

# What Makes a Reference ‘Important’?

Identifying Important Cross-References Passages

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## Abstract

This talk is conceptually a follow up to my BibleTech 2008 paper (yes, 11 years ago!) on *Locating New Testament Cross-References*. In this presentation, we'll explore the data behind a new Logos 8 feature, **Important Passages**.

# Review: BibleTech 2008

At BibleTech 2008, I presented a paper titled *Locating New Testament Cross-References: Some Strategies*.<sup>1</sup> In that paper, I outlined some possible strategies to use in creating a database of cross-references for the New Testament. The paper was ordered by amount of “tech” needed to pursue the strategy. There were three tech levels:

- No Tech
- Low Tech
- Mo’ Tech

In each section, I listed and described some options to gather data. These included:

- **No Tech:** Find a Bible in the public domain and use its references
- **Low Tech:** Find some data points like Gospel Harmonies, NT Use of the OT, Thematic approaches, aggregation of data related by person or place names, etc.
- **Mo’ Tech:** Verses that share statistically improbable words (via TF/IDF), n-grams to locate shared phrases or common substrings, use of syntactically annotated corpora to locate similarly structured text.

After all of that (and eleven years since then) I can say that in creating the **Important Passages** data for Logos 8, we didn’t really use any of those approaches (well, not *explicitly*). But the conclusion of the paper provided the formation of a guiding principle:

In the creation of a cross-reference database, however, one item has become clear to me as I’ve considered the different approaches in this paper. Cross-references are helpful, but recording the reason for the cross-reference can also be just as helpful. How many times have you followed a cross-reference only to come across a passage that doesn’t seem to have much of anything to do with the referring passage? Recording the reason for the cross-reference—be it because of similar words, similar phrasing, common names or places, common themes—is something that automated methods can begin to accomplish. As new and updated cross-reference databases are created and enhanced for the next century of Bible study, schemes for communicating the *what* (reference) along with the *why* (reason) should be part of the equation.<sup>2</sup>

One thing that was abundantly clear to me after working on that paper in 2008 was that in addition to providing an association between two references, a cross-reference database should also make an effort to provide the reason the two references are associated.

**More clearly stated:** As much as is possible, each reference association should provide at least one reason for the association.

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<sup>1</sup> Online: <https://rwbrannan.files.wordpress.com/2019/03/bibletech2008paper.pdf>

<sup>2</sup> Brannan 2008, p. 19

# Why Look at Cross-References Again?

The Cross-References guide section in Logos has been pretty much the same since the early 2000s (at least 2006, but maybe back as far as 2002–2003). It currently (even in Logos 8!) looks like this:

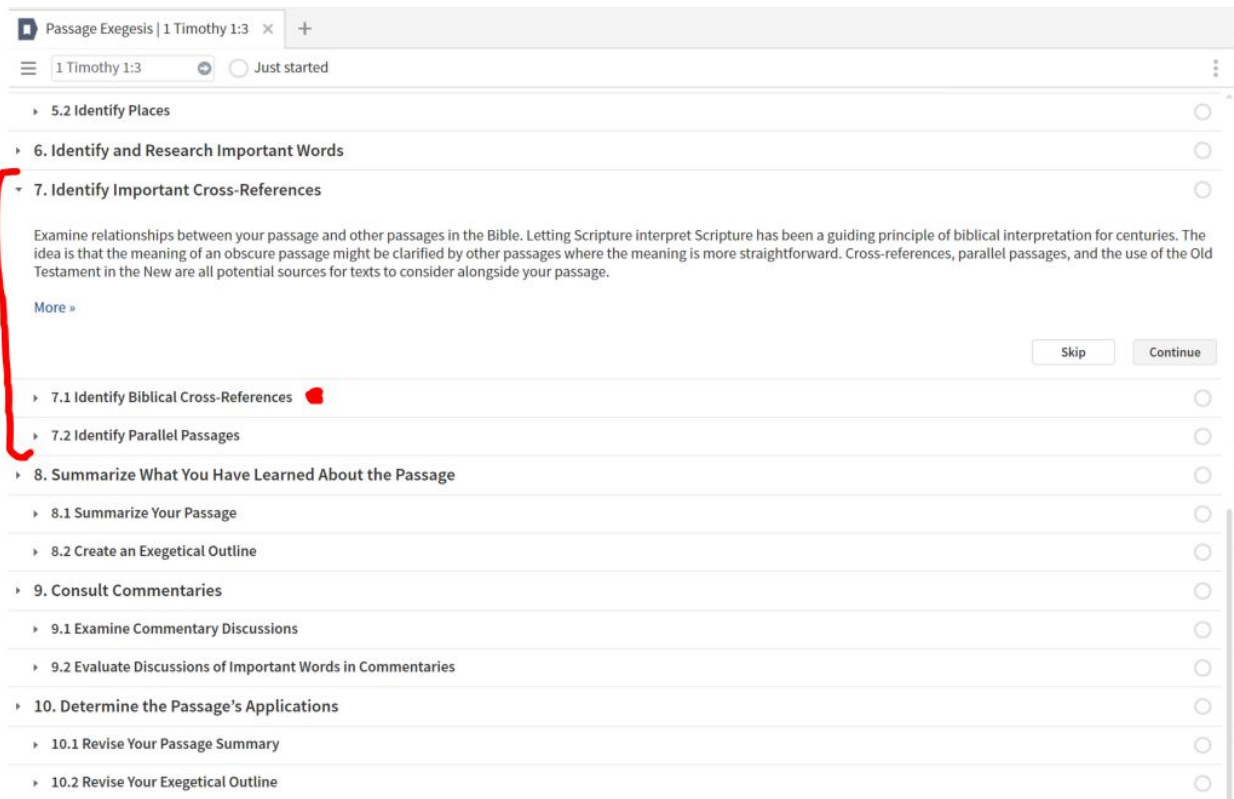
The screenshot shows the Logos interface for the Cross-References guide. At the top, there's a search bar with "Romans 16:1-16" entered. Below the search bar, a list of resources is displayed: "Concordância Exaustiva do Conhecimento Bíblico", "The New Treasury of Scripture Knowledge", "The Treasury of Scripture Knowledge", "Short Bible Reference System", "El Tesoro del conocimiento bíblico", "Parallelstellen (Jantzen-Jettel)", and "Trésors de la connaissance de l'Écriture". Below this list, there are two columns of text. The left column contains three entries: "Ac 18:2 | And he found a certain Jew named Aquila, a native of Pontus who had arrived recently from Italy along with Priscilla his wife, because Claudius had ordered all the Jews to depart from Rome, and he went to them.", "1 Co 16:19 | The churches of the province of Asia greet you. Aquila and Prisca greet you in the Lord many times, together with the church in their house.", and "Mk 15:21 | And they forced a certain man who was passing by, Simon of Cyrene (the father of Alexander and Rufus), who was coming from the country, to carry his cross." The right column contains one entry: "He shaved his head at Cenchoa, because he had taken a vow." Below the text, there are two buttons: "Save as Passage List" and "Open 143 passages in LEB".

The available cross-reference type resources are listed at the top of the guide, and some references (aggregation from, I believe, the user's top 5 preferred Bibles) is provided with the five most popular references expanded in the user's preferred Bible. Not bad, a good list of references and typically appropriate as it relies on curation done by others for inclusion in published Bibles.

However, the primary issue is that this is essentially a list of references. Relevant, yes; but there is no indication as to why a reference is relevant.

## Workflows

One of the signature features of Logos 8 is the **Workflows** feature. Workflows are a structured method of walking a user through a process that consists of unique tasks. In the process of Bible study, one of the common tasks is to consult cross-references for a passage, so this is a step accounted for in many workflows. Here's how it looks in our "Passage Exegesis" workflow:



But our solution for cross-references, while useful, had not been reviewed or re-evaluated since we originally released it. All it really did was dump back a list of Bible references ostensibly related to the passage in question.

It was (and is) functional, but we wanted it to be better. It was time to re-think the process of consulting cross-references.

# New Proposal: Methodological Innovation

In November of 2017, primarily because of **Workflows**, we started seriously considering creating a new database of Bible cross references. An internal document sets out the very basics of the approach we considered:

Commentaries have this great one-way referencing going on where a milestone (the reference verse) mentions several associated references in discussion. If someone has access to a whole lot of commentaries (we do, currently almost 6,500)<sup>3</sup> then one can aggregate the milestone->reference pairs that commonly occur across the set of available commentaries.

The first innovation? We noticed that in the same way commentaries discuss Hebrew, Greek, and transliterated words, commentaries also offer a lot of references in the context of discussion. And the combination of information — Bible milestones with Bible references — gave us an idea on how to aggregate information about references discussed in particular contexts.

In the below example, “1 Timothy 1:3” is the *milestone*, and the Bible references in the textual discussion are *references*:

The screenshot shows a Logos Bible software window. The title bar reads "The First and Second Letters to Timothy: A New Translation with Introduction and Commentary". The search bar contains "1 Timothy 1:3". The main text area displays a commentary on 1 Timothy 1:3. The text includes several Bible references highlighted in red: "1 Cor 16:12", "2 Cor 8:6; 12:18", "Acts 20:1-3", "LXX Jdg 3:25; Wis 3:9; Siblyline Oracles 5:131; Mt 15:32; Mk 8:2", "Acts 18:18", "Acts 11:23 and 13:43", "Acts 5:5", "1 Tim 1:6, 10; 4:1; 5:15; 2 Tim 2:18". A Table of Contents sidebar is visible on the left, showing the current page is "Notes" under "II. The Opening Commission (1:3-11)".

In the context of “1 Timothy 1:3” several other references are mentioned along the way.

This is where the **Important Passages** data in Logos 8 starts, by aggregating the milestone-reference pairs to determine which references frequently occur in the discussion of 1 Timothy 1:3 (or whatever the milestone may be).

However, this is not where the **Important Passages** data ends. We have several sources for data like this. In addition to the commentaries, any sort of work that contains milestone-reference pairs

<sup>3</sup> As of November 2, 2017: 6,496 total commentaries

can be evaluated. This means that Bibles (with their center-column cross references), Study Bibles (essentially mini-commentaries), and even existing cross-reference works such as the old Treasury of Scripture Knowledge can be evaluated. Even lexicons can be analyzed, associating references that occur with the same article/headword as relevant.

All of this information aggregated across resources available to Logos Bible Software covers a huge swathe of data. During the time this dataset was developed (Spring/Summer 2018), **it included 2.43 million milestones and 29.48 million references**;<sup>4</sup> most of those harvested from commentaries but a not-insubstantial portion harvested from Bibles, cross-reference resources, lexicons, and Study Bibles.

Another benefit: Because this information associates milestones and references that use the “Bible” scheme, it is language-neutral. This means that localization, a primary concern when you’re planning on shipping a new version of software in six languages besides English<sup>5</sup> from day one, is actually doable.

Even with the milestone-reference pairs aggregated across all commentaries available for Logos Bible Software, we basically end up “dump[ing] back a list of Bible references ostensibly related to the passage in question.” It can be aggregated, scored, and processed; but it is still simply a list of stuff with no indication as to why a particular reference is included as relevant for the milestone.

## Need More Data

Let’s return to where my BibleTech 2008 paper ended: Cross-References need to do a better job of explaining their relevance. They should provide a reason for the association that provides a filter to the reader/user as to whether they should follow the reference, or move on.

The second innovation — the realization that made **Important Passages** feasible — was that we (Logos) had scads of data that could be used to make implicit reasons for references explicit: We had several *highly curated datasets* that associate passages with something distinctive.

For example, these datasets can tell us each of the parables in the Bible. Or every proverb. Or every miracle. Alternately, we know all the passages where people, places, and things are mentioned (not to mention all the different ways they are referred to). Or we know all the original language lemmas (dictionary forms) in a passage.

In other words, we could take a milestone-passage relationship and determine which data the milestone and the passage hold in common. Are they both in parables? Which lemmas do they share? Do the passages share references to common people, places, or things? Are the milestone and reference related intertextually? Are there infrequently occurring words that are shared in the passages?

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<sup>4</sup> On average 10 references per milestone.

<sup>5</sup> Spanish, German, Portuguese, Korean, Chinese (Traditional), and Chinese (Simplified).

## Mash it all up

We reviewed all of our datasets to determine the items that would be appropriate to include as reasons for cross-references. Here's the list we came up with:

- **Commentaries:** The reference occurs frequently in commentary discussion of the study passage.
- **Lexicons:** Both references are frequently cited in lexicon articles discussing vocabulary common to both verses.
- **Shared Cultural Concepts:** Both references analyzed sharing concepts in the Lexham Cultural Outlines, or Cultural Concepts.
- **Shared Topics:** Both references share common biblical concepts analyzed by Logos Controlled Vocabulary (LCV), which is the organizing principle of the Factbook.
- **Bible Sense:** Both references are analyzed sharing Bible Sense Lexicon analysis senses.
- **Shared People/Places/Things:** Both references share common components (people, places, and things) analyzed by the BibleKnowledgebase.
- **New Testament Use of the Old Testament:** Both references occur in a common entry in the New Testament Use of the Old Testament dataset.
- **Similar Commands:** Both references are analyzed as containing similar types of commands.
- **Shared Miracles:** Both references have some aspect of a miracle in common.
- **Speaking To God:** Both references share some common aspect in address to Deity.
- **Theophanies:** Both references involve some aspect of a theophany.
- **Similar Questions:** Both references are analyzed as containing similar types of questions.
- **Similar Sacrifices:** Both references share some commonality regarding sacrifice.
- **Proverbs:** Both references are analyzed as similar types of proverbs.
- **Parallel Passages:** Both references occur in a common parallel text. This could involve synoptic gospels, or other sets of parallels (OT History, Jude-2 Peter, Pauline Parallels).
- **Shared Figurative Language:** Both references involve common use of a particular type of figurative language.
- **Parables:** Both references have some aspect of a Parable in common.
- **Shared Preaching Themes:** Both references share a common preaching theme.

Remember the example from 1 Timothy 1:3? Here's what 1 Timothy 1:3 looks like in **Important Passages** (with LEB and SBLGNT above to provide the reference for context). The result order is sorted by relevance/rank.



The Lexham English Bible | SBLGNT

1 Timothy 1:3

1 Timothy Chapter 1

The Greek New Testament: SBL Edition

**Instructions for Timothy in Ephesus**

<sup>3</sup> Just as I urged you *when I* traveled to Macedonia, remain in Ephesus, so that you may instruct certain people not to teach other doctrine, <sup>4</sup> and not

<sup>3</sup> Καθώς παρεκάλεσά σε προσμείναι ἐν Ἐφέσῳ, παρευόμενος εἰς Μακεδονίαν, ἵνα παραγγείλῃς τισὶν μὴ ἑτεροδιδασκαλεῖν <sup>4</sup> μηδὲ προσέχειν μύθοις καὶ γενεαλογίαις ἀπεράντοις, αἵτινες ἐκζητήσεις παρέχουσι μᾶλλον ἢ οἰκονομίαν θεοῦ τὴν ἐν

Important Passages | 1 Timothy 1:3

1 Timothy 1:3

IMPORTANT PASSAGES

References of All Types To all passages

By Rank By Type

1 Ti 6:3 If anyone teaches other doctrine and does not devote himself to the sound words of our Lord Jesus Christ and the teaching *that is* in accordance with godliness,  
 < Shared Figurative Language Heretic in Ephesus Timothy ἑτεροδιδασκαλέω

Ga 1:6 I am astonished that you are turning away so quickly from the one who called you by the grace of Christ to a different gospel,  
 Lexicons

Ac 20:1 Now after the turmoil had ceased, Paul summoned the disciples, and *after encouraging them*, he said farewell *and* departed to travel to Macedonia.  
 Macedonia

Ga 1:7 not that *there is* a different *gospel*, except there are some who are disturbing you and wanting to distort the gospel of Christ.  
 Commentaries

1 Ti 1:20 among whom are Hymenaeus and Alexander, whom I have handed over to Satan, in order that they may be taught not to blaspheme.  
 < Shared Figurative Language Lexicons

Tt 1:14 not paying attention to Jewish myths and commandments of people who turn away from the truth.  
 myth Lexicons

1 Ti 1:19 having faith and a good conscience, which some, *because they* have rejected *these*, have suffered shipwreck concerning their faith,  
 Timothy Lexicons

Tt 1:5 On account of this, I left you behind in Crete, in order that what remains may be set in order and you may appoint elders in every town, as I ordered you.  
 < Shared Figurative Language

Tt 3:9 But avoid foolish controversies and genealogies and contentions and quarrels about the law, for they are useless and fruitless.  
 genealogy study Lexicons

1 Ti 1:18 I am setting before you this instruction, Timothy *my child*, in accordance with the prophecies spoken long ago about you, in order that by them you may fight the good fight,  
 Timothy Lexicons

More » Save as Passage List Open 115 passages in The Lexham English Bible

An alternate visualization that groups the references by reason type is also available. In the below example, the references that share common cultural concepts are displayed.



The Lexham English Bible | SBLGNT

1 Timothy 1:3

Chapter 1 The Greek New Testament: SBL Edition

**Instructions for Timothy in Ephesus**

<sup>3</sup> Just as I urged you *when I*<sup>\*</sup> traveled to Macedonia, remain in Ephesus, so that you may instruct certain people not to teach other doctrine,<sup>4</sup> and not

<sup>3</sup> Καθὼς παρεκάλεσά σε προσμείναι ἐν Ἐφέσῳ, πορευόμενος εἰς Μακεδονίαν, ἵνα παραγγείλῃς τισὶν μὴ ἑτεροδιδασκαλεῖν <sup>4</sup> μηδὲ προσέχειν μύθοις καὶ γενεαλογίαις ἀπεράντοις, αἵτινες ἐχζήτησιν παρέχουσι μᾶλλον ἢ οἰκονομίαν θεοῦ τὴν ἐν

Important Passages | 1 Timothy 1:3

1 Timothy 1:3

IMPORTANT PASSAGES

References of All Types To all passages By Rank By Type

- ▶ Commentaries
- ▶ Lexicons
- ▶ Parallel Passages
- ▶ Shared Cultural Concepts
  - 1 Ti 4:11 Command these *things* and teach *them*.
    - Teaching
  - 1 Ti 4:13 Until I come, pay attention to the *public* reading, to exhortation, to teaching.
    - Teaching
  - 1 Ti 4:6 By teaching these *things* to the brothers, you will be a good servant of Christ Jesus, trained in the words of the faith and of the good teaching that you have followed faithfully.
    - Teaching
  - Tt 3:9-11 But avoid foolish controversies and genealogies and contentions and quarrels about the law, for they are useless and fruitless. Reject a divisive person after a first and second admonition, knowing that such a person is perverted and is sinning, being self-condemned.
    - Law
  - Ac 4:18 And they called them *back and* commanded *them* not to speak or to teach at all in the name of Jesus.
    - Teaching
- More »
- ▶ Shared Figurative Language
- ▶ Shared People/Places/Things
- ▶ Shared Senses
- ▶ Similar Commands

Save as Passage List | Open 115 passages in The Lexham English Bible