed GNT.<sup>24</sup> OakTree's *Accordance* similarly developed their own tagging of the Nestle text, along with text formatting, accomplished by Bill Mounce and Rex Koivisto.<sup>25</sup>

*OT Greek Pseudepigrapha.* The Greek Pseudepigrapha (a somewhat fluid "collection") were initially released by OakTree Software for *Accordance* with the cooperation of Craig Evans in 2003. The initial morph tagging was done by Rex Koivisto and Marco Fabbri for OakTree and *Accordance*. The OakTree edition was subsequently licensed by OakTree to Bibleworks, and therefore both partake of the Koivisto/Fabbri morph-tagging. Logos has subsequently issued their own edition with morph tagging done by Michael Heiser and Ken Penner. (A, B, L)

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<sup>21</sup> For a summary of this extensive project, and electronic views of the book in pdf format, see: <http://ccat.sas.upenn.edu/nets/>. The print edition, with each book translation assigned to a scholar specializing in that particular book, was released under the title *A New English Translation of the Septuagint* and edited by Albert Pietersma and Benjamin G. Wright and published by Oxford University Press in 2007.

<sup>22</sup> There are also numerous supplementary Hebrew texts that have been morph-tagged and are also available for Septuagintalists as well: the Dead Sea Scrolls, the Targums, the Mishnah, Hebrew Inscriptions, etc. But these are outside the purview of this brief paper.

<sup>23</sup> As mentioned earlier, Logos and BibleSoft's *PC Study Bible* continue to use the GRAMCORD morph Greek NT. BibleWorks and OakTree's *Accordance* have developed their own or licensed alternative morphologically tagged Greek NTs.

<sup>24</sup> This is not to mention other morph-tagged editions of the GNT: Westcott and Hort (A, B), Textus Receptus (A, B), Robinson-Pierpont's Greek New Testament (Byzantine Textform 2005), Tischendorf (A, [available in B but untagged])

<sup>25</sup> This was released to replace the GRAMCORD GNT for OakTree in 2003. In addition to printed critical editions of the GNT, such as the Westcott-Hort text and the Tischendorf text (both released on 2004), OakTree Software has been producing morph-tagged editions of several key individual MSS of the GNT, including Codex Bezae (2005), Codex Vaticanus (2006), Codex Sinaiticus (2007), Codex Washingtonensis, (2007) and (soon) Codex Alexandrinus. Each is entirely morph-searchable, including searching for *nomina sacra*. OakTree has also in 2008 released a morph-tagged collection of Papyri for *Accordance* based on Philip Comfort and David Barrett's *The Text of the Earliest New Testament Manuscripts*. 2nd corrected edition, Wheaton: Tyndale, 2001. BibleWorks and Logos also have released e-modules of Comfort and Barrett but their e-editions are not, to my knowledge, morphologically tagged.

*Philo*. The Norwegian *Philo Concordance Project* became the basis for electronic research data here. The works of Philo were lemmatized and partially tagged by Norwegian scholars Peder Borgen, Kåre Fuglseth, Roald Skarsten. They began licensing this material to Bible software publishers in 2005-2006. Initially the Norwegian tagging for this data was focused on lemmatization rather than morphological tagging (as one would expect for a “concordance” project), although some rudimentary morph tagging was included. As a result, different scholars were set to work for all three publishers improving the morph tagging to current electronic standards. These improved forms of Philo’s works are now available from all three developers, though the tagging will have been accomplished by different cooperating scholars. (A, B, L)

*Josephus*. The complete works of Josephus were tagged by Jean-Noel Aletti, A. Gieniusz and M. Bushell for *BibleWorks*, originally in 2005. BibleWorks has since licensed this to OakTree for *Accordance* users as well (B, A).

*Apostolic Fathers* The Apostolic Fathers are available in several electronic editions: the most important for scholars is the critical Greek edition of Michael Holmes (now in its 3rd edition), with its critical apparatus and English translation. For OakTree the first edition was initially morph tagged by Rex Koivisto in 2001, and upgraded to the third edition of Holmes in 2009.<sup>26</sup> (B, A) The older edition of Lightfoot is also available in morph-tagged edition by two of the publishers. (B, A)<sup>27</sup>

### **Latin E-texts.**

*The Latin Vulgate, Morph-tagged*. The electronic form of the Latin Vulgate (whether the Weber edition of the German Bible Society, or some form of a public domain Vulgate) has been available for some time by all three major publishers (A, B, L).<sup>28</sup> However, only OakTree’s *Accordance* currently has the *morph-tagged* Weber edition of the Latin Vulgate. This morphologically tagged edition of the entire Latin Vulgate was completed by Marco Fabbri of the Pontificia Università Della Santa Croce in 2007. (A)

### **Syriac E-texts.**

*The Peshitta NT, Morph-tagged*. Although the Peshitta NT has been available, even in a morphologically tagged edition, since 2006, the Peshitta OT is not *yet* available in electronic form. (NT: A, B)

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<sup>26</sup> Michael W. Holmes, *The Apostolic Fathers: Greek Texts and English Translations*. 3rd Revised Ed. Grand Rapids: Baker, 2007. The electronic edition includes textual apparatus, introductions, English translation, as well as a morph-tagged text (at least in the OakTree edition for *Accordance*).

<sup>27</sup> In addition to these important works, other Christian Koine material available in morph-tagged electronic form from includes: *Greek Christian Apologists*: Irenaeus (5 books), Justin Martyr (Apology, Trypho), Athenagoras (Plea and Resurrection) and Theophilus of Antioch (3 books To Autolytus). The Apologists module was released in 2007) *The NT Apocryphal Gospels* (released in 2005); and *Eusebius’ Ecclesiastical History* (released in two stages: 1/2 in 2008, and the entirety in 2009). These are available only from OakTree Software for *Accordance* at present.

