Digital Humanities
UNIVERSITÄT LEIPZIG

UNIVERSITÄT LEIPZIG 1409 2009 ALMA MATER LIPSIENSIS

Alexander von Humboldt
Stiftung/Foundation

# Digital Methods in Classical Studies


## Monica Berti
**(Universität Leipzig)**


**Ringvorlesung**
**Transdisziplinäre Aspekte digitaler Methodik in den Geistes- und Kulturwissenschaften**
**Leibniz-Institut für Europäische Geschichte**
**Mainz, July 3, 2019**

# Outline

1. Open Data of Ancient Greek and Latin Sources
2. Catalogs and Citation Systems
3. Data Entry and Analysis for Classical Philology
4. Critical Editions and Annotations
5. Linguistic Resources

# 1

# Open Data of Ancient Greek and Latin Sources

# Open Data

↓

accessibility

- **open access**
- **open data**

# Open Access ?

Papyri.info

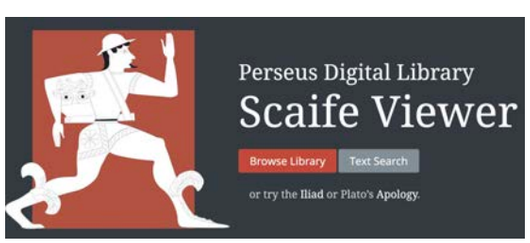
DCLP

PACKARD HUMANITIES INSTITUTE
Digital Text Archives

LOEB CLASSICAL LIBRARY
*Founded by* JAMES LOEB 1911 *Edited by* JEFFREY HENDERSON

Oxford Scholarly Editions Online
www.oxfordscholarlyeditions.com

THESAURUS LINGUAE GRAECAE ®
A Digital Library of Greek Literature
Project Director: Maria Pantelia




THE DIGITAL LATIN LIBRARY

<EpiDoc>

DE GRUYTER
BIBLIOTHECA TEUBNERIANA LATINA (BTL) & THESAURUS LINGUAE LATINAE (TLL) ONLINE

BREPOLiS
Brepols Online Databases

Musisque Deoque

Open Philology
UNIVERSITÄT LEIPZIG

Open Greek and Latin Project

BrillOnline *Discovery*
*Over three centuries of scholarly publishing*

digilibLT

**and other projects …**

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# Open Access ?

Papyri.info

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BREPOLiS
Brepols Online Databases

PACKARD HUMANITIES INSTITUTE
Digital Text Archives

Perseus Digital Library
Scaife Viewer
Browse Library | Text Search
or try the Iliad or Plato's Apology.

Musisque Deoque

LOEB CLASSICAL LIBRARY
*Founded by* JAMES LOEB 1911 *Edited by* JEFFREY HENDERSON

Open Philology
UNIVERSITÄT LEIPZIG

Open Greek and Latin Project

Oxford Scholarly Editions Online
www.oxfordscholarlyeditions.com

THE DIGITAL LATIN LIBRARY

BrillOnline *Discovery*
*Over three centuries of scholarly publishing*

<EpiDoc>

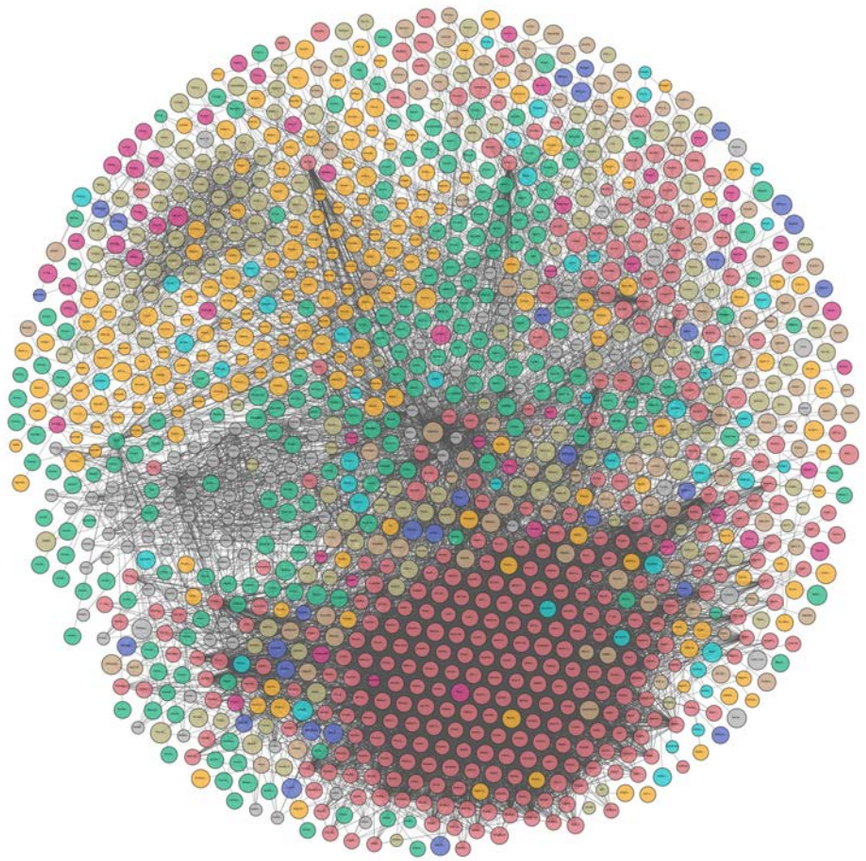
digilibLT

and other projects …

- a wide variety of digital **collections** and **corpora**
- different **models** of **accessibility**
- different **business models**

# Open Data ?

## Linked Open Data



The Linked Open Data Cloud

https://www.w3.org/wiki/LinkedData
https://www.w3.org/standards/semanticweb/data

# Open Data ?

# Linked Ancient World Data

★ Available on the web (whatever format) but with an open licence, to be Open Data
★★ Available as machine-readable structured data (e.g. excel instead of image scan of a table)
★★★ As above plus non-proprietary format (e.g. CSV instead of excel)
★★★★ All the above plus: Use open standards from W3C (RDF and SPARQL) to identify things, so that people can point at your stuff
★★★★★ All the above, plus: Link your data to other people's data to provide context

http://lawd.info/
http://dlib.nyu.edu/awdl/isaw/isaw-papers/7/

# Open Data ?

# Linked Ancient World Data

★ Available on the web (whatever format) but with an open licence, to be Open Data
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★★★★★ All the above, plus: Link your data to other people's data to provide context

PLEIADES

Papyri.info

TRISMEGISTOS

OPEN CONTEXT

nomisma.org

http://lawd.info/

http://dlib.nyu.edu/awdl/isaw/isaw-papers/7/

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# PLEIADES

## Alexandria

a Pleiades place resource

Creators: A. Bernand
Contributors: Brady Kiesling, Sean Gillies, Jen Thum, Jeffrey Becker, Iris Fernandez, H. Kopp, Herbert Verreth, B. Siewert-Mayer, Mark Depauw, R. Talbert, Adam Prins, W. Röllig, Tom Elliott, DARMC, Roko Rumora, Francis Deblauwe, Eric Kansa
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Last modified Aug 08, 2018 01:41 PM — History

tags: dare:ancient=1, dare:major=1, dare:feature=major settlement

**The ancient port city in Egypt's Nile Delta, founded by Alexander the Great in 332/331 BCE.**

**Canonical URI for this page:**
https://pleiades.stoa.org/places/727070

**Representative Point (Latitude, Longitude):**
31.201435, 29.909773

**Locations:**
- DARMC location 1090 (330 BC - AD 640)

**Names:**
- *Alexandrea ad Aegyptum* (Georgian, 540 BC - AD 640)
- *Alexandreia* (Ancient Greek, 540 BC - AD 650)
- *Alexandreia ad Aegyptum* (30 BC - AD 226)
- *Alexandria* (330 BC - AD 640)
- *Alexandria* (German, 1548 BC - AD 2000)
- *Rakote* (Coptic, AD 300 - AD 640)
- *Rhakōtis* (Ancient Greek, 330 BC - AD 640)
- *al-Iskandariyya* (AD 1370 - AD 1501)
- *al-Iskandarīya* (Modern Standard Arabic, 2010 BC - AD 2000)
- *al-İskandarīya* (AD 819 - AD 2000)

