

SQL

SQL Tutorial

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What is Emdros?

- ➔ Emdros is a text database engine.
- ➔ Emdros deals with “annotated text”, or “analyzed text”.
- ➔ Emdros is especially good at storing and retrieving **syntactic analyses** of text.
- ➔ Emdros has a powerful query language (MQL).

MQL Tutorial

- ➔ What follows is a short tutorial on MQL.
- ➔ The examples are mostly from a syntactic database of the Hebrew Bible (Tanakh).

MQL Tutorial

- ➔ MQL is centered around “object blocks” surrounded by [square brackets]:

[Clause]

Finds clause-objects

MQL Tutorial – Structures

- ⇒ Object blocks can be:
 - Nested or
 - Consecutive or
 - Separated by arbitrary stretches
- ⇒ These are the **basic structural relationships** that can obtain between object blocks.
- ⇒ They are used in the “**basic principle of MQL**” (coming up next...)

MQL Tutorial – Basic principle

- ➔ Basic principle in MQL:

The structure of the query
mirrors the structure of the objects
found by the query
in terms of
nesting, consecutiveness,
and arbitrary space.

(Examples follow...)

SQL Tutorial - Nesting

- ➔ If object block A (e.g., Phrase) is nested inside object block B (e.g., Clause), then the object found by A must be wholly contained in the object found by B:

```
[Clause  
  [Phrase]  
]
```

Finds a phrase inside a clause.

MQL Tutorial - Sequence

- ➔ If object block B is consecutive to object block A, then the object found by B must be consecutive to the object found by A:

[W ord]

[W ord]

Finds two adjacent words

MQL Tutorial – Arbitrary space

- ➔ Arbitrary space is signalled with “..” between object blocks:

```
[Clause  
    [Phrase]  
    ..  
    [Phrase]  
]
```

Finds a clause, and two phrases inside the clause optionally separated by an arbitrary amount of text. (But both phrases must be inside the clause!)

MQL Tutorial – Boolean restrictions

- ➔ Object blocks can have Boolean restrictions on the features (or attributes) on the objects they find:

```
[Clause
  clause_type = Way0
  [Phrase
    phrase_type = VP
    AND function = Pred
    AND verbal_tense = wayyiqtol
  ]
]
```

Finds a clause of type Way0 within which there is a wayyiqtol VP which has function Pred(icate).

MQL Tutorial – Example

- ➔ All this combined allows for interesting research questions:

```
[Clause
  [Phrase phrase_type = VP and function = Pred
    [Word psp = verb and number = singular]
  ]
  ..
  [Phrase phrase_type = NP and function = Subj
    [Word psp = conjunction and lexeme = "W"]
  ]
]
```

Finds a clause with two phrases inside, optionally separated, where the first is a Predicate VP with a singular verb, and the second phrase is a Subject NP inside of which the conjunction “We” (or “and”) is found. This means that the subject is plural (“A and B”), but the verb is singular. This occurs about 250 times in the Hebrew Bible, showing that it wasn't bad grammar.

Advanced MQL – Object references

- ⇒ Object-blocks can refer to each other. The keyword “AS” names an object block. Other object blocks can then refer to the named block by dot-notation:

```
[Clause
  [word AS w1
    (psp = verb) and (verbal_tense = infinitive_absolute)
  ]
  ..
  [word
    (psp = verb) and (lexeme = w1.lexeme)
  ]
]
```

Finds a clause, within which there are two verbs, the first of which has verbal tense “infinitive absolute”, and the second of which has the same lexeme as the first. This is fairly common in Hebrew.

Advanced MQL – First / last

- ➔ You can specify that a certain object block must be “first”, “last”, or “first and last” in a context.

```
[Clause  
  [Phrase FIRST phrase_type = VP]  
  ..  
  [Phrase LAST  
    phrase_type = NP and function = Subj]  
]
```

Finds a clause, where the first phrase is a VP and the last phrase is a Subject NP.

There is more to MQL

⇒ MQL also has other bells and whistles:

- Support for “gaps” in objects, e.g., relative clauses which intervene between two parts of a clause.
- Support for limits on the “..” arbitrary-space designator
- Arbitrary Boolean expressions (not, and, or, grouping)
- Arbitrary feature/attribute-comparisons with values (<, >, <=, >=, not equal, etc.)
- And more...

Emdros on the web

Emdros has a website:

www.emdros.org

Feel free to explore...

Contact

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(obfuscated because of spam-protection)