

Using the Bible Knowledgebase for Information Integration

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<http://semanticbible.com/other/talks/2011/BibleTech/InformationIntegration.html>

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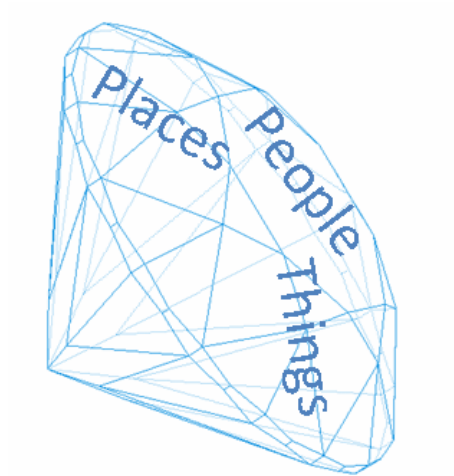
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Advanced Technology for Eternal Truth

Semantic Organization at Logos

Logos ... organizing the world's Biblical information



Two major projects that have been released with Logos 4 (though work is still ongoing)

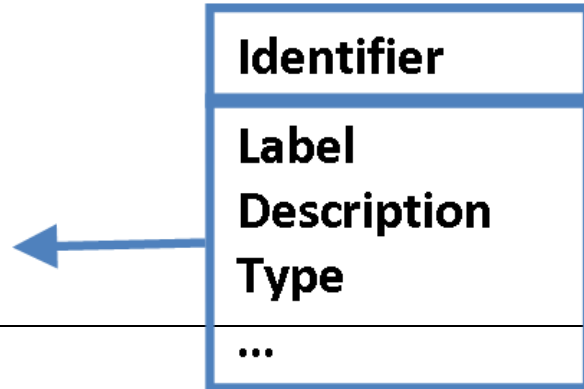
- 1. The Logos Controlled Vocabulary*
- 2. Bible Knowledgebase: semantic organization of information about entities in the Biblical text*

The traditional approach to the Bible follows the linear order of the text, perhaps augmented by a Bible dictionary and commentary. With the BK we're trying to provide different lenses or facets for viewing and navigating through the text. This supports one of our Logos slogans: Facilitate Serendipitous Discovery.

The Methodology

Organize information around:

- Identity
 - Unambiguous
 - Addressable
- Utility
- Relationships



Compare TimBL's rules for [Linked Data](#):

1. Use URIs to identify things (= Identity)
 - Use HTTP URIs so people can look things up
2. Provide useful information in a standard format when someone references a URI (= Utility)
3. Include links to other URIs (= Relationships)

Since the last BibleTech, BK entities are now addressable by Logos hyperlinks

Network Effects



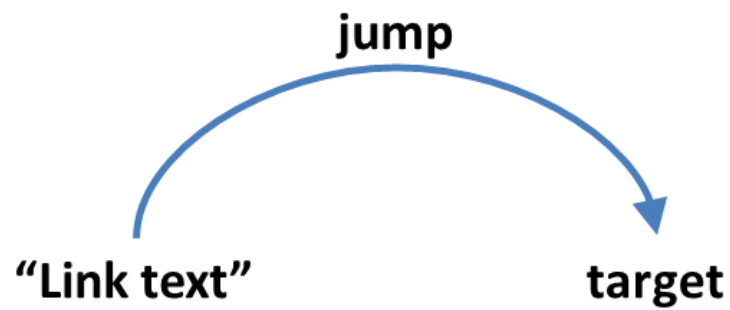
Resources in Scholar's Silver, a mid-level product

Books on your kindle or iPad aren't any smarter for being part of a digital library: they're still individual, disconnected bundles of content. They don't get smarter when you add more books.

We're committed to enabling Metcalfe's Law for digital libraries: value of a network is proportional to the square of the number of connections

- *Rich markup*
- *Original content*
- *Information integration*
- *Not just search, but smarts*

The Lowly Hyperlink



It's so simple: just three basic elements. How could we build a world wide web on this?!? Simplicity is good, but limited:

- *only a single destination*
- *no semantics on the link itself, just "jump"*
- *unidirectional: you don't know what points to the target (without a search engine to process the entire web)*
- *very limited preview of the target: a URL doesn't really tell you much about what you'll find there*

Textual Links in Logos

The screenshot shows the Logos Bible Software 4 interface. The main window displays the text of Acts 6:8-15. A right-click context menu is open over the word "Asia" in the text. The menu is divided into two sections: "Sub-menu actions" and "Contextual sub-menu".

Sub-menu actions:

- Copy
- Look up
- Look up in a new tab
- Power Lookup
- Bible Word Study
- Search this resource
- Search all open resources
- Search entire library
- The International Standard Bible...
- The Zondervan Encyclopedia of the Bible,...
- Baker Encyclopedia of the Bible

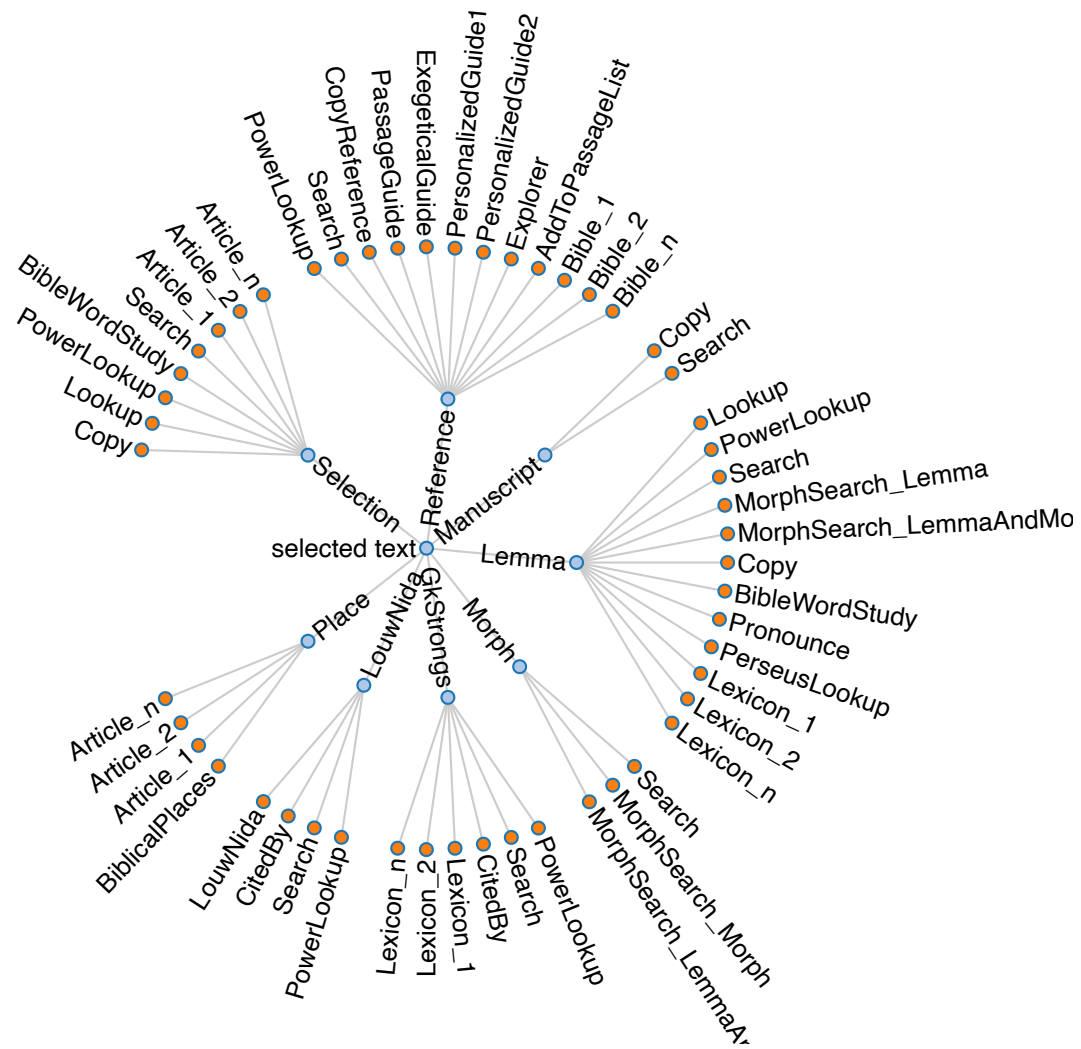
Contextual sub-menu:

Selection	Asia
Reference	Acts 6:9
Manuscript	Ἀσία
Lemma	Ἀσία
Morph	NGSF
Greek Strong's	Strong's Greek #773
Louw-Nida	Louw Nida 93.415
Place	Asia

Red arrows point from the text labels "Contextual sub-menu" and "Sub-menu actions" to their respective sections in the menu.

We try to do better in Logos 4, with sub-menus on the right-click (context) menu

... Give You A Lot More



Visualized, you can see we provide a much larger branching factor with lots of destinations (and this is still an abbreviated view)

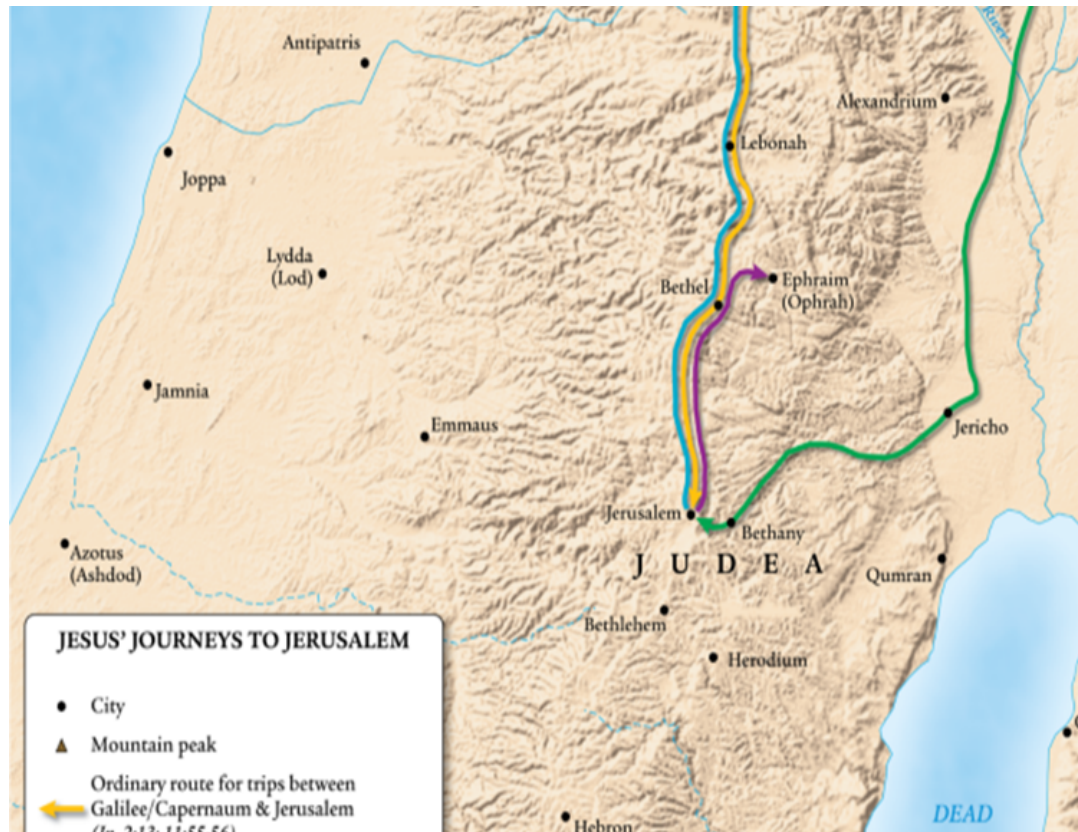
But note: still a single starting point! Only very limited use of context: the same word in difference contexts behaves the same way.

But How to Get to the Macro View?

"The overall pattern of data often exhibits patterns that emerge from the individual pieces of data, patterns that can be impossible to discern by merely re-sorting the data in spreadsheet format"—Clay Shirkey

The human visual system is amazingly good at focusing on relevant details in a large complex picture. We scan, then attend, then focus in and see detail. How do we do this for Bible study so we can look at data patterns and put information in a richer context, not just hyperlink out from a single point?

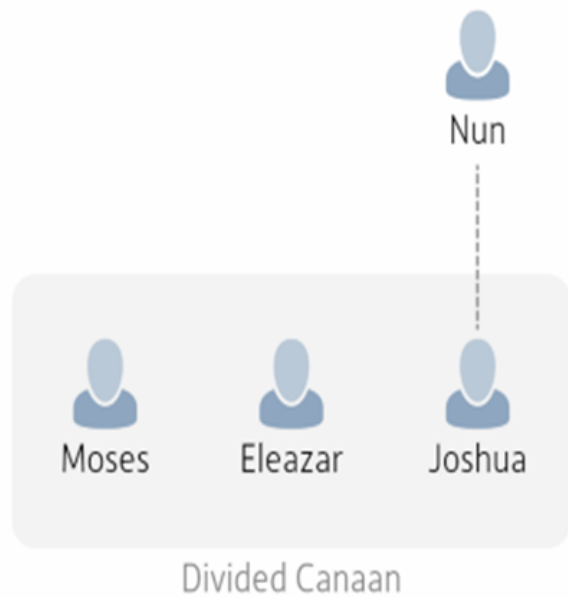
Putting Place Information in Context



- One of the 63 maps we commissioned for Logos 4
- maps are one of the oldest technologies for contextualizing information
- geospatial relationship to other places: much more information here than just a list of placenames
- story relationship: selective inclusion of other places
- But only one kind of relationship: doesn't tell me:
 - which cities are larger, more important, mentioned more in the Bible (or at all)

what about putting people information in context?

People Information in Context

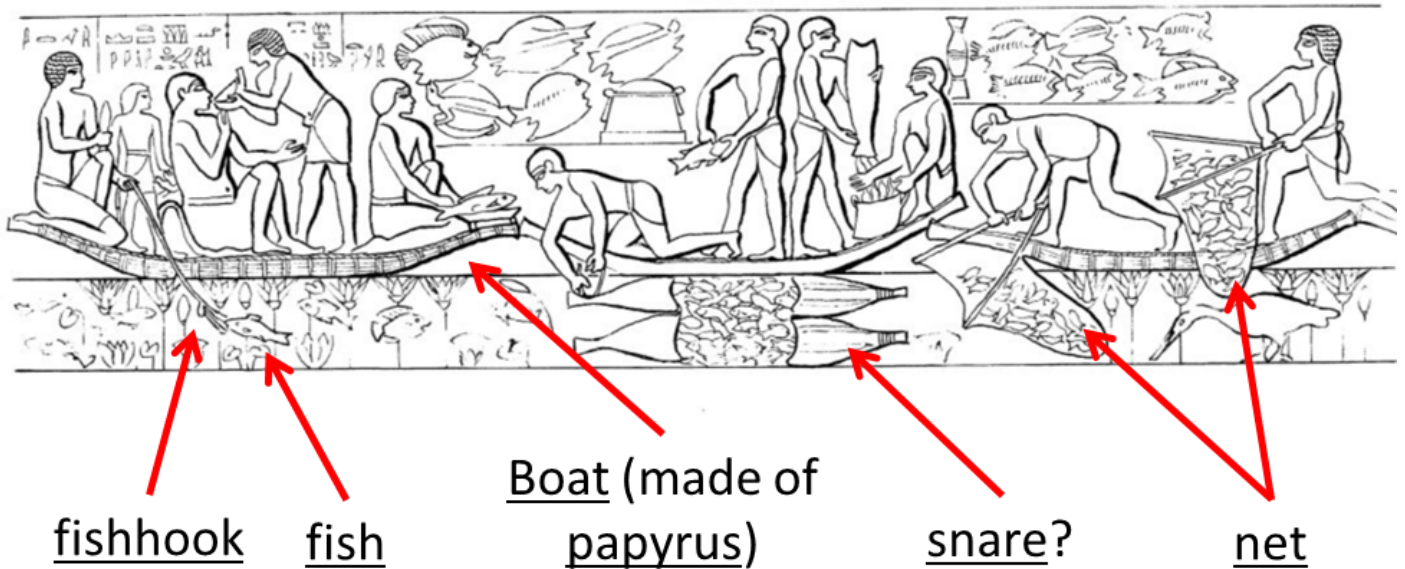


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- Nun is mentioned by name 30 times: how many times by himself? "none" :-)
 - Family trees map one kind interpersonal relationship
 - People also have place contexts: residence, or travel. We could combine them with maps, for example showing Paul's companions on different legs of his missionary journeys.
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what about putting things information in context? One way to relate things to each other is by shared activities: you could describe them in prose, or ...

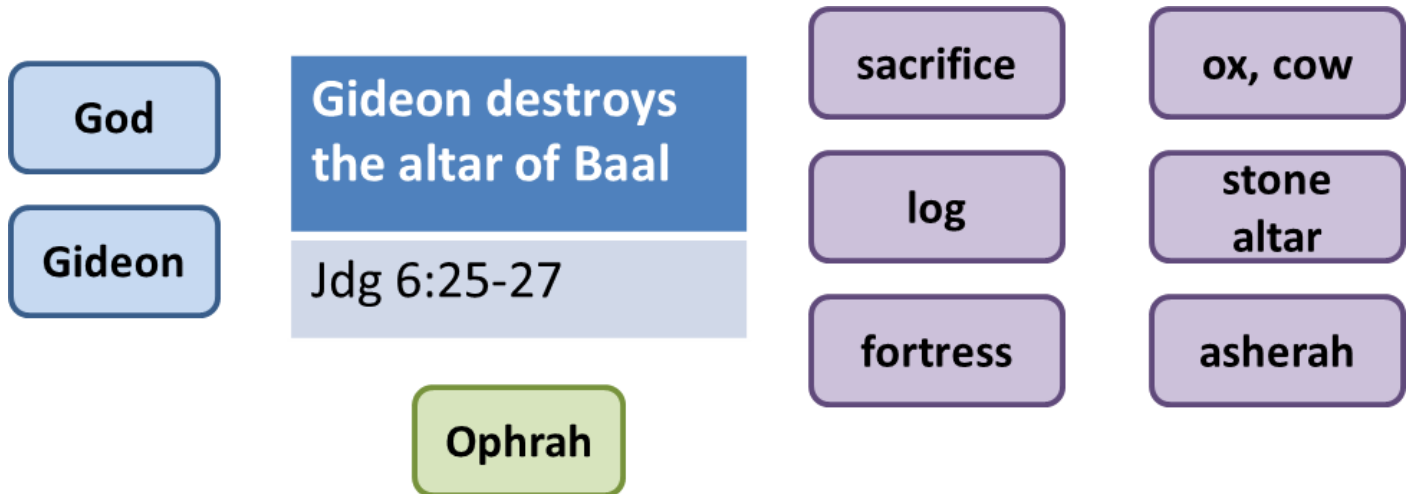
Things Information in Context?

General: fishing, fisherman's tools



- via a picture (this one is from 1000 Bible Images). Imagine hyperlinks overlaid on this image.
- This shows much more about the interrelationships of these things than a simple list
 - demonstrates usage
 - shows relative size

Biblical Events

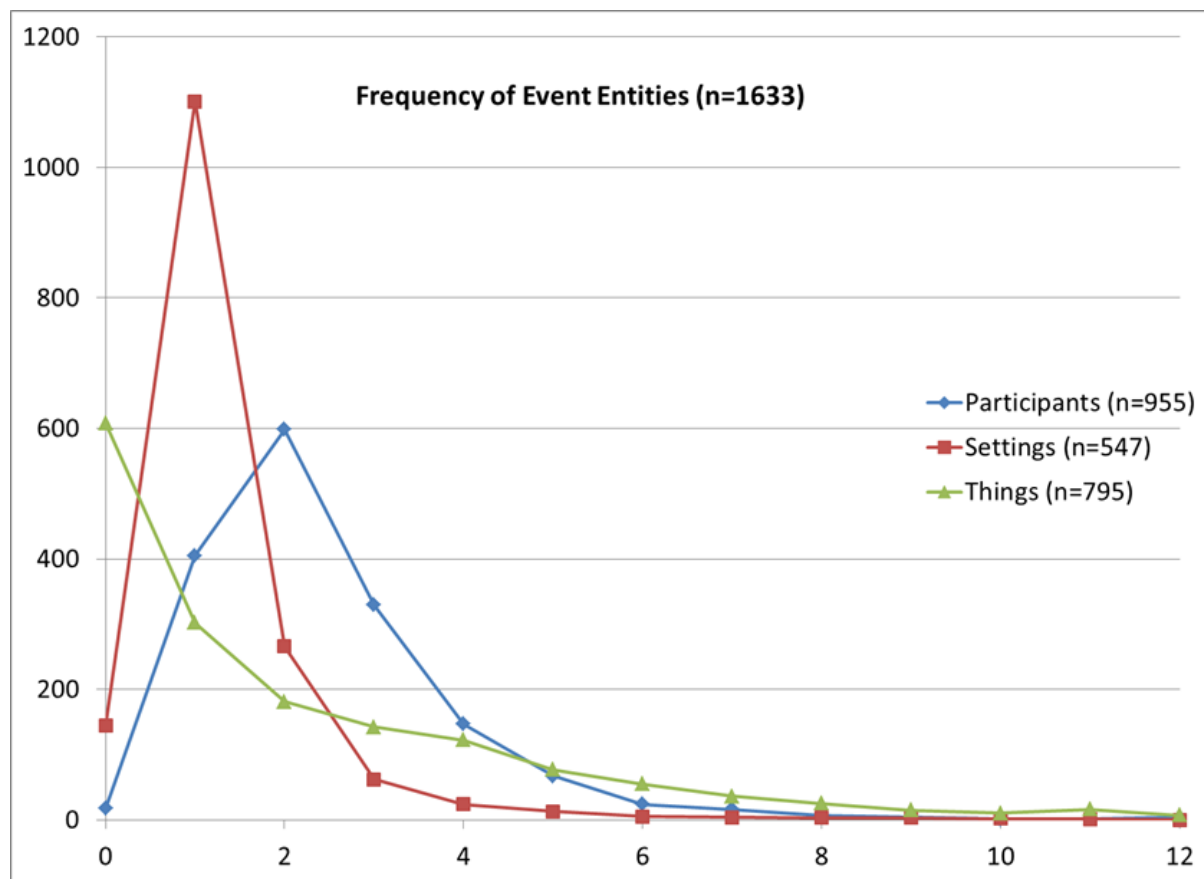


That night the LORD said to him, "Take your father's bull, and the second bull seven years old, and pull down the altar of Baal that your father has, and cut down the Asherah that is beside it and build an altar to the LORD your God on the top of the stronghold here, with stones laid in due order. Then take the second bull and offer it as a burnt offering with the wood of the Asherah that you shall cut down." So Gideon took ten men of his servants and did as the LORD had told him. But because he was too afraid of his family and the men of the town to do it by day, he did it by night.

First public presentation today about Biblical Events: goes back to my Composite Gospel project at SemanticBible.com. How do we provide a story view, rather than just the linear text?

- these are all ways of building "molecules" out of the information atoms of people/places/things. Back to the methodology: identity, utility, relationships
- the "Nun" problem comes from capturing name mentions without context
- Suppose we captured not just mentions but participation in the story?
- Intuitively, what we mean by "you know the story of Gideon's fleece"?
- Includes unnamed referents in the NT
- Elliot Ritzema both developed guidelines and annotated the events. Includes multiple defining texts, as well as mention texts.
- This is an early look: not yet released in Logos, and no announcements yet as to when it will be available.

Distribution of Event Entities



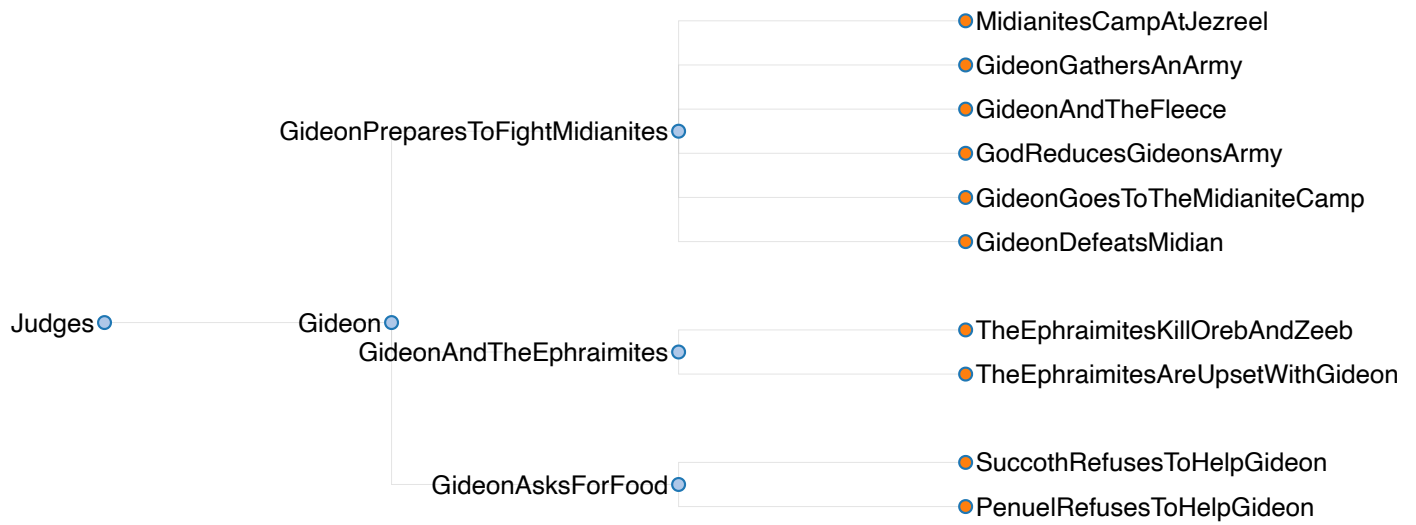
- 1633 Events with ID, Title, Description, Defining text(s)
- 955 distinct Agents as participants (24% of 4000 total)
- 24% also have "mention texts"

Use Cases

- Distinguish participation from mention
- Browse by event and discover related people, places, and things
- Show references for an entity by story
- Show other references to the stories in a passage
- Overall integration

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- *not just by reference: 18 stories where Gideon is a participant.*
 - *18 doesn't include a mention in 1 Ki and Heb*

Event Hierarchy



Time

- Sequence vs. absolute time
- Integration into timelines

Questions and Challenges

- Harmonization
- Events within events
- Entities who *aren't* participants?

The Big(ger) Picture



Timelines



Google maps



LCV



Resources and References

- Berners-Lee, T (2006). [Design Issues: Linked Data](#). Technical note.
- Boisen, S (2009). [Organizing the People, Places, and Things in the Bible](#). Presented March 27, 2009 at BibleTech:2009.
- Boisen, S (2010). [Using a Controlled Vocabulary for Managing a Digital Library Platform](#). Presented June 23, 2010 at Semantic Technology Conference.
- Visualizations created using [Protovis](#).
- BK Events data created by Elliott Ritzema and other staff in the Design & Editorial Department at [Logos Bible Software](#).

About This Presentation

- This is an XHTML document, structured and presented with [HTML Slidy](#). You can use your browser to view source and see how it works.
- Hyperlinks courtesy of [Logos Bible Software's RefTagger](#)