**Alexandria makes connections with:**
*None*

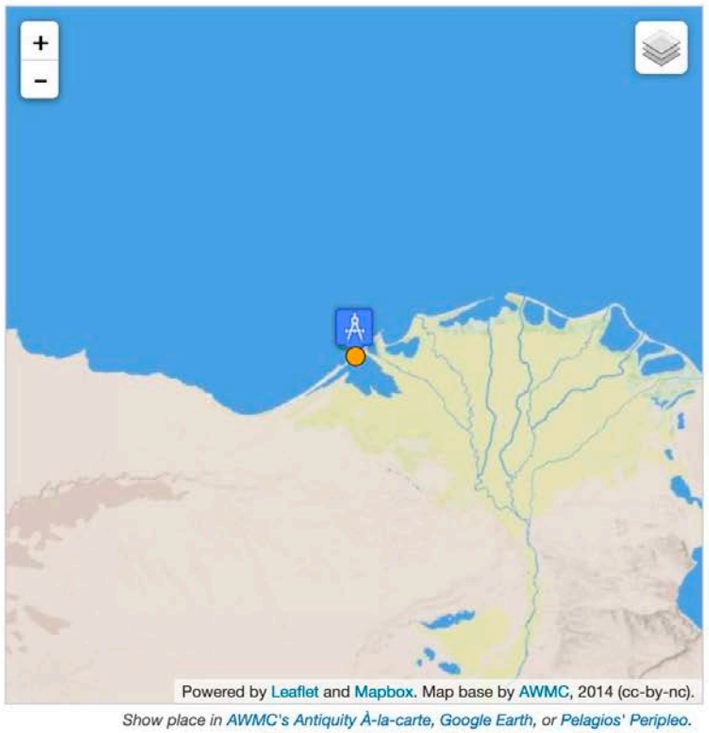
**Alexandria receives connections from:**
- Pharos ➡ connection ➡ Alexandria (unspecified date range)
- Serapeum of Alexandria ➡ at ➡ Alexandria (unspecified date range)
- Chatby Necropolis ➡ at ➡ Alexandria (unspecified date range)
- Catacombs of Kom el Shoqafa ➡ at ➡ Alexandria (unspecified date range)
- Kom el-Dikka ➡ at ➡ Alexandria (unspecified date range)

**Place type:**
settlement, port

**References:**

***Evidence:***
- TP (Talbert: CUP) 8C3 (Talbert 367)

***See Further:***
- BAtlas 74 B2 Alexandria




*Show place in AWMC's Antiquity À-la-carte, Google Earth, or Pelagios' Peripleo.*
*Show area in GeoNames, Google Maps, or OpenStreetMap.*

```
{{cite web |url=https://pleiades.stoa.org/places/727070 |title=Places: 727070 (Alexandria)
|author=Bernand, A. |accessdate=June 24, 2019 3:40 am |publisher=Pleiades}}
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# Papyri.info

## p.fay.110 = HGV P.Fay. 110 = Trismegistos 10775 = columbia.apis.p387

metadata ☑ HGV data ☑ TM data ☑ APIS catalog record ☑ | text ☑ transcription ☑ images ☑ translation ☑ | open in editor

Canonical URI: http://papyri.info/ddbdp/p.fay;;110

### HGV: P.Fay. 110 [source] [xml]

| | |
|---|---|
| **Title** | Letter from Gemellus to Epagathus |
| **Publications** | P.Fay. 110 [More in series P.Fay.] |
| **Support/Dimensions** | Papyrus |
| **Post-Concordance BL Entries** | VIII 122; XII 68 |
| **Translations** | Olsson, Papyrusbriefe (1925) 52; Arzt-Grabner, Christlicher Alltag (2008), S. 122.; White, Ancient Lett (1986), 95 |
| **Origin** | Euhemeria (Arsinoites) [More from Euhemeria (Arsinoites)] |
| **Material** | Papyrus |
| **Date** | 11. Sept. 94 [More from the period between 94 CE and 95 CE] |
| **Commentary** | Gehört zum Gemellus - Archiv. Neudruck: Arzt-Grabner, Christlicher Alltag, S. 121f. |
| **Print Illustrations** | Plate V (nicht VI); Montevecchi, Papirologia, Tav. 44; Roberts, Greek Literary Hands, 11 b, vor S. 11 (Z. 22) |
| **Subjects** | Brief (privat); Lucius Bellenos Gemellos an Epagathos; Aufträge; Wirtschaft (Land) |
| **Images** | http://wwwapp.cc.columbia.edu/ldpd/app/apis/item?mode=item&k... |
| **License** | © Heidelberger Gesamtverzeichnis der griechischen Papyrusurkunden Ägyptens. This wor is licensed under a Creative Commons Attribution 3.0 License. |

### Trismegistos: 10775 [source]

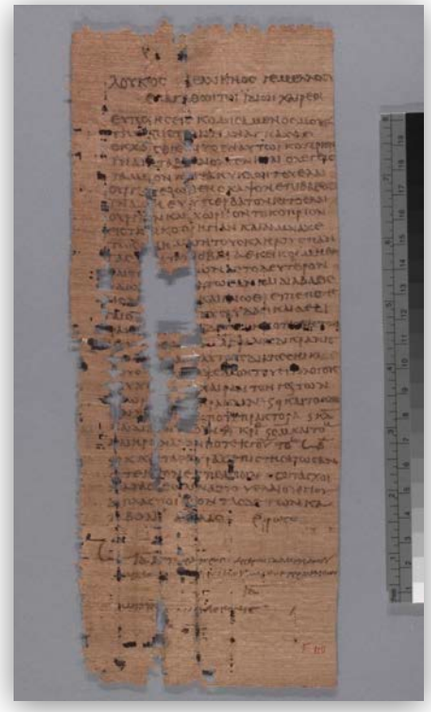
| | |
|---|---|
| **Publications** | P. Fay. 110 (Grenfell, Bernard P. / Hunt, Arthur S. / Hogarth, David G.; 1900) = Olsson, Papyrusbriefe (Olsson, Bror / / ; 1925) |
| **Inv. no.** | New York, Columbia University P. Fay. 110 |
| **Date** | AD 94 Sep 11 (Domitianus, year 14, Germanicus (= Pachons) 14) |
| **Language** | Greek |
| **Provenance** | Egypt, 00b - Euhemeria (Qasr el-Banat)[found & written] |
| **Archive** | Epagathos estate manager of Lucius Bellienus Gemellus |
| **People** | mentioned people |
| **Places** | mentioned places |

### Catalog Record: columbia.apis.p387 [xml]

| | |
|---|---|
| **Title** | Letter [94 AD] |
| **Summary** | Letter from Lucius Bellenus Gemellus to Epagathus, perhaps his nephew. Gemellus sends instructions Epagathus to perform certain tasks related to the running of his estate |
| **Citations** | P.Fay. 110 |
| **Inv. Id** | Fay. 110 |
| **Support/Dimensions** | 1 papyrus fragment; 10.5 x 26.9 cm |
| **Language** | In Greek |
| **Date** | 94 CE [More from the period between 94 CE and 95 CE] |
| **Note (general)** | Written along the fibers; on the verso, an address |
| **Note (general)** | 35 lines; complete but for a large hole at the center left. Some holes along a vertical fold line |
| **Note (general)** | The address is written in large, formal letters. The text is in a semi-formal round hand of the literary ty The last 4 lines are written in a small cursive hand |
| **Note (general)** | Some abbreviations towards the end of the text |
| **Subjects** | Lucius Bellenus Gemellus -- landowner in the Fayum; Papyri; Papyri |
| **License** | This work is licensed under a Creative Commons Attribution-NonCommercial 3.0 License. |

### DDbDP transcription: p.fay.110 [xml]

AD94 Euhemeria



**http://papyri.info/ddbdp/p.fay;;110**

- https://www.trismegistos.org/text/10775
- http://papyri.info/hgv/10775/source
- http://papyri.info/apis/columbia.apis.p387/source
- http://papyri.info/apis/columbia.apis.p387/images

# TM 10775

**Stable URI (with TM ID):**
www.trismegistos.org/text/10775

**Date:** AD 94 Sep 11

**Provenance:** Euhemeria (Qasr el-Banat) - Egypt (00 - Aegyptus) [found & written]

**Language/script:** Greek

**Material:** papyrus

**Recto/Verso:** Ro/Vo, back: address

**More info:** DDbDP (PN), HGV, PapPal, PN-APIS (Columbia)

## Publications

→ P. Fay. 110 (Grenfell, Bernard P. / Hunt, Arthur S. / Hogarth, David G. - 1900) (default)

·Olsson, Papyrusbriefe 52 (Olsson, Bror - 1925)

## Collections

New York, Columbia University P. Fay. 110

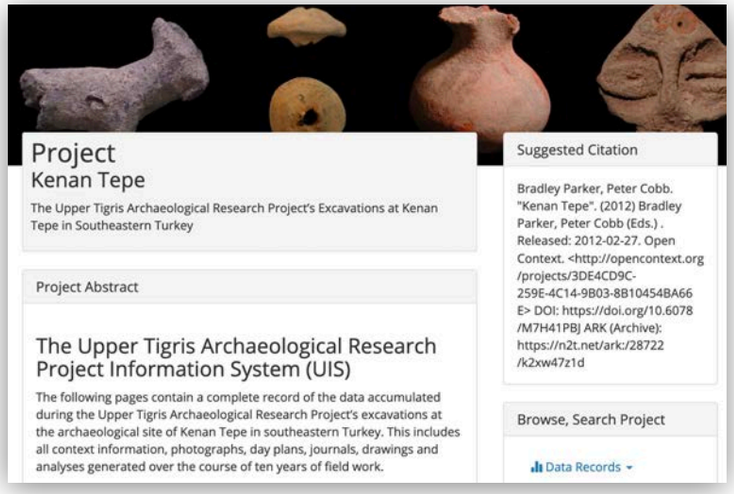
## Archive

Epagathos estate manager

## Information mentioned in this text

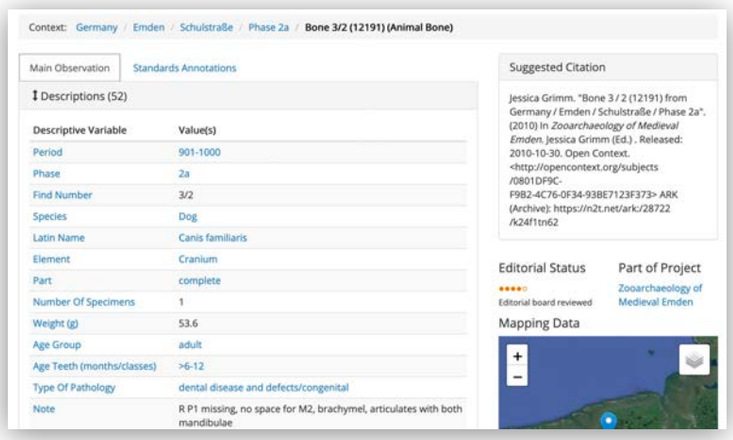
https://www.trismegistos.org/text/10775

# OPEN CONTEXT



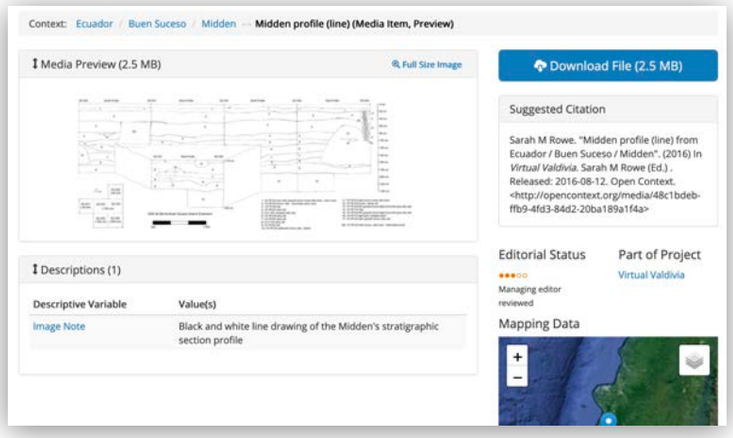

## Projects

https://opencontext.org/projects/3DE4CD9C-259E-4C14-9B03-8B10454BA66E



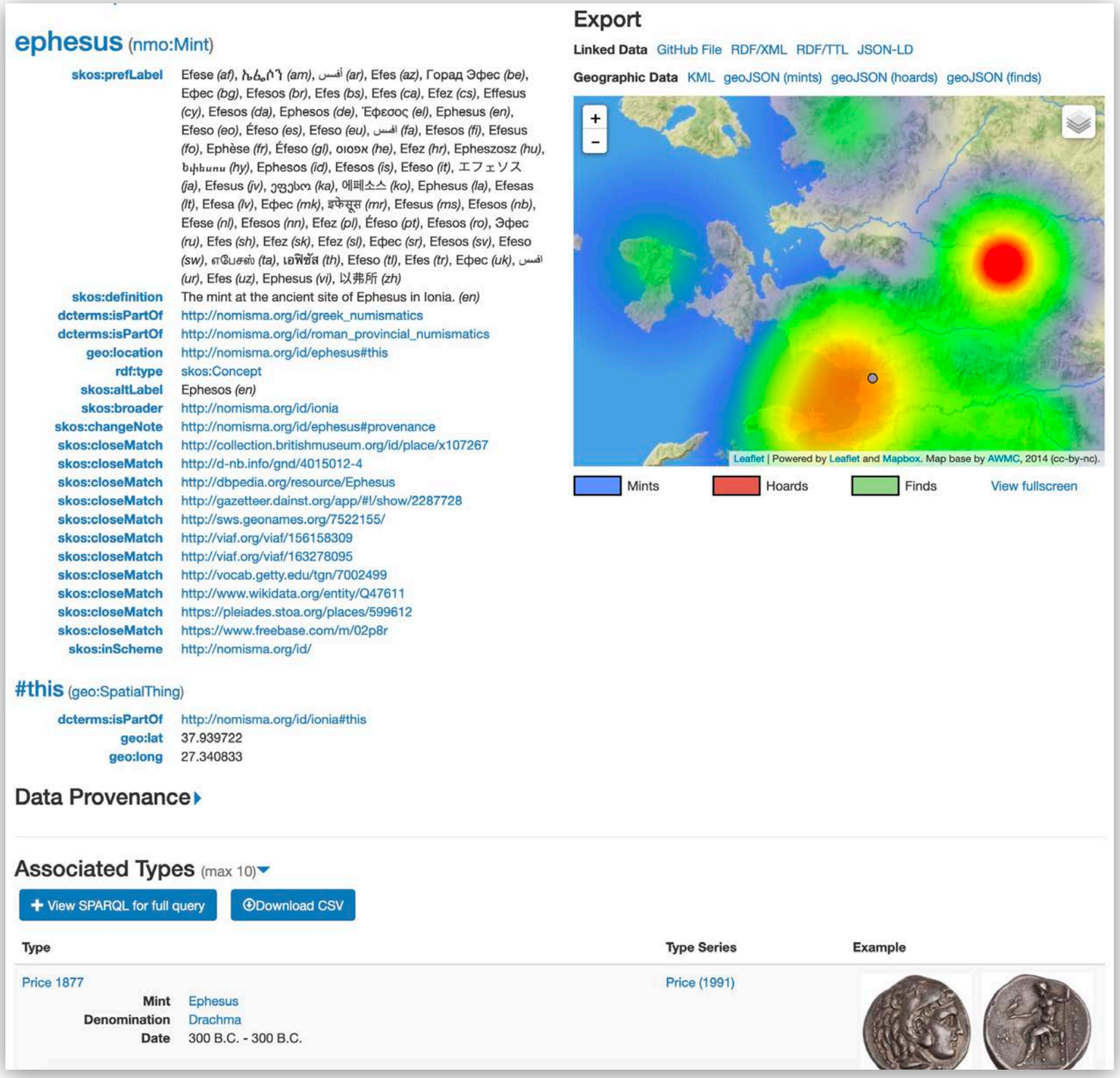

## Data record

https://opencontext.org/subjects/0801DF9C-F9B2-4C76-0F34-93BE7123F373#tab_obs-1




## Media

https://opencontext.org/media/48c1bdeb-ffb9-4fd3-84d2-20ba189a1f4a



## ephesus (nmo:Mint)

| | |
|---|---|
| skos:prefLabel | Efese *(af)*, ኤፌሶን *(am)*, أفسس *(ar)*, Efes *(az)*, Горад Эфес *(be)*, Ефес *(bg)*, Efesos *(br)*, Efes *(bs)*, Efes *(ca)*, Efez *(cs)*, Effesus *(cy)*, Efesos *(da)*, Ephesos *(de)*, Έφεσος *(el)*, Ephesus *(en)*, Efeso *(eo)*, Éfeso *(es)*, Efeso *(eu)*, افسس *(fa)*, Efesos *(fi)*, Efesus *(fo)*, Ephèse *(fr)*, Éfeso *(gl)*, אפסוס *(he)*, Efez *(hr)*, Epheszosz *(hu)*, Եփեսոս *(hy)*, Ephesos *(id)*, Efesos *(is)*, Efeso *(it)*, エフェソス *(ja)*, Efesus *(jv)*, ეფესო *(ka)*, 에페소스 *(ko)*, Ephesus *(la)*, Efesas *(lt)*, Efesa *(lv)*, Ефес *(mk)*, इफेसूस *(mr)*, Efesus *(ms)*, Efesos *(nb)*, Efese *(nl)*, Efesos *(nn)*, Efez *(pl)*, Éfeso *(pt)*, Efesos *(ro)*, Эфес *(ru)*, Efes *(sh)*, Efez *(sk)*, Efez *(sl)*, Ефес *(sr)*, Efesos *(sv)*, Efeso *(sw)*, எபேசஸ் *(ta)*, เอฟิซัส *(th)*, Efeso *(tl)*, Efes *(tr)*, Ефес *(uk)*, افسس *(ur)*, Efes *(uz)*, Ephesus *(vi)*, 以弗所 *(zh)* |
| skos:definition | The mint at the ancient site of Ephesus in Ionia. *(en)* |
| dcterms:isPartOf | http://nomisma.org/id/greek_numismatics |
| dcterms:isPartOf | http://nomisma.org/id/roman_provincial_numismatics |
| geo:location | http://nomisma.org/id/ephesus#this |
| rdf:type | skos:Concept |
| skos:altLabel | Ephesos *(en)* |
| skos:broader | http://nomisma.org/id/ionia |
| skos:changeNote | http://nomisma.org/id/ephesus#provenance |
| skos:closeMatch | http://collection.britishmuseum.org/id/place/x107267 |
| skos:closeMatch | http://d-nb.info/gnd/4015012-4 |
| skos:closeMatch | http://dbpedia.org/resource/Ephesus |
| skos:closeMatch | http://gazetteer.dainst.org/app/#!/show/2287728 |
| skos:closeMatch | http://sws.geonames.org/7522155/ |
| skos:closeMatch | http://viaf.org/viaf/156158309 |
| skos:closeMatch | http://viaf.org/viaf/163278095 |
| skos:closeMatch | http://vocab.getty.edu/tgn/7002499 |
| skos:closeMatch | http://www.wikidata.org/entity/Q47611 |
| skos:closeMatch | https://pleiades.stoa.org/places/599612 |
| skos:closeMatch | https://www.freebase.com/m/02p8r |
| skos:inScheme | http://nomisma.org/id/ |

## #this (geo:SpatialThing)

| | |
|---|---|
| dcterms:isPartOf | http://nomisma.org/id/ionia#this |
| geo:lat | 37.939722 |
| geo:long | 27.340833 |

## Export

**Linked Data** GitHub File RDF/XML RDF/TTL JSON-LD

**Geographic Data** KML geoJSON (mints) geoJSON (hoards) geoJSON (finds)



## Data Provenance

## Associated Types (max 10)

View SPARQL for full query | Download CSV

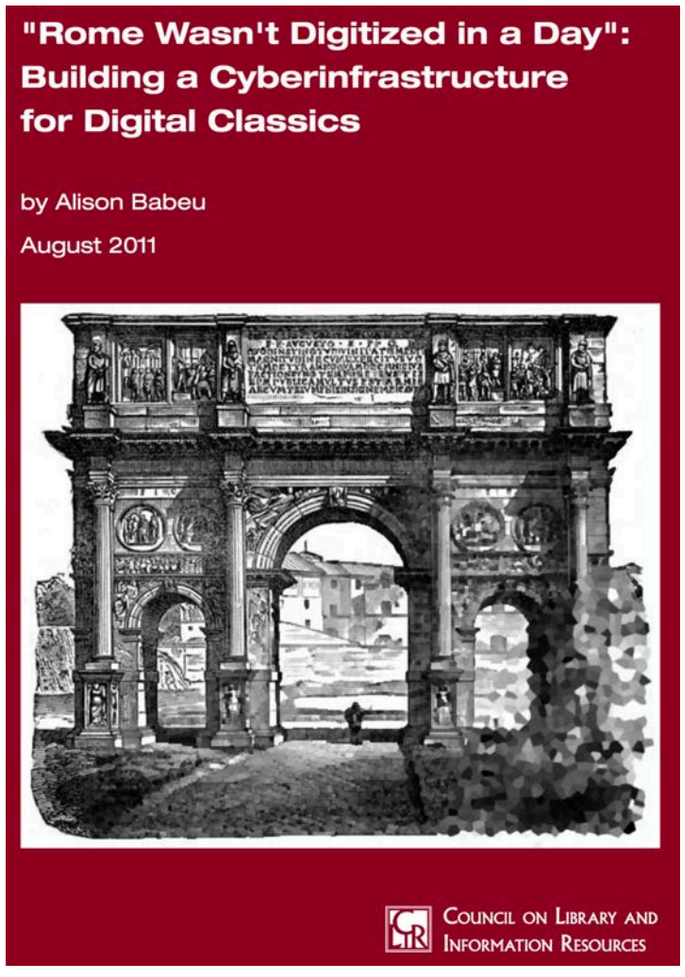
| Type | Type Series | Example |
|---|---|---|
| Price 1877<br>Mint: Ephesus<br>Denomination: Drachma<br>Date: 300 B.C. - 300 B.C. | Price (1991) |  |

http://nomisma.org/id/ephesus

# Digital Libraries

## generations of digital corpora in Classics

- make texts available online
- professional data entry and consistent markup scheme
- semantic mark up in SGML/XML (TEI)
- image-front collections with page images
- decentralized contributions from users (million book libraries)
- multiple editions of primary sources
- annotations
- …

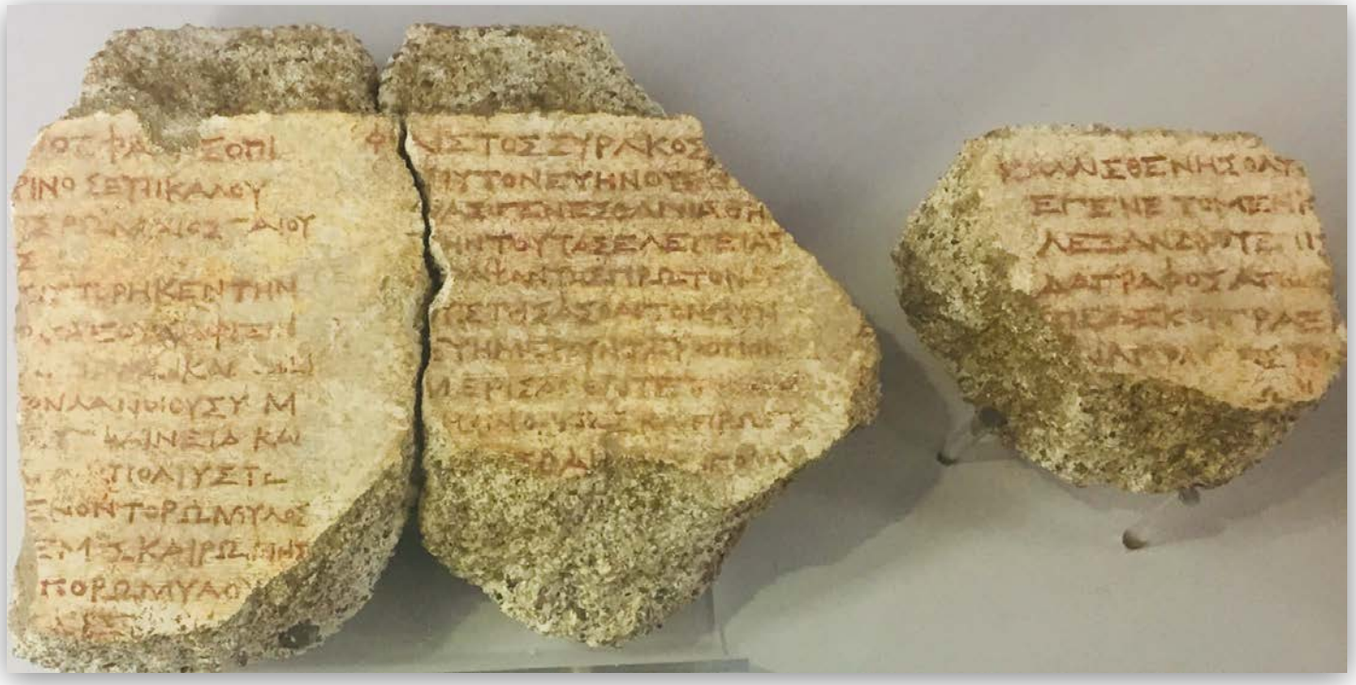


# 2

# Catalogs and Citation Systems

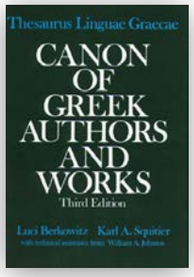
# Philology

- canons
- catalogs
- citation systems



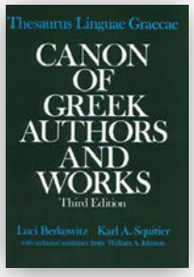
Tauromenium, Lapidarium
Fragments of painted library catalog
(3rd-2nd century BC)

http://sicily.classics.ox.ac.uk/inscription/ISic0613




# TLG Canon of Greek Authors and Works

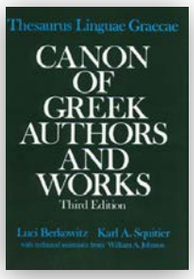
http://stephanus.tlg.uci.edu/canon.php




# TLG Canon of Greek Authors and Works

{tlg0032}

http://stephanus.tlg.uci.edu/canon.php




# TLG Canon of Greek Authors and Works

Book 1 chapter 1 section 1 line t GO

Prev | Next

**XENOPHON, *Hellenica*. {0032.001}**

**1.1.**
**(1) ΕΛΛΗΝΙΚΩΝ Α**

Μετὰ δὲ ταῦτα οὐ πολλαῖς ἡμέραις ὕστερον ἦλθεν ἐξ *(1)* Ἀθηνῶν Θυμοχάρης ἔχων ναῦς ὀλίγας· καὶ εὐθὺς ἐναυμάχησαν αὖθις Λακεδαιμόνιοι καὶ Ἀθηναῖοι, ἐνίκησαν δὲ **(2)** Λακεδαιμόνιοι ἡγουμένου **Ἀγησανδρίδου**. μετ' ὀλίγον δὲ τούτων Δωριεὺς ὁ Διαγόρου ἐκ Ῥόδου εἰς Ἑλλήσποντον εἰσέπλει ἀρχομένου χειμῶνος τέτταρσι καὶ δέκα ναυσὶν ἅμα ἡμέρᾳ. κατιδὼν δὲ ὁ τῶν Ἀθηναίων ἡμεροσκόπος ἐσήμηνε τοῖς στρατηγοῖς. οἱ δὲ ἀνηγάγοντο ἐπ' αὐτὸν εἴκοσι ναυσίν, *(5)* ἃς ὁ Δωριεὺς φυγὼν πρὸς τὴν γῆν ἀνεβίβαζε τὰς αὑτοῦ **(3)** τριήρεις, ὡς ἤνοιγε, περὶ τὸ Ῥοίτειον. ἐγγὺς δὲ γενομένων τῶν Ἀθηναίων ἐμάχοντο ἀπό τε τῶν νεῶν καὶ τῆς γῆς μέχρι οἱ Ἀθηναῖοι ἀπέπλευσαν εἰς Μάδυτον πρὸς τὸ ἄλλο στρατό- **(4)** πεδον οὐδὲν πράξαντες. Μίνδαρος δὲ κατιδὼν τὴν μάχην ἐν Ἰλίῳ θύων τῇ Ἀθηνᾷ, ἐβοήθει ἐπὶ τὴν θάλατταν, καὶ καθελκύσας τὰς ἑαυτοῦ τριήρεις ἀπέπλει, ὅπως ἀναλάβοι τὰς **(5)** μετὰ Δωριέως. οἱ δὲ Ἀθηναῖοι ἀνταναγαγόμενοι ἐναυμάχησαν περὶ Ἄβυδον κατὰ τὴν ἠόνα, μέχρι δείλης ἐξ ἑωθινοῦ. καὶ τὰ μὲν νικώντων, τὰ δὲ νικωμένων, Ἀλκιβιάδης ἐπεισπλεῖ @1 **(6)** δυοῖν δεούσαις εἴκοσι ναυσίν. ἐντεῦθεν δὲ φυγὴ τῶν Πελο-

**Cite this Work**

E.C. Marchant, *Xenophontis opera omnia*, vol. 1, Oxford: Clarendon Press, 1900 (repr. 1968)
Retrieved from: http://stephanus.tlg.uci.edu/Iris/Cite?0032:001:0

**Translation**

**Morphological Analysis and Lexica**

**Word Form: Ἀγησανδρίδου**

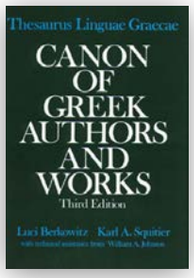
**Lemma: Ἀγησανδρίδας, -α, ὁ**
Agesandridas

**Possible analyses:**
Noun masc gen sg [doric]

**Show entry in:**
**DGE**
**Smith (Biogr.)** s.v. AGESANDRIDAS

{tlg0032.001.1.1.1}

http://stephanus.tlg.uci.edu/canon.php




# TLG Canon of Greek Authors and Works

1. **AESCHYLUS Trag. {0085}**
6-5 B.C.
Trag.
Atheniensis
− Cross Reference
• Scholia et vitae: Cf. SCHOLIA IN AESCHYLUM {5010}

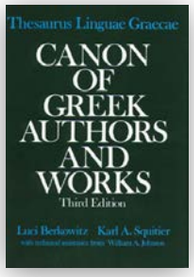
5. **Persae {0085.012}** (Click to select)
Trag.
D.L. Page, *Aeschyli Septem Quae Supersunt Tragoedias*, Oxford: Clarendon Press, 1972: 3-41.
Word Count: 5,470
− Other Edition
**Persae {0085.002}**
G. Murray, *Aeschyli tragoediae*, 2nd edn., Oxford: Clarendon Press, 1955 (repr. 1960): 53-95.
+ Cross Reference

6. **Septem contra Thebas {0085.013}** (Click to select)
Trag.
D.L. Page, *Aeschyli Septem Quae Supersunt Tragoedias*, Oxford: Clarendon Press, 1972: 45-87.
Word Count: 5,346
− Other Edition
**Septem contra Thebas {0085.004}**
G. Murray, *Aeschyli tragoediae*, 2nd edn., Oxford: Clarendon Press, 1955 (repr. 1960): 155-200.
− Cross Reference
• Scholia et vitae: Cf. SCHOLIA IN AESCHYLUM {5010}

7. **Supplices {0085.014}** (Click to select)
Trag.
D.L. Page, *Aeschyli Septem Quae Supersunt Tragoedias*, Oxford: Clarendon Press, 1972: 91-133.
Word Count: 5,242
− Other Edition
**Supplices {0085.001}**
G. Murray, *Aeschyli tragoediae*, 2nd edn., Oxford: Clarendon Press, 1955 (repr. 1960): 3-48.
− Cross Reference
• Scholia et vitae: Cf. SCHOLIA IN AESCHYLUM {5010}

8. **Agamemnon {0085.015}** (Click to select)
Trag.
D.L. Page, *Aeschyli Septem Quae Supersunt Tragoedias*, Oxford: Clarendon Press, 1972: 139-198.
Word Count: 8,480
− Other Edition
**Agamemnon {0085.005}**
G. Murray, *Aeschyli tragoediae*, 2nd edn., Oxford: Clarendon Press, 1955 (repr. 1960): 207-274.
− Cross Reference
• Scholia et vitae: Cf. SCHOLIA IN AESCHYLUM {5010}

9. **Choephoroe {0085.016}** (Click to select)
Trag.
D.L. Page, *Aeschyli Septem Quae Supersunt Tragoedias*, Oxford: Clarendon Press, 1972: 201-244.
Word Count: 5,698




# TLG Canon of Greek Authors and Works

PARALLEL BROWSING

AESCHYLUS {0085}
Persae {012} (Page, D.L.)

Lines: 20
Display: Greek
Links: Active
Select: Compare editions
Show Texts

AESCHYLUS {0085}
Persae {002} (Murray, G.)

Text Structure
Line t GO
Prev | Next

« Jump »

Text Structure
A | A | A
Line t GO
Prev | Next

**AESCHYLUS, *Persae*. {0085.012}**
**ΠΕΡΣΑΙ**

**ΧΟΡΟΣ** τάδε μὲν Περσῶν τῶν οἰχομένων *(1)*
Ἑλλάδ' ἐς αἶαν πιστὰ καλεῖται,
καὶ τῶν ἀφνεῶν καὶ πολυχρύσων
ἑδράνων φύλακες κατὰ πρεσβείαν
οὓς αὐτὸς ἄναξ Ξέρξης βασιλεὺς *(5)*
Δαρειογενὴς
εἵλετο χώρας ἐφορεύειν·
ἀμφὶ δὲ νόστωι τῶι βασιλείωι
καὶ πολυχρύσου στρατιᾶς ἤδη
κακόμαντις ἄγαν ὀρσολοπεῖται *(10)*
θυμὸς ἔσωθεν·
πᾶσα γὰρ ἰσχὺς Ἀσιατογενὴς
ὤιχωκεν, ἐὸν δ' ἄνδρα βαΰζει
… *(13,bis)*
κοὔτε τις ἄγγελος οὔτε τις ἱππεὺς *(14)*
ἄστυ τὸ Περσῶν ἀφικνεῖται, *(15)*
οἵτε τὸ Σούσων ἠδ' Ἀγβατάνων
καὶ τὸ παλαιὸν Κίσσιον ἔρκος
προλιπόντες ἔβαν, τοὶ μὲν ἐφ' ἵππων,
οἱ δ' ἐπὶ ναῶν, πεζοί τε βάδην

Prev | Next
Line t GO

**AESCHYLUS, *Persae*. {0085.002}**
**ΠΕΡΣΑΙ**

*ΧΟΡΟΣ (1)*
Τάδε μὲν Περσῶν τῶν οἰχομένων *(1)*
Ἑλλάδ' ἐς αἶαν πιστὰ καλεῖται,
καὶ τῶν ἀφνεῶν καὶ πολυχρύσων
ἑδράνων φύλακες, κατὰ πρεσβείαν
οὓς αὐτὸς ἄναξ Ξέρξης βασιλεὺς *(5)*
Δαρειογενὴς
εἵλετο χώρας ἐφορεύειν.
ἀμφὶ δὲ νόστῳ τῷ βασιλείῳ
καὶ πολυχρύσου στρατιᾶς ἤδη
κακόμαντις ἄγαν ὀρσολοπεῖται *(10)*
θυμὸς ἔσωθεν.
πᾶσα γὰρ ἰσχὺς Ἀσιατογενὴς
οἴχωκε, νέον δ' ἄνδρα βαΰζει,
κοὔτε τις ἄγγελος οὔτε τις ἱππεὺς
ἄστυ τὸ Περσῶν ἀφικνεῖται· *(15)*
οἵτε τὸ Σούσων ἠδ' Ἀγβατάνων
καὶ τὸ παλαιὸν Κίσσιον ἔρκος
προλιπόντες ἔβαν, τοὶ μὲν ἐφ' ἵππων,
τοὶ δ' ἐπὶ ναῶν, πεζοί τε βάδην

Prev | Next
Line t GO

# Perseus Catalog

## Xenophon

Textgroups: tlg0032
tlg1754
CITE id: urn:cite:perseus:author.1499
Tlg id: tlg0032
Alt id: LCCN n 80036673
Name: Xenophon
Abbr: X.

### Work Information

URN: urn:cts:greekLit:tlg0032.tlg001
Work title: Hellenica
Textgroup: tlg0032
Author: Xenophon

**Editions of this Work, Click to Expand**

- Hellenica, Historia Graeca
- Hellenica, Xenophon, Hellenica, Vol 1
- Hellenica, Xenophontis Opera omnia, Volume I, Historia Graeca;Hellenica
- Hellenica, Xenophontis Opera omnia, Volume I, Historia Graeca
- Hellenica, Xenophōntos Hellēnika;Hellenica

**Translations of this Work, Click to Expand**

- Hellenica, The, Cyropaedia, or, Institution of Cyrus, and the Hellenics, or Grecian history
- Hellenica, The, Greek historians, The complete and unabridged historical works of Herodotus, Volume II
- Hellenica, Xenophon, Hellenica, Vol 1
- Hellenica, Xenophon in Seven Volumes, Vol 1 and Vol 2
- Hellenica, Xenophon's Hellenics, books I-IV, and the Banquet

`urn:cts:greekLit:tlg0032.tlg001`

http://catalog.perseus.org

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`urn:cts:greekLit:tlg0032.tlg001`

http://catalog.perseus.org

Digital Humanities
UNIVERSITÄT LEIPZIG

UNIVERSITÄT LEIPZIG 1409 2009 ALMA MATER LIPSIENSIS

Alexander von Humboldt
Stiftung/Foundation

# Perseus Catalog

## Xenophon, Hellenica

*Hellenica*

Book 1 Chapter 1 Section 1 to Book 1 Chapter 1 Section 5 (1.1.1– 1.1.5)

add parallel version

1 1 1 μετὰ δὲ ταῦτα οὐ πολλαῖς ἡμέραις ὕστερον ἦλθεν ἐξ Ἀθηνῶν Θυμοχάρης ἔχων ναῦς ὀλίγας· καὶ εὐθὺς ἐναυμάχησαν αὖθις Λακεδαιμόνιοι καὶ Ἀθηναῖοι, ἐνίκησαν δὲ Λακεδαιμόνιοι ἡγουμένου Ἀγησανδρίδου.

2 μετ᾽ ὀλίγον δὲ τούτων Δωριεὺς ὁ Διαγόρου ἐκ Ῥόδου εἰς Ἑλλήσποντον εἰσέπλει ἀρχομένου χειμῶνος τέτταρσι καὶ δέκα ναυσὶν ἅμα ἡμέρᾳ. κατιδὼν δὲ ὁ τῶν Ἀθηναίων ἡμεροσκόπος ἐσήμηνε τοῖς στρατηγοῖς. οἱ δὲ ἀνηγάγοντο ἐπ᾽ αὐτὸν εἴκοσι ναυσίν, ἃς ὁ Δωριεὺς φυγὼν πρὸς τὴν γῆν ἀνεβίβαζε τὰς αὑτοῦ τριήρεις, ὡς ἤνοιγε, περὶ τὸ Ῥοίτειον.

3 ἐγγὺς δὲ γενομένων τῶν Ἀθηναίων ἐμάχοντο ἀπό τε τῶν νεῶν καὶ τῆς γῆς μέχρι οἱ Ἀθηναῖοι ἀπέπλευσαν εἰς Μάδυτον πρὸς τὸ ἄλλο στρατόπεδον οὐδὲν πράξαντες.

4 Μίνδαρος δὲ κατιδὼν τὴν μάχην ἐν Ἰλίῳ θύων τῇ Ἀθηνᾷ, ἐβοήθει ἐπὶ τὴν θάλατταν, καὶ καθελκύσας τὰς ἑαυτοῦ τριήρεις ἀπέπλει, ὅπως ἀναλάβοι τὰς μετὰ Δωριέως.

5 οἱ δὲ Ἀθηναῖοι ἀνταναγαγόμενοι ἐναυμάχησαν περὶ Ἄβυδον κατὰ τὴν ἠόνα, μέχρι δείλης ἐξ ἑωθινοῦ. καὶ τὰ μὲν νικώντων, τὰ δὲ νικωμένων, Ἀλκιβιάδης ἐπεισπλεῖ δυοῖν δεούσαις εἴκοσι ναυσίν.

### CTS URN

urn:cts:greekLit:tlg0032.tlg001.perseus-grc2:1.1.1-1.1.5

### TEXT MODE

NORMAL HIGHLIGHT

click and shift-click on words to highlight

### TEXT SIZE

Aα Aα Aα Aα Aα

### TEXT WIDTH

Narrow Normal Wide

### HIGHLIGHT

@Ἀγησανδρίδου[1]

### EXPORT PASSAGE

*as* text *or* xml

### MORPHOLOGY

**Ἀγησανδρίδας** noun 1st

**Ἀγησανδριδ-ου** genitive singular masculine *(Doric Aeolic)*

### WORD LIST

*Number in parentheses is frequency per 10k in this work.*

### CHS COMMENTARY

No comments found.

`urn:cts:greekLit:tlg0032.tlg001.perseus-grc2:1.1.1@Ἀγησανδρίδου[1]`

https://scaife.perseus.org/reader/urn:cts:greekLit:tlg0032.tlg001.perseus-grc2:1.1.1-1.1.5/

The CITE Architecture Technology-independent, machine-actionable citation of scholarly resources

# About the CITE architecture

## Background

The CITE architecture defines a framework for scholarly reference to the unique cultural phenomena that humanists study. Christopher Blackwell and Neel Smith originally developed the CITE architecture to meet the needs of the Homer Multitext project. Together with the co-editors of the project, Casey Dué and Mary Ebbott, we recognized the need for an architecture that would outlive specific, rapidly changing technologies, while at the same time thoroughly capturing the semantics of our work in a machine-actionable format.

We were surprised to find that, despite the centuries-long tradition in disciplines like classical studies of citing texts by canonical reference, this experience had not been generalized in the digital humanities community. Even the most forward-looking digital projects a decade ago were relying on textual references that failed to represent the semantics implicit in conventional canonical citation, and were expressed in notations such as URLs that, while machine-actionable today, were closely tied to specific ephemeral technologies. We began work on the Canonical Text Service protocol (CTS), and eventually devised the CTS URN notation for citing texts. We subsequently applied this scheme – URN notation for citation, a RESTful service for retrieval of material identified by URN, and client software that talks to the service – to *all* the material in the HMT project: texts, physical artifacts like manuscripts, documentary objects like photographs, and analytical objects such as morphological analyses of texts.

## Components of the CITE architecture

The CITE architecture comprises:

1. standards for citing scholarly resources with a technology-independent but machine actionable URN notation
2. APIs for services to retrieve scholarly resources identified with the CITE architecture's URN notation
3. some code libraries for working with URN notation, and the CITE services

## Why?

- Why should "digital humanities" start from citation?
- Why URNs?

- the CITE architecture
- working with **texts**:
  - an abstract model: OHCO2
  - a notation for citation: CTS URNs
  - services to retrieve canonical citations: the Canonical Text Service
- working with **objects**:
  - an abstract model: CITE2 collections
  - a notation for citation: CITE2 Object URNs
  - services to retrieve canonical citations (including extensions): CITE Collection Service
- an overview of citable **data models**

http://cite-architecture.org/

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  - an abstract model: OHCO2
  - a notation for citation: CTS URNs
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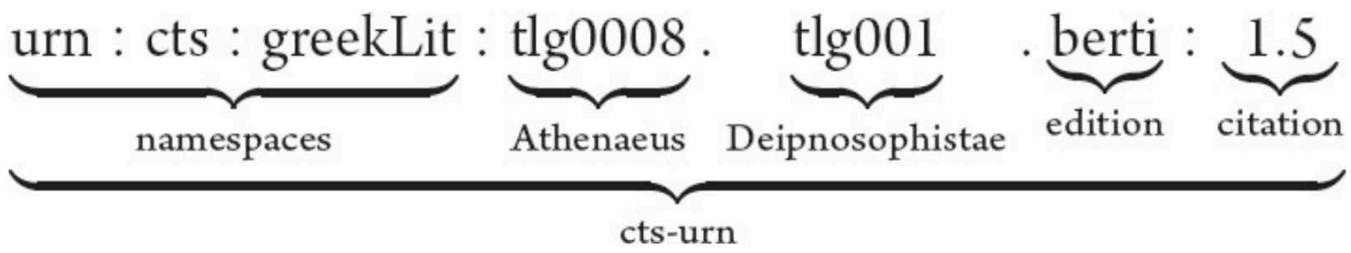
  - a notation for citation: CITE2 Object URNs
  - services to retrieve canonical citations (including extensions): CITE Collection Service
- an overview of citable **data models**

http://cite-architecture.org/




| URN | Identifies… |
|---|---|
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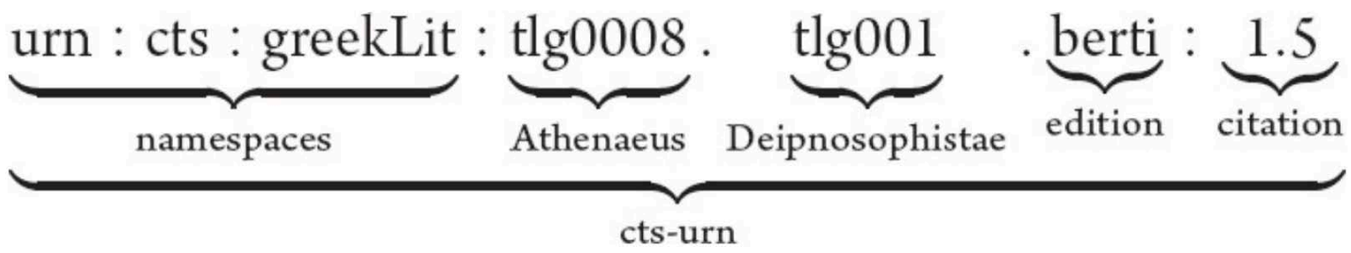
| urn:cts:greekLit:tlg0008.tlg001.berti:1.18 | *Deipnosophistae*, Book 1, Paragraph 18 |
| urn:cts:greekLit:tlg0008.tlg001.berti:1.18–1.19 | *Deipnosophistae*, 1.18 through 1.19 |
| urn:cts:greekLit: tlg0008.tlg001.berti:1.18–2 | *Deipnosophistae*, 1.18 through (all of) Book 2 |
| urn:cts:greekLit:tlg0008.tlg001.berti:1.18@καὶ[17] | *Deipnosophistae*, the 17th instance of καὶ in 1.18 |
| urn:cts:greekLit:tlg0008.tlg001.berti:1.18@καὶ [17]-1.18@αὐτοὶ[1] | *Deipnosophistae*, a range of text within 1.18 |

http://cite-architecture.org/



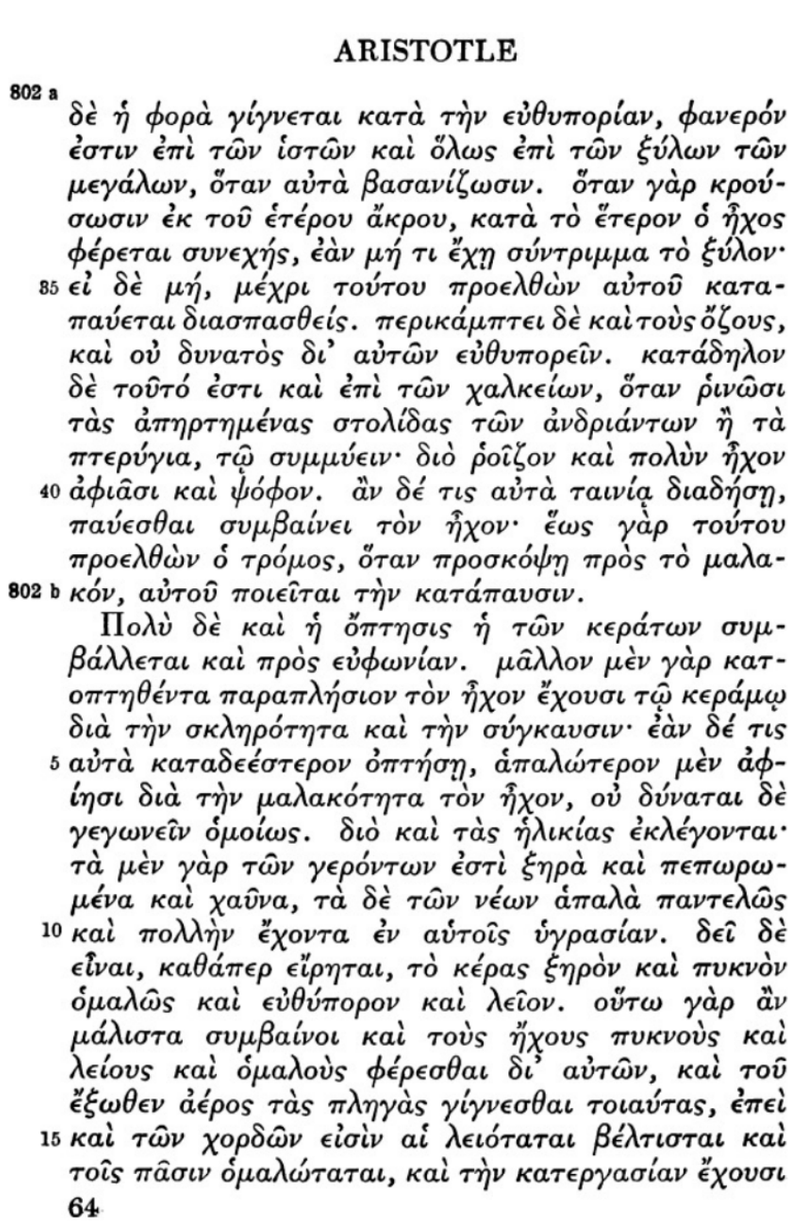

| URN | Identifies… |
|---|---|
| urn:cts:greekLit:tlg0008.tlg001.berti:1 | *Deipnosophistae*, Book 1 |
| urn:cts:greekLit:tlg0008.tlg001.berti:1.18 | *Deipnosophistae*, Book 1, Paragraph 18 |
| urn:cts:greekLit:tlg0008.tlg001.berti:1.18–1.19 | *Deipnosophistae*, 1.18 through 1.19 |
| urn:cts:greekLit: tlg0008.tlg001.berti:1.18–2 | *Deipnosophistae*, 1.18 through (all of) Book 2 |
| urn:cts:greekLit:tlg0008.tlg001.berti:1.18@καὶ[17] | *Deipnosophistae*, the 17th instance of καὶ in 1.18 |
| urn:cts:greekLit:tlg0008.tlg001.berti:1.18@καὶ [17]-1.18@αὐτοὶ[1] | *Deipnosophistae*, a range of text within 1.18 |

# 3

# Data Entry and Analysis for Classical Philology

# Optical Character Recognition (OCR)

## Lace: Visualizing, Editing and Searching Polylingual OCR Results



ARISTOTLE

802 a δὲ ἡ φορὰ γίγνεται κατὰ τὴν εὐθυπορίαν, φανερόν ἐστιν ἐπὶ τῶν ἰστῶν καὶ ὅλως ἐπὶ τῶν ξύλων τῶν μεγάλων, ὅταν αὐτὰ βασανίζωσιν. ὅταν γὰρ κρούσωσιν ἐκ τοῦ ἑτέρου ἄκρου, κατὰ τὸ ἕτερον ὁ ἦχος φέρεται συνεχής, ἐὰν μή τι ἔχῃ σύντριμμα τὸ ξύλον· εἰ δὲ μή, μέχρι τούτου προελθὼν αὐτοῦ καταπαύεται διασπασθείς. περικάμπτει δὲ καὶ τοὺς ὄζους, καὶ οὐ δυνατὸς δι' αὐτῶν εὐθυπορεῖν. κατάδηλον δὲ τοῦτό ἐστι καὶ ἐπὶ τῶν χαλκείων, ὅταν ῥινῶσι τὰς ἀπηρτημένας στολίδας τῶν ἀνδριάντων ἢ τὰ πτερύγια, τῷ συμμύειν· διὸ ῥοῖζον καὶ πολὺν ἦχον ἀφιᾶσι καὶ ψόφον. ἂν δέ τις αὐτὰ ταινίᾳ διαδήσῃ, παύεσθαι συμβαίνει τὸν ἦχον· ἕως γὰρ τούτου προελθὼν ὁ τρόμος, ὅταν προσκόψῃ πρὸς τὸ μαλα-

802 b κόν, αὐτοῦ ποιεῖται τὴν κατάπαυσιν.

Πολὺ δὲ καὶ ἡ ὄπτησις ἡ τῶν κεράτων συμβάλλεται καὶ πρὸς εὐφωνίαν. μᾶλλον μὲν γὰρ κατοπτηθέντα παραπλήσιον τὸν ἦχον ἔχουσι τῷ κεράμῳ διὰ τὴν σκληρότητα καὶ τὴν σύγκαυσιν· ἐὰν δέ τις αὐτὰ καταδεέστερον ὀπτήσῃ, ἀπαλώτερον μὲν ἀφίησι διὰ τὴν μαλακότητα τὸν ἦχον, οὐ δύναται δὲ γεγωνεῖν ὁμοίως. διὸ καὶ τὰς ἡλικίας ἐκλέγονται· τὰ μὲν γὰρ τῶν γερόντων ἐστὶ ξηρὰ καὶ πεπωρωμένα καὶ χαῦνα, τὰ δὲ τῶν νέων ἁπαλὰ παντελῶς καὶ πολλὴν ἔχοντα ἐν αὐτοῖς ὑγρασίαν. δεῖ δὲ εἶναι, καθάπερ εἴρηται, τὸ κέρας ξηρὸν καὶ πυκνὸν ὁμαλῶς καὶ εὐθύπορον καὶ λεῖον. οὕτω γὰρ ἂν μάλιστα συμβαίνοι καὶ τοὺς ἤχους πυκνοὺς καὶ λείους καὶ ὁμαλοὺς φέρεσθαι δι' αὐτῶν, καὶ τοῦ ἔξωθεν ἀέρος τὰς πληγὰς γίγνεσθαι τοιαύτας, ἐπεὶ καὶ τῶν χορδῶν εἰσὶν αἱ λειόταται βέλτισται καὶ τοῖς πᾶσιν ὁμαλώταται, καὶ τὴν κατεργασίαν ἔχουσι

64

Aristotle (). *Minor Works Vol. 1.*

-20 -5 Previous 22 Next +5 +20

ARISTOTLE.
802 a.
δὲ ