



Github as a meeting place for Biblical scholars

Open Science and community building

Wido van Peursen

Eep Talstra Centre for Bible and Computer

Data Conversations, @UBVU, 17 July 2019



www.etcbc.nl



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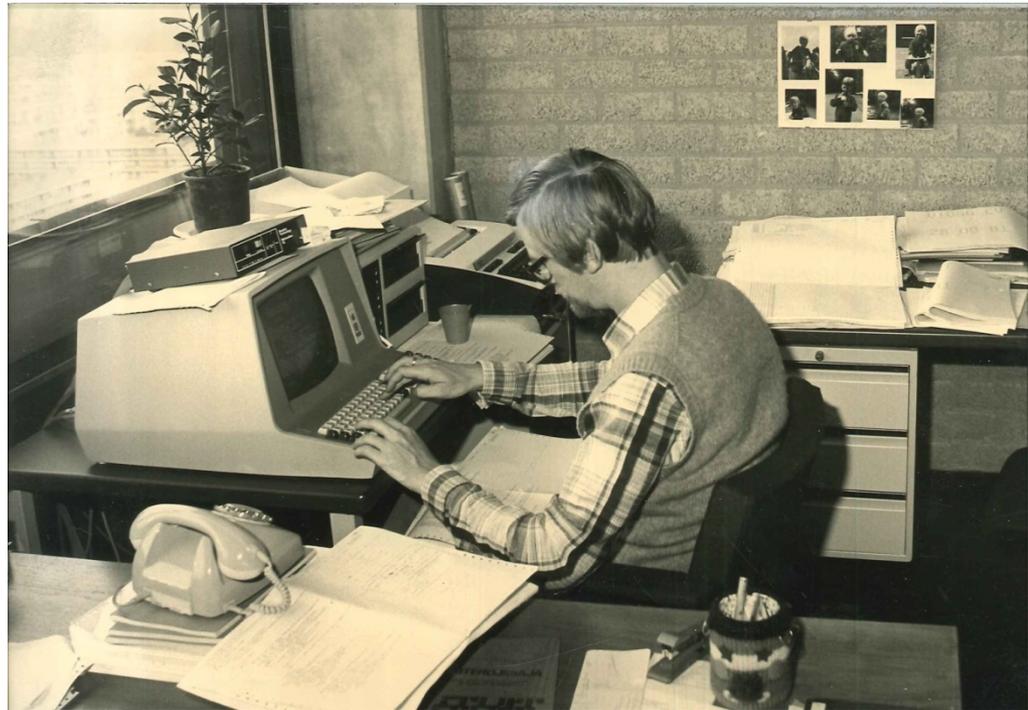
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History

1977: Werkgroep Informatica Vrije Universiteit (WIVU)



2013: WIVU becomes ETCBC:

Eep Talstra Centre for Bible and Computer

SHEBANQ

The screenshot displays the SHEBANQ interface for Genesis 1. The main text is in Hebrew with several words highlighted in yellow and cyan. The sidebar on the left contains a list of queries with checkboxes and colored icons. The top navigation bar includes the text 'bhsa', '2017', '4b', '4', 'English', 'Genesis 1', 'hebrew', 'phonetic', 'text', and 'Notes (1/3)'. The text in the main window is as follows:

1 בְּרֵאשִׁית בָּרָא אֱלֹהִים אֶת הַשָּׁמַיִם וְאֶת הָאָרֶץ:
2 וְהָאָרֶץ הָיְתָה תֵהוֹ וְנָחַו וְחֹשֶׁךְ עַל-פְּנֵי תְהוֹם וְרוּחַ אֱלֹהִים מְרַחֶפֶת עַל-פְּנֵי הַמַּיִם:
3 וַיֹּאמֶר אֱלֹהִים יְהִי אוֹר וַיְהִי-אוֹר:
4 וַיֵּרָא אֱלֹהִים אֶת-הָאוֹר כִּי-טוֹב וַיַּבְדֵּל אֱלֹהִים בֵּין הָאוֹר וּבֵין הַחֹשֶׁךְ:
5 וַיִּקְרָא אֱלֹהִים לְאוֹר יוֹם וְלַחֹשֶׁךְ קָרָא לַיְלָה וַיְהִי-עֶרֶב וַיְהִי-בֹקֶר יוֹם אֶחָד: פ
6 וַיֹּאמֶר אֱלֹהִים יְהִי רִקיעַ בְּתוֹךְ הַמַּיִם וַיְהִי מַבְדִּיל בֵּין מַיִם לְמַיִם:
7 וַיַּעַשׂ אֱלֹהִים אֶת-הַרְקִיעַ וַיַּבְדֵּל בֵּין הַמַּיִם אֲשֶׁר מִתַּחַת לָרִקיעַ וּבֵין הַמַּיִם אֲשֶׁר מֵעַל
לָרִקיעַ וַיְהִי-כֵן:
8 וַיִּקְרָא אֱלֹהִים לָרִקיעַ שָׁמַיִם וַיְהִי-עֶרֶב וַיְהִי-בֹקֶר יוֹם שֵׁנִי: פ
9 וַיֹּאמֶר אֱלֹהִים יִקְווּ הַמַּיִם מִתַּחַת הַשָּׁמַיִם אֶל-מְקוֹם אֶחָד וְתִרְאֶה הַיַּבְשָׁה וַיְהִי-כֵן:
10 וַיִּקְרָא אֱלֹהִים לַיַּבְשָׁה אָרֶץ וּלְמִקְנֵה הַמַּיִם קָרָא יַמִּים וַיֵּרָא אֱלֹהִים כִּי-טוֹב:
11 וַיֹּאמֶר אֱלֹהִים תְּדַשָּׂא הָאָרֶץ דָּשָׂא עֵשֶׂב מִזְרִיעַ זָרַע עֵץ פָּרִי עֹשֶׂה פְרִי לְמִינוֹ אֲשֶׁר
זָרַע-בּוֹ עַל-הָאָרֶץ וַיְהִי-כֵן:

<https://shebanq.ancient-data.org>

The ETCBC on Github

The screenshot shows the GitHub profile page for the Eep Talstra Centre for Bible and Computer. At the top left is a circular logo with a blue background, a white quill pen, and white angle brackets. To the right of the logo, the name "Eep Talstra Centre for Bible and Computer" is displayed in a large, dark font. Below the name, it says "Creators of the ETCBC Hebrew Text Database". Further down, there are location and contact details: "Amsterdam", "http://www.etcbc.nl", and "office@wi.th.vu.nl".

Below the header, there are navigation tabs: "Repositories 31" (highlighted), "People 13", "Teams 5", "Projects 0", and "Settings".

The main section is titled "Pinned repositories" and contains six repository cards arranged in a 2x3 grid. Each card shows the repository name, a brief description, and the primary language used. The repositories are: **bhsa** (Hebrew Bible + Linguistic annotations in text-fabric format, HCL, 8 stars, 8 forks), **linksyr** (Project results of the CLARIAH research pilot LinkSyr, HCL), **shebanq** (Exposing the Hebrew Text Database of the ETCBC, JavaScript, 12 stars), **course_materials** (Contains scripts to learn to work with the ETCBC database, Jupyter Notebook, 1 star), **syrocr** (Dead Sea Scrolls in TF format based on Abegg's data, HTML, 3 stars), and **dss** (Dead Sea Scrolls in TF format based on Abegg's data, HCL, 2 stars, 2 forks).

Below the pinned repositories, there is a search bar "Find a repository...", filters for "Type: All" and "Language: All", and a green "New" button.

At the bottom, there are two featured repository sections. The first is for **dss**, with a description "Dead Sea Scrolls in TF format based on Abegg's data", language "HCL", 2 stars, 2 forks, and "Updated 3 days ago". The second is for **CACCHT**, with a description "The repository contains scripts for parsing and analyzing Hebrew texts.", language "Jupyter Notebook", 1 fork, 2 stars, 0 issues, 0 pull requests, and "Updated on May 14".

On the right side, there are two additional sections: "Top languages" showing a bar chart and a list of languages (HCL, Jupyter Notebook, Python, OpenEdge ABL, JavaScript) with their respective counts, and "People" showing a list of 13 contributors with their profile pictures.

Feature documentation

The screenshot shows the BHS feature documentation website. The top navigation bar includes the BHS logo and a GitHub link. The left sidebar contains a navigation menu with categories like Home, Colophon, Text-Fabric versus SHEBANQ, Updates, References, Words and morphemes, and Features. The main content area is divided into three sections: Grid features, Sectional features, and Lexeme features. The right sidebar contains a Table of contents with links to various feature categories.

BHSA GitHub

BHSA
Home
Colophon
Text-Fabric versus SHEBANQ
Updates
References
Words and morphemes
Features ^
0 home
book
book@ll
chapter
code
det
dist
dist_unit
distributional_parent
domain
freq_lex
freq_occ
function
functional_parent
g_cons
g_cons_utf8
g_lex
g_lex_utf8
g_name
g_name_utf8
g_pfm
g_pfm_utf8

Grid features

name	description	examples
otype	node type	book verse clause phrase word
oslots	slot containment	1 1-11 2010-2015,2020-2030
otext	textapi	<i>no data, only specifications</i>

Sectional features

name	description	examples
book	name of Bible book	Genesis Psalms Amos
chapter	number of chapter within book	3
verse	number of verse within chapter	4
label	passage indicator	AMOS 03,04
label	key for part within verse	A B C

Lexeme features

(on node type `lex`)

name	description	examples
------	-------------	----------

Table of contents
Introduction
Grid features
Sectional features
Lexeme features
Word features
Orthography
Lexical (on node type word)
Morphology
Morphemes
Statistics
Linguistic features
Sentence(-atom) features
Clause(-atom) features
Phrase(-atom) features
Relationships
Generic features

[Morphemes](#)

home/#morphemes

Course Materials

The screenshot shows a GitHub repository page for 'course_materials'. At the top, it displays '7 commits', '1 branch', '0 releases', and '1 contributor'. Below this, there are buttons for 'Branch: master', 'New pull request', 'Create new file', 'Upload files', 'Find File', and 'Clone or download'. The repository owner is 'MartijnNaajer', with the latest commit '2196b61' on Dec 1, 2017. A list of files is shown, including 'Analysis_and_Visualization_of_Data_with_R.ipynb', 'Analysis_and_Visualization_of_Data_with_R_Assignment.ipynb', 'Introduction_to_Text_Fabric_Assignment.ipynb', 'Introduction_to_text_fabric.ipynb', 'Layer_picture.png', 'README.md', and 'all_words.csv'. The 'README.md' file is selected and its content is displayed below. The README content includes a title 'course_materials', a description of the repository's purpose, and instructions on how to use the materials, including installing Jupyter and Text-Fabric, and a list of files provided.

7 commits 1 branch 0 releases 1 contributor

Branch: master New pull request Create new file Upload files Find File Clone or download

MartijnNaajer Add files via upload Latest commit 2196b61 on Dec 1, 2017

Analysis_and_Visualization_of_Data_with_R.ipynb	Add files via upload	2 years ago
Analysis_and_Visualization_of_Data_with_R_Assignment.ipynb	Add files via upload	2 years ago
Introduction_to_Text_Fabric_Assignment.ipynb	Add files via upload	2 years ago
Introduction_to_text_fabric.ipynb	Add files via upload	2 years ago
Layer_picture.png	Add files via upload	2 years ago
README.md	Create README.md	2 years ago
all_words.csv	Add files via upload	2 years ago

README.md

course_materials

Contains scripts to learn to work with the ETCBC database

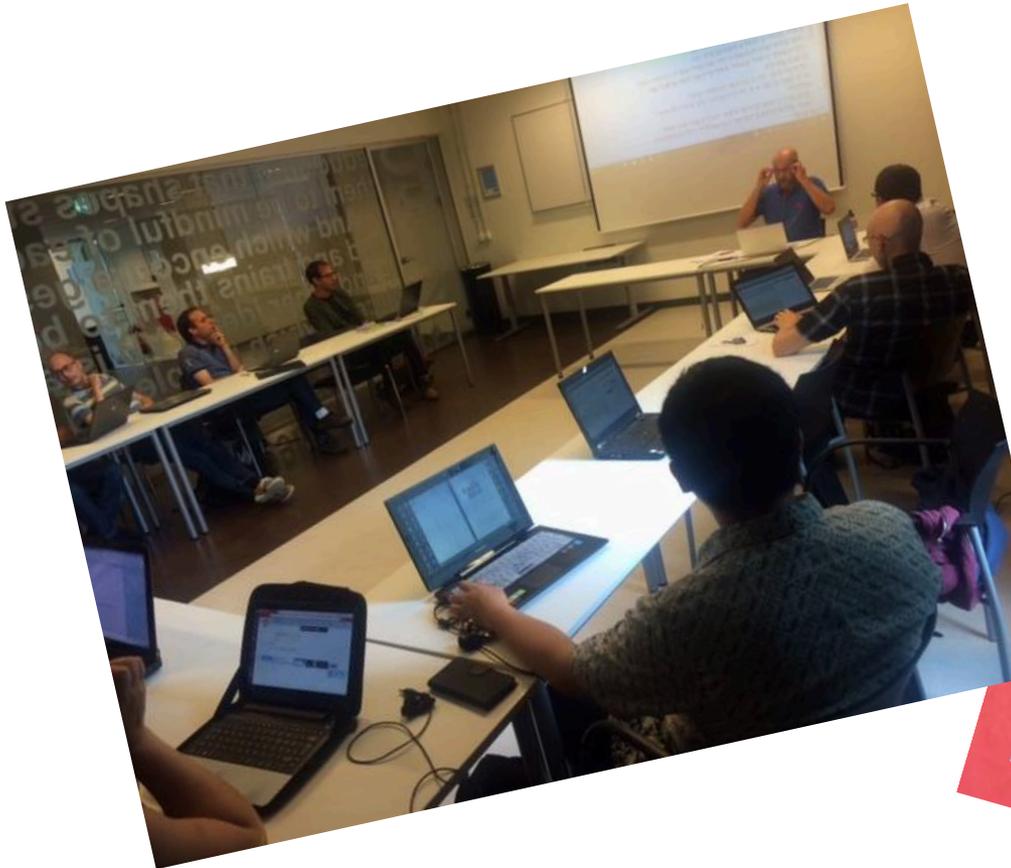
In this repository you find the materials that we have used in the MA/PhD course Digital Humanities and Biblical Studies in 2017 at Vrije Universiteit Amsterdam.

If you want to use these materials, first install [Jupyter](#) and [Text-Fabric](#). Of course, you also have to install Python3 and if you want to use the R file, you should install an R kernel for Jupyter.

It consists of a course on Text-Fabric (TF): `Introduction_to_Text_Fabric.ipynb` . In this course you learn how to extract data from the ETCBC database (BHSA c version). There is also a file with exercises: `Introduction_to_Text_Fabric_Assignment.ipynb`

Once you have made a dataset with TF or downloaded a csv file from [Shebanq](#), you can analyze these data with the tools we use in the file `Analysis_and_Visualization_of_Data_with_R.ipynb` . The data file that is needed here is `all_words.csv`, which I downloaded from the Shebanq website It offers an introduction to data exploration and visualization of the data with R. Of course there is also a file with exercises: `Analysis_and_Visualization_of_Data_with_R_Assignment.ipynb`

MA & PhD course: Biblical Studies & DH



Text-Fabric

The screenshot shows the Text-Fabric website. On the left is a navigation menu under the heading "Text-Fabric" with items: Home, About, Use, Api, Writing, Model, Create, Server, Code, and Implementation. On the right is a "Table of contents" section with items: About, Getting started, and Documentation. The main content area features a circular logo with a red hash symbol and the letters "TF" on a textured background. Below the logo is the text "Text-Fabric" and a sub-heading "About". The "About" section contains a paragraph: "Before diving head-on into Text-Fabric, you might want to read a bit more about what it is and where it came from. And after it, if you want to cite it, use this DOI: [10.5281/zenodo.592193](https://doi.org/10.5281/zenodo.592193)." Below this is a light blue expandable panel titled "Intro" which lists: "Text-Fabric is several things:" followed by a bulleted list: "a browser for ancient text corpora", "a Python3 package for processing ancient corpora", and "a tool to contribute additional research data to corpora". The panel also contains text: "A corpus of ancient texts and linguistic annotations represents a large body of knowledge. Text-Fabric makes that knowledge accessible to non-programmers by means of a built-in a search interface that runs in your browser. From there the step to program your own analytics is not so big anymore. You can export your results to Excel and work with them from there. And if that is not enough, you can call the Text-Fabric API from your Python programs. This works really well in Jupyter notebooks." Below the "Intro" panel is another light blue expandable panel titled "Apps".

Text-Fabric

[Home](#)

[About](#) ▾

[Use](#) ▾

[Api](#) ▾

[Writing](#) ▾

[Model](#) ▾

[Create](#) ▾

[Server](#) ▾

[Code](#) ▾

[Implementation](#) ▾

Table of contents

[About](#)

[Getting started](#)

[Documentation](#)



Text-Fabric

About

Before diving head-on into Text-Fabric, you might want to read a bit more about what it is and where it came from. And after it, if you want to cite it, use this DOI: [10.5281/zenodo.592193](https://doi.org/10.5281/zenodo.592193).

Intro

Text-Fabric is several things:

- a *browser* for ancient text corpora
- a Python3 package for processing ancient corpora
- a tool to contribute additional research data to corpora

A corpus of ancient texts and linguistic annotations represents a large body of knowledge. Text-Fabric makes that knowledge accessible to non-programmers by means of a built-in a search interface that runs in your browser.

From there the step to program your own analytics is not so big anymore.

You can export your results to Excel and work with them from there.

And if that is not enough, you can call the Text-Fabric API from your Python programs. This works really well in Jupyter notebooks.

Apps

Dead Sea Scrolls

The Dead Sea Scrolls (DSS)

The Dead Sea Scrolls (also Qumran Caves Scrolls) are ancient Jewish religious manuscripts found in the Qumran Caves in the Judean Desert, near Ein Feshkha on the northern shore of the Dead Sea.

[Wikipedia article on DSS.](#)

Martin G. Abegg, Jr. (b. 1950) is a notable Dead Sea Scrolls scholar, researcher, and professor. Abegg is responsible for reconstructing the full text of the Dead Sea Scrolls from the Dead Sea Scrolls concordance, a project that broke the lengthy publication monopoly held on the scrolls.

[Wikipedia article on Abegg](#)

Provenance

The contents of this repo is created during the *Creating Annotated Corpora of Classical Hebrew Texts (CACCHT) project* carried out by Jarod Jacobs, Martijn Naaijer, Dirk Roorda, Robert Rezetko, Oliver Glanz, and Wido van Peursen.

The DSS texts and morphological data connected with them were generously provided by Martin Abegg, which consist of two foundational sets of data: transcriptions and morphological tagging. The transcriptions come from various sources, but primarily reflect what is found in the Discoveries in the Judean Desert series (Oxford:Clarendon Press, 1955-). For full details see:

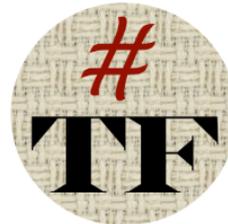
[DSSB-Read me first](#) and [QUMRAN - Read me first](#).

Abegg started morphologically tagging the Qumran texts in the mid-90s with the assistance of several people that he mentions in the above read me first files. Over the following decades, Abegg completed full morphological tagging of nearly every Hebrew and Aramaic scroll found in the Judean Desert between 1947 and today. For more information about the development and particularities of Abegg's data, we will once again point you to the DSSB and QUMRAN read me first files.

The tagging scheme itself is also [documented](#).

After conversion to Text-Fabric, the these tags have been normalized into separate features, such as *sp* (*part-of-speech*), *ps* (*person*), *nu* (*number*), *gn* (*gender*), etc.

See [morphological features in TF](#).



```
103 f1 3 w w0 Pc B -
103 f1 3 CoX vRq0X ncms -
103 f1 3 yhyw hyh vq13mp -
103 f1 3 l/k[M] lV PpX2mp -
103 f1 3 w zIN Pp B -
103 f1 3 ylcrz bDc0r ncmscX3f
103 f1 3 la Lea Pn - -
103 f1 3 taklw[ akl vq12mp -
103 f1 3 / - - -
103 f1 3 - - - -
103 f2 1 ]w w0 Pc B -
103 f2 1 mq[d]C/y mIqVd;av
```

Corpora

The screenshot shows a web browser window with the URL <https://annotation.github.io/text-fabric/About/Corpora/>. The page has a dark blue header with the 'Corpora' logo and a GitHub repository badge showing 16 stars and 5 forks. On the left is a navigation menu for 'Text-Fabric' with links to Home, About, Install, Corpora (highlighted), Faq, News, Older, Use, Api, Writing, Model, Create, Server, Code, and Implementation. The main content area features the heading 'A TF app can also download and update the corpus data.' followed by 'The list of current apps is' and a table. On the right is a 'Table of contents' with links to 'Current apps', 'Get apps', 'Get data', and 'More corpora'.

A TF app can also download and update the corpus *data*.

The list of current apps is

acronym	language/writing system	name	period	long name
bhsa	Hebrew	Hebrew Bible	1000 BC - 900 AD	Biblia Hebraica Stuttgartensia (Amstelodamensis)
dss	Hebrew	Dead Sea Scrolls	300 BC - 100 AD	Transcriptions based on Martin Abegg's data files
peshitta	Syriac	Syriac Old Testament	1000 BC - 900 AD	Vetus Testamentum Syriace
synt	Syriac	Syriac New Testament	0 - 1000 AD	Novum Testamentum Syriace
quran	Arabic	Quran	600 - 900 AD	Quranic Arabic Corpus
oldbabylonian	Akkadian / cuneiform	Old Babylonian letters	1900 - 1600 BC	Altbabylonische Briefe in Umschrift und Übersetzung
uruk	proto-cuneiform	Uruk	4000 - 3100 BC	Archaic tablets from Uruk
banks	modern english	Iain M. Banks	1984 - 1987 AD	99 words from the SF novel Consider Phlebas

All these apps can be found in [annotation](#) on GitHub. Each repo named `app- appName` hosts the app named `appName`.

Community building



etcbc-vu | peursenwtvan

bootcamp_nlp_syriac
dadel
data
@ dh2019
dighum_course
dss
etcbc_40years
@ etcbcnext
general
greek
introduce_yourself
@ jupyter
@ linksyr
@ lorentz_2019
ni_aa_201819
@ participants
@ pelagios
quran
random
shebanq
study_at_vu
synvar
text-fabric
tf-query
tf-syr
twitter
workshop_linksyr

Direct Messages (+)
Slackbot
peursenwtvan (you)
Christiaan Erwich
Dirk Roorda

#text-fabric
☆ | & 146 | ♡ 2 | Add a topic

Friday, June 7th

Jarod Jacobs 4:56 PM
Hi all, I'm trying to upgrade text-fabric. Currently, I have 5.4.1, but when I

```
pip install --upgrade text-fabric
```

I'm told the the requirement is already satisfied. If I try

```
pip install text-fabric==7.8.0
```

I get: (edited)
ERROR: Could not find a version that satisfies the requirement text-fabric==7.8.0 (from versions: 0.0.2, 0.0.3, 0.0.4, 0.0.5, 0.0.7, 0.0.8, 0.0.9, 0.0.10, 0.0.11, 0.0.12, 0.0.13, 1.0.0, 1.0.1, 1.1.0, 1.2.0, 1.2.1, 1.2.2, 1.2.3, 1.2.4, 1.2.5, 1.2.6, 1.2.7, 2.0.0, 2.1.1, 2.1.2, 2.1.3, 2.2.0, 2.2.1, 2.3.0, 2.3.1, 2.3.2, 2.3.3, 2.3.4, 2.3.5, 2.3.6, 2.3.7, 2.3.8, 2.3.9, 2.3.10, 2.3.11, 2.3.12, 2.3.13, 2.3.14, 2.3.15, 3.0.0, 3.0.1, 3.0.2, 3.0.3, 3.0.4, 3.0.5, 3.0.6, 3.0.7, 3.0.8, 3.0.9, 3.1.0, 3.1.1, 3.1.2, 3.1.3, 3.1.4, 3.1.5, 3.2.0, 3.2.1, 3.2.2, 3.2.3, 3.2.4, 3.2.5, 3.2.6, 3.3.0, 3.3.1, 3.3.2, 3.3.3, 3.3.4, 3.4.0, 3.4.1, 3.4.2, 3.4.3, 3.4.4, 3.4.5, 3.4.6, 3.4.7, 3.4.8, 3.4.9, 3.4.10, 3.4.11, 3.4.12, 4.0.3, 4.1.0, 4.1.1, 4.1.2, 4.2.0, 4.2.1, 4.3.0, 4.3.1, 4.3.2, 4.3.3, 4.3.4, 4.3.5, 4.3.6, 4.4.0, 4.4.1, 4.4.2, 4.4.3, 5.0.0, 5.0.1, 5.0.2, 5.0.3, 5.0.4, 5.1.0, 5.2.0, 5.2.1, 5.3.0, 5.3.1, 5.3.2, 5.3.3, 5.4.0, 5.4.1)
ERROR: No matching distribution found for text-fabric==7.8.0

I've tried uninstalling text-fabric via pip and reinstalling, but I again end up with 5.4.1. Any idea why this is happening? Thanks!

Christiaan Erwich 5:03 PM
With which `pip` have you installed tf before?

5:04 PM My first intuition would be that you have installed TF with `pip3` before, and now you are installing it with `pip`

Jarod Jacobs 5:06 PM
Thanks for the idea Christiaan! I just tried upgrading with pip3 and uninstall/reinstall with pip3 but have gotten the same results.

Christiaan Erwich 5:07 PM
hmm darn

Christiaan Erwich 5:12 PM
have you tried checking which TF version is on your PC? (edited)

Jarod Jacobs 5:25 PM
if I do pip list, it shows text-fabric 5.4.1

Ernst Boogert 6:31 PM
I think this has to do with multiple Python installations... (edited)
So 5.4.1 is installed in the Python you currently use, while another Python is floating around, that is used when you call pip
If you use Anaconda for your package management, you can use the Anaconda terminal; if you pip install TF there, it should be working...
The final option would be to blame @dirkroorda ... 😞 but that is only my last resort... 😞😞
Another option might be that you run Python in a virtual environment, which causes comparable problems if you do not track carefully which Python installation you are using...
In that case, you have first to activate the appropriate virtual environment before calling pip...

+ Message #text-fabric

etcbc.nl



ABOUT EEP TALSTRA CENTRE FOR BIBLE AND COMPUTER

The Eep Talstra Centre for Bible and Computer is a research center at the Vrije Universiteit Amsterdam, Faculty of Theology. The ETCBC develops and maintains an advanced syntactic database of the Hebrew Bible and researches issues related to Ancient Hebrew, Aramaic, and Syriac syntax and exegesis by applying computational and statistical methods.

ACTIVITIES

Upcoming Events

Vandaag juni 2019 Afdrukken Week Maand Agenda ▾

ma	di	wo	do	vr	za	zo
27	28 16:45 PhD defe	29	30	31	1. jun	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17 12:00 Data Con	18	19	20	21	22	23
24	25	26	27	28	29	30

Evenementen worden weergegeven in tijdzone: Midden-Europese tijd - Amsterdam

Tweets by @etcbc_vu

ETCBC Retweeted

Maria J. Cruz
@gravana

The first edition of Data Conversations @VUamsterdam will be held on Monday 17 June. We have a wonderful line-up: @PeursenWTvan, @Tknapien, @PhDToothFAIRy, @KristinaHettne. #vudatacon organised by @UBVU. Look forward to seeing you there! @VU_FGB @FRT_VU @CDSLeiden

Embed [View on Twitter](#)

Bible Online Learner

bibleol.3bmoodle.dk/text/show

Søg

Bible Online Learner Home Text and Exercises User Access Language

Word

Phrase

Clause

Separate lines

Show border

Type

Kind

Relation

Text type

Domain

Indentation

Code (text)

Code (number)

Sentence

Clear grammar

Genesis 1

Clause:No relation:0

1 בְּרֵאשִׁית בָּרָא אֱלֹהִים אֶת
הַשָּׁמַיִם וְאֶת הָאָרֶץ:

Clause:Conjunction:422

2 וְהָאָרֶץ הִיְתָה תְהוֹ וְנָהוּ

Clause:Conjunction:402

3 וַחֲשֶׁךְ עַל־פְּנֵי תְהוֹם

Clause:Conjunction:460

4 וַיְרוּחַ אֱלֹהִים מְרַחֶפֶת עַל־פְּנֵי
הַמַּיִם:

Bible Online Learner

The screenshot displays the Bible Online Learner interface. At the top, the URL `bibleol.3bmoodle.dk/text/show` is visible. The page title is "Bible Online Learner". Below the title, there are navigation buttons for "Word" and "Phrase". A large white banner from the "Ministerie van Onderwijs, Cultuur en Wetenschap" (Ministry of Education, Culture and Science) is overlaid on the page. The banner contains the text: "Gehonoreerde projectvoorstellen Open en online onderwijs - pijler Open leermaterialen". Below the banner, the Hebrew text "וְרוּחַ אֱלֹהִים מְרַחֶפֶת עַל־פְּנֵי הַמַּיִם" is shown, with a blue box highlighting the phrase "וְרוּחַ אֱלֹהִים מְרַחֶפֶת עַל־פְּנֵי הַמַּיִם". The text is annotated with "Clause:Conjunction:460" and "הַמַּיִם:". Other Hebrew text visible includes "וְחֶשֶׁךְ עַל־פְּנֵי תְהוֹמֹת הַיָּם" and "וְרוּחַ אֱלֹהִים מְרַחֶפֶת עַל־פְּנֵי הַמַּיִם".

SURF grant: DADEL project



Ready to start
learning Hebrew?

Learn more about text based e-learning,
sign up for a free learning session at
www.pagename.nl →



Challenges

- **IPR issues**
- **Transformation of scholarly practices:**
 - **Willingness to share (programming) work in progress**
 - **Use of data by others departing from ETCBC strategy**
- **Limited resources (human and budget) for:**
 - **Programming**
 - **Documentation**
 - **Community building and PR**
 - **Community infrastructure (e.g. Slack)**

Opportunities

- **Growing community including:**
 - PhD students
 - Interested people outside Academia
 - People with mixed background: IT and Humanities
- **Cooperation in Network Institute**
- **International partners (including Majority World programs)**