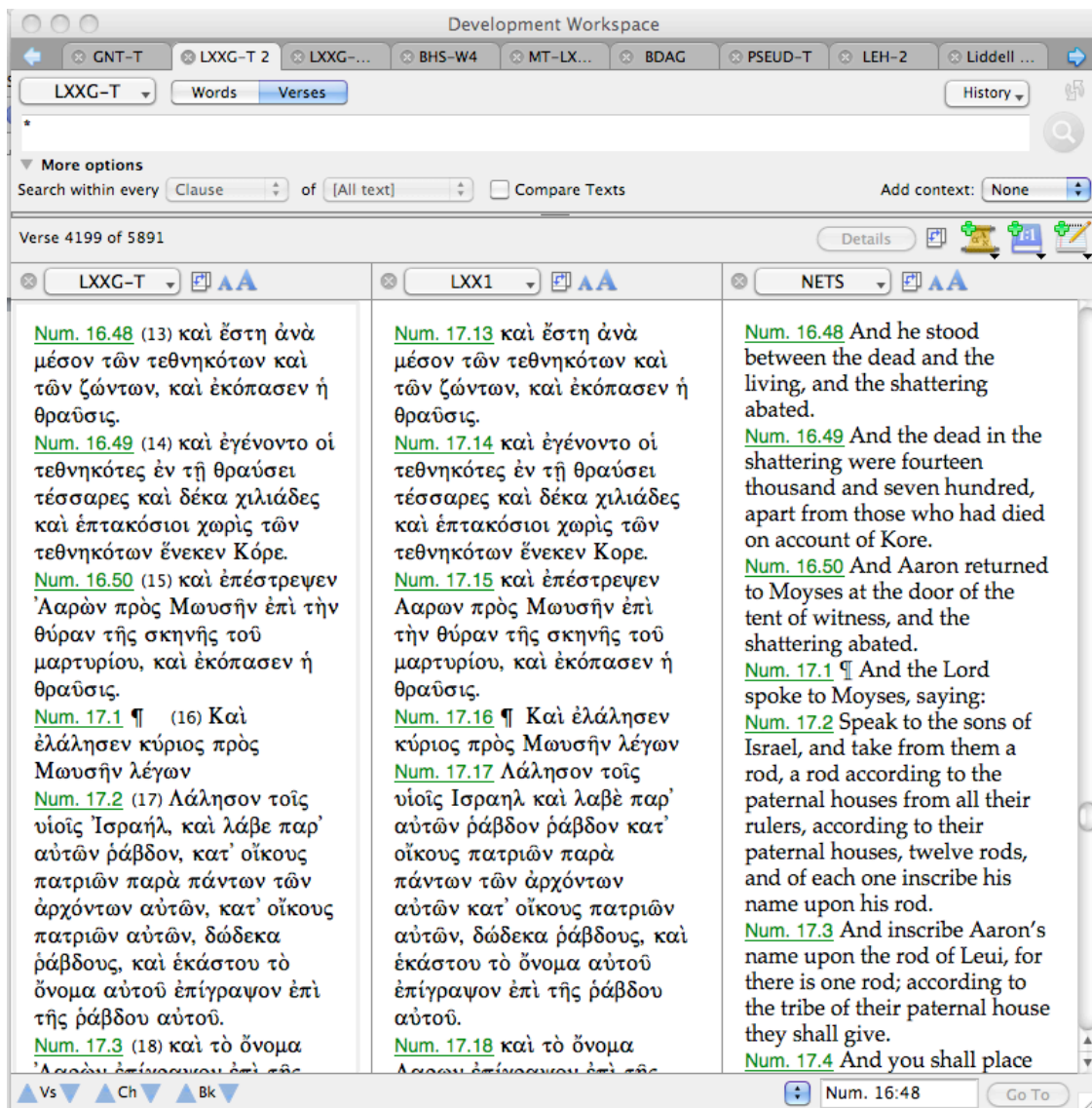
<sup>28</sup> OakTree, for example, had the non morph-tagged Weber edition under license from the German Bible Society for *Accordance* since 1996.

### **Software Features to Access LXX Tools**

As mentioned, the accessibility of an abundance of relevant electronic texts and tools for LXX research is a critical first step in computer-aided research, but it is up to the software developers (1) to be willing and able to license such tools, and (2) to, as effectively as possible, display, compare, manipulate, and access the electronic data thus obtained. What follows are some examples of how computer-aided research is developing to the advantage of Septuagint studies.

**Alignment of texts.** One of the challenges in producing electronic texts for comparative purposes in the field of LXX studies is the divergent versification methodologies used by various producers of LXX texts, both in modern translations, as well as in Greek. In computer-aided research, the tendency is to line comparative texts up by versification markers, so that, say, Exodus 18:4 in Rahlfs-Hanhart is set to line up with Exodus 18:4 in Swete or the MT or the NETS translation, for example. The problem, of course, is that the classification of a portion of the LXX text as, say, “Exodus 18:4” does not mean that the text is the *same* text. So it is much more important to observe the content of the verse so that, for example, one can see that the text of Rahlfs-Hanhart of 18:4 is really the text of Swete 18:5 or Göttingen 18:2. If those are the actual parallel passages, then the lining up of the *content* of the texts should match rather than the verse numbers when displaying such texts in parallel. Below is an example of how important this can be to have correct alignment of text.

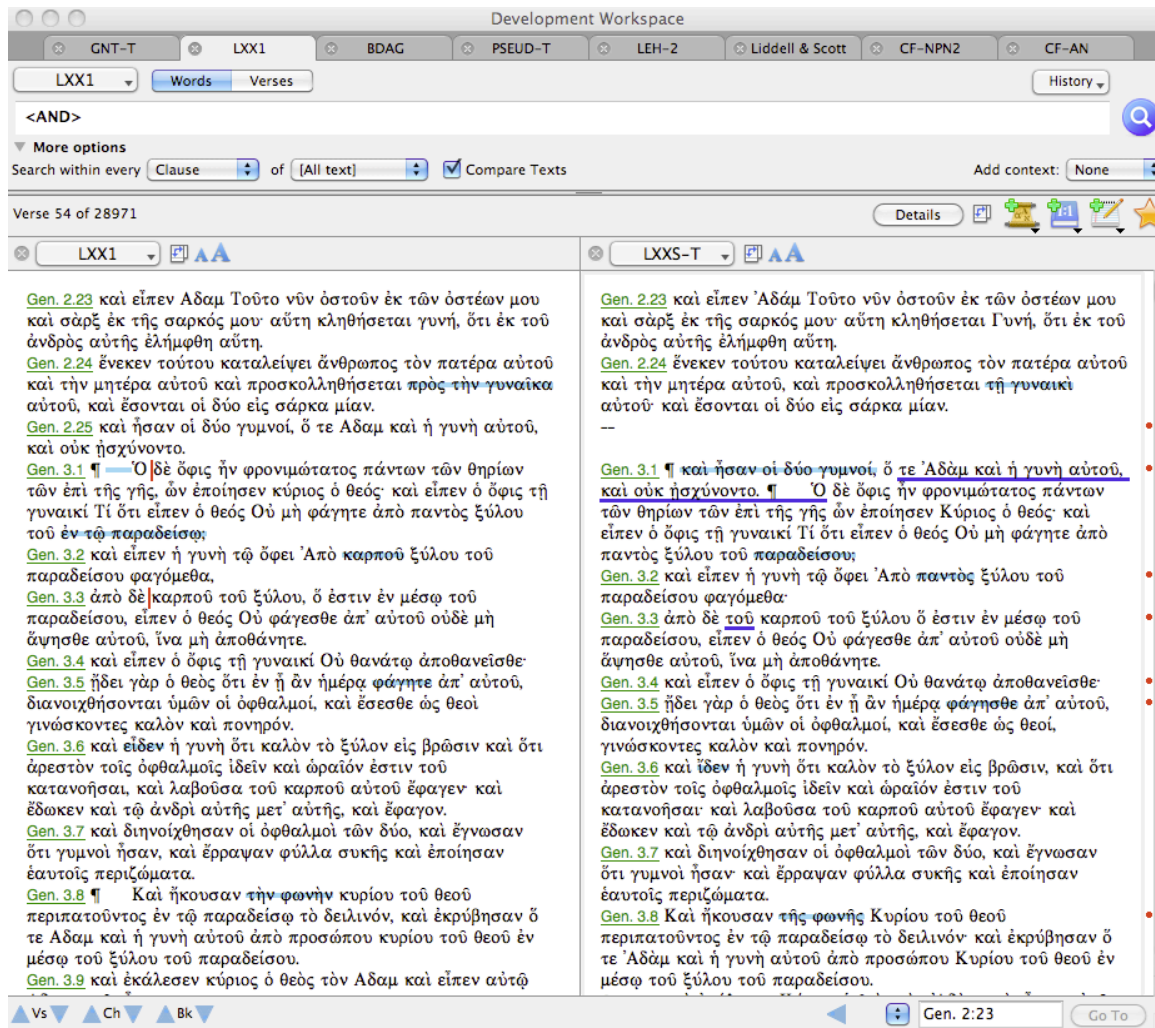




In this case, Rahlfs-Hanhart (center column) has a different verse numbering system than Göttingen (left column), and NETS (right column). But with the help of the computer and a well-crafted program, the correct text does in fact up despite those differences in versification systems.

**Detailed comparison of texts.** With the development of multiple editions of the LXX, the comparison of these editions can be enhanced by computer analysis. Certainly, the placing beside each other of parallel and similar texts has become commonplace among biblical research software developers, but the ability of the computer *to aid the human eye in catching details and differences* has improved dramatically. For example, by putting the Rahlfs-Hanhart edition of the LXX alongside the Swete edition, one can painstakingly compare them line by line, by passing the eye between the texts. However, with the recent “compare” feature of *Accordance*, these differences between similar texts can be instantly highlighted for the scholar. In the image below, LXX1 is Rahlfs-Hanhart, and LXXS-T is Swete. The “Compare Texts” checkbox above them

has been selected, and the insertions/deletions between the two are immediately indicated by the underlining, strike-throughs, and insertion marks. This certainly aids the researcher in identifying differences so as to pursue the textual-critical decisions of the editors.



**Search of texts (morphological) and MT/LXX Tool.** One of challenges of comparative LXX/MT studies is to find *what you are looking for*, even with computer-aided tools. For example, if one were to seek to find the ways in which συναγωγή is used to translate various Hebrew expressions, one could search Rahlfs-Hanhart for συναγωγή, and display the Hebrew text alongside it. But it would be rather tedious to work through the examples and find the various Hebrew words involved. But let us say that someone really is after the instances in which לַחֵץ is translated as συναγωγή as distinguished from instances in which it is translated as ἐκκλησία. It would be very tedious indeed to pick through all 221 instances of the use of συναγωγή as starters, looking for instances where it represents לַחֵץ, and then to repeat the procedure using ἐκκλησία as the search form in Rahlfs-Hanhart.

Development Workspace

GNT-T LXX1 LXX1 2 BDAG PSEUD-T LEH-2 Liddell & S... CF-NPN2 CF-AN

LXX1 Words Verses History

συναγωγή

More options

Search within every Verse of [All text] Compare Texts Add context: None

221 hits Verse 1 of 207

LXX1 BHS-W4

Gen. 1.9 ¶ Καὶ εἶπεν ὁ θεὸς Συναχθήτω τὸ ὕδωρ τὸ ὑποκάτω τοῦ οὐρανοῦ εἰς **συναγωγὴν** μίαν, καὶ ὀφθήτω ἡ ξηρὰ. καὶ ἐγένετο οὕτως. καὶ συνήχθη τὸ ὕδωρ τὸ ὑποκάτω τοῦ οὐρανοῦ εἰς τὰς **συναγωγὰς** αὐτῶν, καὶ ὤφθη ἡ ξηρὰ.

Gen. 28.3 ὁ δὲ θεὸς μου εὐλογήσαι σε καὶ αὐξήσαι σε καὶ πληθύναι σε, καὶ ἔσῃ εἰς **συναγωγὰς** ἐθνῶν

Gen. 35.11 εἶπεν δὲ αὐτῷ ὁ θεὸς Ἐγὼ ὁ θεὸς σου· αὐξάνου καὶ πληθύνου· ἔθνη καὶ **συναγωγαὶ** ἐθνῶν ἔσονται ἐκ σοῦ, καὶ βασιλεῖς ἐκ τῆς ὀσφύος σου ἐξελεύσονται.

Gen. 48.4 καὶ εἶπέν μοι Ἰδοὺ ἐγὼ αὐξάνω σε καὶ πληθυνῶ σε καὶ ποιήσω σε εἰς **συναγωγὰς** ἐθνῶν καὶ δώσω σοι τὴν γῆν ταύτην καὶ τῷ σπέρματί σου μετὰ σὲ εἰς κατάρχεσιν αἰώνιον.

Ex. 12.3 λάλησον πρὸς πᾶσαν **συναγωγὴν** υἱῶν Ἰσραὴλ λέγων Τῇ δεκάτῃ τοῦ μηνὸς τούτου λαβέτωσαν ἕκαστος πρόβατον κατ' οἶκου πατριῶν, ἕκαστος πρόβατον κατ' οἰκίαν.

Ex. 12.6 καὶ ἔσται ὑμῖν διατετηρημένον ἕως τῆς τεσσαρεσκαίδεκάτης τοῦ μηνὸς τούτου, καὶ σφάζουσιν αὐτὸ πᾶν τὸ πλῆθος **συναγωγῆς** υἱῶν Ἰσραὴλ πρὸς ἐσπέραν.

Ex. 12.19 ἐπτά ἡμέρας ζύμη οὐχ εὐρεθήσεται ἐν ταῖς οἰκίαις ὑμῶν πᾶς, ὃς ἂν φάγη ζυμωτόν, ἐξολεθρευθήσεται ἡ ψυχὴ ἐκείνη ἐκ **συναγωγῆς** Ἰσραὴλ ἔν τε τοῖς γειώραις καὶ αὐτόχθοσιν τῆς γῆς

Ex. 12.47 πᾶσα **συναγωγή** υἱῶν Ἰσραὴλ ποιήσει αὐτό.

Gen. 1.1 וַיֹּאמֶר אֱלֹהִים יְקוּוּ הַמַּיִם מִתַּחַת הַשָּׁמַיִם אֶל-מְקוֹמָם וַיְהִי כַּכֵּן וַיִּקְרָא אֱלֹהִים הַיַּבֵּשֶׁת וַיְהִי-כֵן וַיֹּאמֶר אֱלֹהִים וְיִבְרָךְ הַיַּבֵּשֶׁת וְהַיַּבֵּשֶׁת לָקְחָה מַיִם וַיֹּאמֶר לֹו אֱלֹהִים אֲנִי אֶל שְׂדֵי פְּרָה וּרְבֵה וְיִי קָתַל גּוֹיִם וַיְהִי מִמָּדָר וּמִלְכִּים מִחֲלָצִיף וַיֵּצֵאוּ וַיֹּאמֶר אֱלֹהִים הִנְנִי מִפְּרִדָּה וְהַרְבִּיתִּיךָ וַיִּתְּתִיךָ לָקְחָה מַיִם וַיְהִי אֶת-הָאָרֶץ וְהָאֵת לְוַדְעָה אֶתְּתִיךָ עוֹלָם וַיִּבְרָו אֶל-כָּל-עֵבֶרֶת יִשְׂרָאֵל לֵאמֹר בְּעֶשֶׂר לַחֲדָשׁ נִזְחַ וַיִּקְחִי לָהֶם אִישׁ שָׁה לְבִית-אֵבֶת שָׁה לְבָיִת׃ וַיְהִי לָכֵם לְמִשְׁמַרְתָּ עַד אַרְבָּעָה עֶשְׂרֵי יוֹם לַחֲדָשׁ נִזְחַ וְשִׁחֲטוּ אֹתוֹ כָּל קָתַל עֵבֶרֶת יִשְׂרָאֵל בֵּין הָעֶרְבִים׃ שְׁבַעַת יָמִים שָׂאֵר לֹא יִמְצָא בְּבַחְיֹכֶם כִּי אֶל-אֶכָּל וְחִמְצַת וְנִכְרְתָה הַנֶּפֶשׁ הַהִוא מֵעֵבֶרֶת יִשְׂרָאֵל בְּגֵר וּבְאֶזְרַח יִאֲרֶץ׃ כָּל-עֵבֶרֶת יִשְׂרָאֵל יַעֲשֶׂה אֹתוֹ׃ וַיִּסְעוּ מֵאֵילָם וַיָּבֹאוּ כָּל-עֵבֶרֶת בְּנֵי-יִשְׂרָאֵל וּלְמַדְבַּר-סִין אֲשֶׁר בֵּין-אֵילָם וּבֵין סִינַי בְּחִמְשָׁה עֶשְׂרֵי יוֹם׃ וַיְהִי וַיִּלְוִנוּ [נ] [לְוִנוּ] כָּל-עֵבֶרֶת בְּנֵי-יִשְׂרָאֵל עַל-מִשְׁחָה עַל-אֶהָרָן בְּמִדְבָּר׃ וַיֹּאמְרוּ אֱלֹהִים בְּנֵי יִשְׂרָאֵל מִי־יִתְּנוּ מִנְחָתוֹ בְּיַד-יְהוָה

Gen. 1:9

This is where a comparative tool such as Tov's Hebrew/Greek parallel text comes in. In this text, each *word* in the MT is displayed alongside the corresponding LXX word. That enables the computer to search for specific word identifications between the two. The basic tool looks like this:

Development Workspace

GNT-T LXX1 LXX1 2 MT-LX... BDAG PSEUD-T LEH-2 Liddell ...

MT-LXX Parallel Greek History

\*  
More options

Browser Paragraph 126 of 359478 Details Show: All Text

Gen. 1:1  
בראשית / ברא  
אלהים  
את ה/שמים  
את ה/ארץ  
ἐν ἀρχῇ  
ἐποίησεν  
ὁ θεὸς  
τὸν οὐρανὸν  
καὶ τὴν γῆν

Gen. 1:2  
היתה  
תהו  
בהו/ו  
חשך/ו  
על פני =%ps44  
תהום  
רוח/ו  
אלהים  
מרחפת  
על פני =%ps44  
מים/ה  
ἡ ~20 δὲ γῆ  
ἦν  
ἀόρατος  
καὶ ἀκατασκεύαστος  
καὶ σκότος  
ἐπάνω  
τῆς ἀβύσσου  
καὶ πνεῦμα  
θεοῦ  
ἐπεφέρετο  
ἐπάνω  
τοῦ ὕδατος

Gen. 1:3  
יאמר  
אלהים  
יהי  
אור  
יהי/ו  
καὶ εἶπεν  
ὁ θεός  
γενηθήτω  
φῶς  
καὶ ἐγένετο

Art Gen. 1:1 Go To

By linking this tool to our Hebrew Masoretic text and Rahlfs-Hanhart and applying it to the search at hand, we yield very specific results compared to a general search for all inflected forms of συναγωγή. This shows that among the 221 uses of συναγωγή, 33 are translations of קהל.

The screenshot shows a search interface with the following elements:

- Search bar: [MERGE BHS-W4] <AND> [MERGE LXX1 2]
- Filters: MT-LXX Parallel, Greek, History, Search icon.
- More options: Search within every Paragraph, Extra Fields: 1.
- AND Entry
- Browser: 66 hits Paragraph 1 of 33, Details, Show: Paragraphs.
- Results table:
 

קהל/ל	εἰς συναγωγὰς
קהל/ו	καὶ συναγωγαὶ
קהל/ל	εἰς συναγωγὰς
קהל/ה	τὴν συναγωγὴν
קהל/ה	τῆς συναγωγῆς
קהל/ה	ἢ συναγωγῆ
קהל/ה	συναγωγῆς
קהל	συναγωγῆς
קהל/ה	συναγωγῆς
קהל/ה את	τὴν συναγωγὴν
{...?קהל}52 ש' ערת <14.7%>	συναγωγῆς
קהל	τὴν συναγωγὴν
קהל/ה	τῆς συναγωγῆς
קהל/ה	τὴν συναγωγὴν
קהל את	τὴν συναγωγὴν
קהל/ה	τῆς συναγωγῆς
קהל/ה את	τὴν συναγωγὴν
קהל/ה את	τὴν συναγωγὴν
קהל/ה	ἢ συναγωγῆ
קהל/כס	συναγωγῆν ὁμῶν
קהל	τῆ συναγωγῆ [33.17]18
קהל	συναγωγῆ [51.15]18
- Bottom bar: Art, Gen. 28:3, Go To

A quick scan of the overall results shows the various inflections of συναγωγή which express קהל at a glance. This can be expanded to show the context in the specific passages easily enough, thus:

The screenshot shows a software interface for searching through the LXX. At the top, there are several tabs labeled 'GNT-T', 'LXX1', 'LXX1 2', 'BHS-W4', 'MT-LX...', 'BDAG', 'PSEUD-T', and 'LEH-2'. Below the tabs, there is a search bar with 'MT-LXX Parallel' and 'Greek' selected. A search query '[MERGE BHS-W4] <AND> [MERGE LXX1 2]' is entered. Below the search bar, there are options for 'More options', 'Search within every Paragraph', and 'Extra Fields: 1'. A search button is visible. Below the search bar, there is a 'Browser' section showing '66 hits Paragraph 11019 of 359478'. A 'Details' button and a 'Show: All Text' dropdown are also present. The main content area displays two search results for the Hebrew word 'קהל' (qahal). The first result is for Gen. 28:3, showing the Hebrew text 'אֱלֹהֵי אֲבוֹתָיִךָ' and the Greek translation 'ὁ ~20 δὲ θεὸς μου εὐλόγησαι σε καὶ αὐξήσαι σε καὶ πληθύναι σε καὶ ἔσῃ εἰς ἐκκλησίαν ἐθνῶν'. The second result is for Gen. 28:4, showing the Hebrew text 'אֱלֹהֵי אֲבוֹתָיִךָ' and the Greek translation 'καὶ δώη σοὶ τὴν εὐλογίαν ἀβραμ τοῦ πατρὸς μου σοὶ καὶ τῷ σπέρματί σου μετὰ σέ κληρονομήσαι τὴν γῆν τῆς παροιικήσεώς σου ἣν ἔδωκεν'.

The followup would be to check for instances where קהל is translated as ἐκκλησία (incidentally, the LXX translates קהל as ἐκκλησία 71 times). Certainly this procedure is an advance on the tedium of looking through each use to find what one is after.

**Textual Apparati.** The coming of textual apparati in electronic form is the newest area of development in LXX studies. The Rahlfs-Hanhart apparatus is available currently on the Logos System as part of the SESB, as mentioned. But other offerings are arriving: not only the relatively meager apparatus of Swete, but also the Cambridge larger apparatus. At least in the case of OakTree's *Accordance* offerings, these have hypertext links, are attachable to any form of the LXX text in use, and have unique searchable fields for searching for given MSS, Greek and/or Hebrew words in the apparati, etc.

Development Workspace

GNT-T LXX1 LXXG-T LXXS-T BHS-W4 MT-LX... BDAG PSEUD-T

LXXS-T Words Verses History

\* Search

More options  
 Search within every Verse of [All text] Compare Texts Add context: None

Verse 8636 of 29252 Details

LXXS-T

[1Kings 1.15](#) καὶ εἰσήλθεν Βηρσάβее πρὸς τὸν βασιλέα εἰς τὸ ταμίειον καὶ ὁ βασιλεὺς πρεσβύτης σφόδρα, καὶ Ἀβεισὰ ἡ Σωμανεῖτις ἦν λειτουργοῦσα τῷ βασιλεῖ.  
[1Kings 1.16](#) καὶ ἔκυπεν Βηρσάβее καὶ προσεκύνησεν τῷ βασιλεῖ· καὶ εἶπεν ὁ βασιλεὺς Τί ἐστίν σοι;  
[1Kings 1.17](#) ἡ δὲ εἶπεν Κύριέ, σὺ ἄμοσας ἐν τῷ θεῷ σου τῇ δούλῃ σου λέγων ὅτι Ὁ υἱός σου Σαλωμών βασιλεύσει μετ' ἐμέ, καὶ καθήσεται ἐπὶ τοῦ θρόνου μου.  
[1Kings 1.18](#) καὶ νῦν ἰδοὺ Ἀδωνείας ἐβασίλευσεν, καὶ σὺ, κύριέ μου βασιλεῦ, οὐκ ἔγνων·  
[1Kings 1.19](#) καὶ ἐθυσίασεν μόσχους καὶ ἄρνας καὶ πρόβατα εἰς πλῆθος, καὶ ἐκάλεσεν πάντας τοὺς υἱοὺς τοῦ βασιλέως καὶ Ἀβιαθάρ τὸν ἱερέα καὶ Ἰωάβ τὸν ἄρχοντα τῆς δυνάμεως, καὶ τὸν Σαλωμών τὸν δούλόν σου οὐκ ἐκάλεσεν.  
[1Kings 1.20](#) καὶ σὺ, κύριέ μου βασιλεῦ, οἱ ὀφθαλμοὶ παντὸς Ἰσραὴλ πρὸς σέ,

LXXS Apparatus

[1:15](#) Σουμανιτης [A\\*](#) | [om](#) η 2° [A](#)  
 [[appendix](#)] λειτουργ. [B\\*](#) (λειτουργ. [Ba?b](#))

[1:17](#) κυριε] +μου βασιλευ [A](#) | τω θεω] [pr](#) κω [A](#) | Σαλ. ο υιος σου [A](#) | καθησεται] [pr](#) αυτος [A](#)

Vs Ch Bk 1Kings 1:15 Go To

In the display of the Swete Apparatus, above, please note the variants linked to the passages being displayed, as well as the hypertext links to the abbreviations and the MSS symbols used.

Development Workspace

GNT-T LXX1 LXXG-T LXXS-T BHS-W4 MT-LX... BDAG PSEUD-T

LXXS-T Words Verses History

More options

Search within every Verse of [All text] Compare Texts Add context: None

Verse 1 of 17 Details

LXXS-T

**Josh. 3.1** ¶ καὶ ὄρθρισεν Ἰησοῦς τὸ πρῶν καὶ ἀπήρην ἐκ Σαττείν· καὶ ἤλθοσαν ἕως τοῦ Ἰορδάνου, καὶ κατέλυσαν ἐκεῖ πρὸ τοῦ διαβῆναι.

**Josh. 3.2** καὶ ἐγένετο μετὰ τρεῖς ἡμέρας διήλθον οἱ γραμματεῖς διὰ τῆς παρεμβολῆς

**Josh. 3.3** καὶ ἐνετείλαντο τῷ λαῷ λέγοντες Ὅταν ἴδητε τὴν κιβωτὸν τῆς διαθήκης

LXXC Apparatus

**Joshua 3:1** [Main Apparatus] και ωρθρισεν] ωρθρισε δε d : και ορθρισας gnw : ορθρισας δε k | ιησους post πρωι Nqε | το] τῷ ab'cfjmqu<sub>2</sub> | και 2<sup>o</sup>] pr ipse et omnes filii Israel S<sup>m</sup>(sub \*) : pr αυτος και πας ιηλ hpt : αυτος και πας ιηλ gnw : om k | απηρην Bb'1qr] απηρον Ay : επιρην b : απηραν FMNΘ rell : *perfecti sunt* υεε | σαττειν] σατιτην ι : σαττειμ ab'gnwx : σαττειμ dt : σατειμ p : *Satim* υ : καττειν F<sup>b</sup> : αττειν F\* | ηλθον AFMΘaghik-ptv(mg)wxγa<sub>2</sub>b<sub>2</sub> | εως του ιορδανου] εν τῷ ιορδανη r : +αυτος και παντες οι υιοι ιηλ FNabckqxυε [ αυτος και] post παντες F : α 1<sup>o</sup> *ex corr*(uid) b' | om οι b' | | κατελυσαν] εκατελυσαν b' : κατελυσεν c : κατεβησαν q

[Bottom Apparatus] και 1<sup>o</sup>-και 2<sup>o</sup>] και ορθρισας ισους το πρωι αυτος και πας ιηλ M | και ηλθοσαν] οι λ τον ιορδανην και ηλθοσα M ιορδανου] +οι λ \* αυτος και υιοι παντες ιηλ vz[om \* | υιοι] pr οι]

**Joshua 3:2** [Top Apparatus] τις A

▲ Vs ▼ ▲ Ch ▼ ▲ Bk ▼ J Josh. 3:1 Go To

The above sample displays the Cambridge larger apparatus displayed beneath Swete. Note the verse alignment and scrolling of text to apparatus, and the use of hypertext links (in blue and underlined) for abbreviations and MSS symbols.



Development Workspace

GNT-T LXXG-T 2 LXXG-... BHS-W4 MT-LX... BDAG PSEUD-T LEH-2 Liddell ...

LXXG-GEN Words Verses History

More options  
 Search within every Verse of [All text] Compare Texts Add context: None

Verse 22 of 1530 Details

LXXG-GEN

Gen. 1.22 καὶ εὐλόγησεν αὐτὰ ὁ θεὸς λέγων Αὐξάνεσθε καὶ πληθύνεσθε καὶ πληρώσατε τὰ ὕδατα ἐν ταῖς θαλάσσαις, καὶ τὰ πετεινὰ πληθυνέσθω ἐπὶ τῆς γῆς.  
 Gen. 1.23 καὶ ἐγένετο ἑσπέρα καὶ ἐγένετο πρωί, ἡμέρα πέμπτη.  
 Gen. 1.24 ¶ Καὶ εἶπεν ὁ θεὸς Ἐξαγαγέτω ἡ γῆ ψυχὴν ζῶσαν κατὰ γένος, τετράποδα καὶ ἔρπετά καὶ θηρία τῆς γῆς κατὰ γένος. καὶ ἐγένετο οὕτως.

LXXG-GEN Apparatus

22 ηυλογησεν [A M d<sup>44</sup> s 46<sup>s</sup>-76 527 59 509](#) = [Ra](#) | αὐτὰ / ὁ θεῶ | [tr 346 319](#); om ὁ θεῶ [128<sup>lx</sup> 44 527 730 Sa<sup>1</sup>](#)  
<sup>Lat</sup> [Ambr Hel 6<sup>ap</sup> Aug Gen ad litt 15<sup>ap</sup> III 1<sup>ap</sup> Ruf Gen I 10<sup>te</sup>](#) | λέγων | καὶ εἶπεν [82 <sup>Lat</sup>Hi Eph 1](#) | [tr](#) αὐξάνεσθε et  
 πληθύνεσθε [Bo<sup>k</sup>](#) | καὶ 2<sup>o</sup> [3<sup>o</sup> 15-17 76](#) | πληρώσατε [707\\*](#) | τὰ ὕδατα | τὴν γῆν [246\\*\(c pr m\) Aeth](#); om  
 ὕδατα [569](#); + τὰ [C<sup>o</sup>-16 77 422 551' 569 646 74-134 121-392\\*\(c pr m\)-424 31 54 59 508 Chr VII 65s Genn 1629 La<sup>1</sup>](#)  
[Arm Bo Pal](#) | ἐν ταῖς θαλάσσαις | > [Sev 459](#); [maris La<sup>c</sup>](#); ἐν τῇ θαλάσσει [508](#) | πληθυνέσθω [17-82-135 C<sup>o</sup> d](#)  
[56\\* 76-134 346-392-424 31-120 54 319 508 730](#) | πληθυνεστω [527](#); -νησθησαν [664](#); -θωσαν [rell](#) | om τῆς [106](#)

[23 init](#) | [pr](#) καὶ εἶπεν ὁ θεῶ [108\\*](#) | om ἡμέρα [53](#)

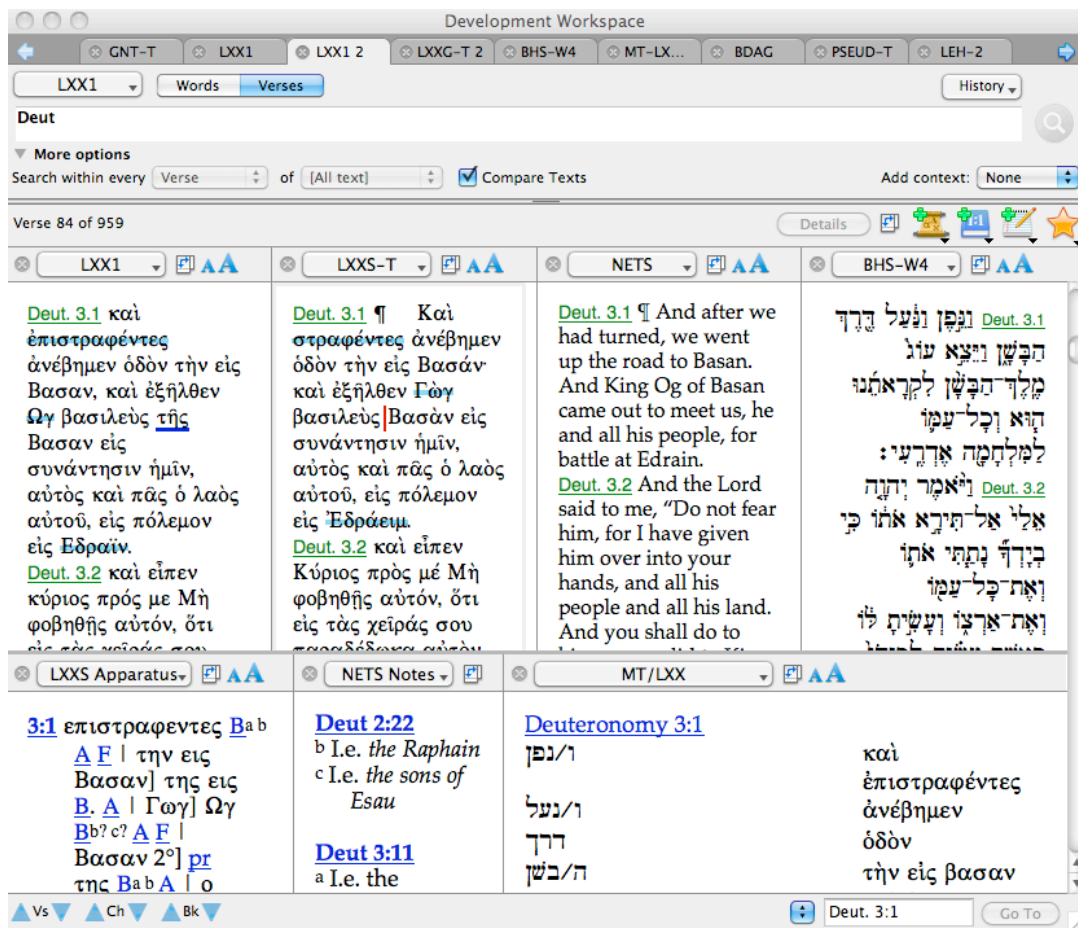
[24](#) om ὁ θεῶ [Phil I 93.3](#) (sed [hab Arm](#)) | εξαγετω [82](#) | γῆ | ζῶσαν | ψυχῆ [75\\*](#) | om ψυχὴν | γένος 1<sup>o</sup> [Eus VI 45](#)  
 VIII 1.383 | κατὰ γένος 1<sup>o</sup> | > [Tht IV 465 Bo<sup>l</sup>](#); + καὶ [59 <sup>Lat</sup>Tert Adv Herm 29](#) | γένος 1<sup>o</sup> | [pr](#) το [Procop 105](#) | καὶ  
 2<sup>o</sup> — θηρία | [ερπ. κ. κτηνῆ Tht IV 465](#) | om καὶ 2<sup>o</sup> [129 Sev 462 Aeth<sup>P</sup>](#)

[20 init](#) — οὐρανοῦ | [α'](#) καὶ εἶπεν ὁ θεός· ἐξερψάτω τὰ ὕδατα ἔρπετον ψυχῆς ζώσης καὶ πετηνὸν  
 ἰπτάμενον ἐπὶ τῆς γῆς, ἐπὶ πρόσωπον τοῦ στερεώματος τοῦ οὐρανοῦ [σ'](#) <καὶ> εἶπεν ὁ θεός·  
 ἐξερψάτω τὰ ὕδατα ἔρπετον, ψυχὴν ζῶσαν, καὶ πετηνὸν πετόμενον ἐπὶ τῆς γῆς κατὰ πρόσωπον  
 στερεώματος οὐρανοῦ [θ'](#) καὶ εἶπεν ὁ θεός· ἐξερψάτωσαν τὰ ὕδατα ἔρπετά, ψυχᾶς ζώσας, καὶ  
 πετηνὸν πετόμενον ἐπὶ τῆς γῆς κατὰ πρόσωπον στερεώματος οὐρανοῦ [Philop 218](#)

[21](#) [τ<sup>o</sup> 1<sup>o</sup>](#) — μεγάλα | τοὺς δράκοντας τοὺς μεγάλους [135](#)

Vs V Ch Bk Gen. 1:22 Go To

Above is a screenshot of the Göttingen LXX Genesis volume with apparatus. Note again the hypertext links for MSS and abbreviations and scrolling alignment with the text versification. Furthermore, each manuscript is also independently searchable in the apparatus.



The above screenshot shows how a combination of LXX related texts can be inter-related on screen for discussion. The left upper column displays Rahlfs-Hanhart’s LXX. Immediately to the right is the Swete LXX. Above them is a checkbox which is checked, indicating that the two LXX texts are to be compared, and thus their differences are highlighted. The next column is the NETS translation, and the final column is the BHS tagged Hebrew MT. Below them, and synchronized, are three tools: the Swete apparatus, neighboring the NETS notes, and finally Tov/Polack’s MT/LXX parallels.

All these are new developments. Existing standard features include the lexical linkages to given words in the LXX text, and the ability to do sophisticated lexical and or morphological searching. These now standard features are, to one degree or another, available in all three of the basic platforms. Interface issues, of course, vary considerably, but the access to these tools will have a snowball effect as developers themselves, by using their own tools, are able to speed their own development of further tools. Below is an example of the selection of then inflected form *σπορίμου* in Genesis 1:29 of the Göttingen LXX, and three relevant lexica (BDAG, LEH, and LS) automatically opened to the entry of the lexical form of that inflected form. This, or some similar feature, is standard in all three of the biblical research software programs highlighted in this paper.



Similarly standard fare includes the ability to search for lemmas so as to yield all their inflected forms, or that combined with certain grammatical or contextual restraints. For example, one could search for all inflected forms of ἀγαπάω, or one could only want the imperatives of the verb ἀγαπάω; or one could search for all the imperative forms of ἀγαπάω when followed within one word by any item (article, noun, participle, adjective) that is in the accusative case. this last search yields five verses when searching through the entire corpus of the LXX in Rahlfs-Hanhart, as seen below.

Development Workspace

LXX1 LXX1 2 LXXG-T 2 LXXS A... LXXG-... BHS-W4 MT-LX... BDAG

LXX1 Words Verses History

αγαπαω@ [VERB imperative] <FOLLOWED BY> <WITHIN 1 Words> [ANY accusative]

More options

Search within every Verse of [All text] Compare Texts Add context: None

10 hits Verse 1 of 5 Details

LXX1

**Tob. 4.13** καὶ νῦν, παιδίον, **ἀγάπα τοὺς** ἀδελφούς σου καὶ μὴ ὑπερηφανεύου τῇ καρδίᾳ σου ἀπὸ τῶν ἀδελφῶν σου καὶ τῶν υἰῶν καὶ θυγατέρων τοῦ λαοῦ σου λαβεῖν σεαυτῷ ἐξ αὐτῶν γυναῖκα, διότι ἐν τῇ ὑπερηφανίᾳ ἀπώλεια καὶ ἀκαταστασία πολλή, καὶ ἐν τῇ ἀχρειότητι ἐλάττωσις καὶ ἔνδεια μεγάλη ἢ γὰρ ἀχρειότης μήτηρ ἐστὶν τοῦ λιμοῦ.

**Psa. 30.24** **ἀγαπήσατε τὸν** κύριον, πάντες οἱ ὄσιοι αὐτοῦ, ὅτι ἀληθείας ἐκζητεῖ κύριος καὶ ἀνταποδίδωσιν τοῖς περισσῶς ποιούσιν ὑπερηφανίαν.

**Wis. 1.1** ¶ **Ἀγαπήσατε δικαιοσύνην**, οἱ κρίνοντες τὴν γῆν, φρονήσατε περὶ τοῦ κυρίου ἐν ἀγαθότητι καὶ ἐν ἀπλότῃ καρδίᾳ ζητήσατε αὐτόν.

**Sir. 7.30** ἐν ὅλῃ δυνάμει **ἀγάπησον τὸν** ποιήσαντά σε καὶ τοὺς λειτουργοὺς αὐτοῦ μὴ ἐγκαταλίπης.

**Hos. 3.1** ¶ Καὶ εἶπεν κύριος πρὸς με Ἔτι πορεύθητι καὶ **ἀγάπησον γυναῖκα** ἀγαπῶσαν πονηρὰ καὶ μοιχαλίν, καθὼς ἀγαπᾷ ὁ θεὸς τοὺς υἱοὺς Ἰσραὴλ καὶ αὐτοὶ ἀποβλέπουσιν ἐπὶ θεοῦ ἀλλοτρίους καὶ φιλοῦσιν πέμματα μετὰ σταφίδων

Vs Ch Bk Tob. 4:13 Go To

These latter two items have become, as mentioned, standard fare in the software packages which is serious about biblical research, such as *Accordance*, *BibleWorks*, or *Logos*.

Septuagint studies are just now beginning to experience significant growth for electronic developers of biblical studies software. With the growth of the availability of advanced resources, such as the e-publication of the Göttingen LXX modules, the development of electronic apparati, the availability of alternative forms of the LXX texts and translations, it is anticipated that this will yield a rich field of tools for the Septuagintalists with computer skills in the next few years.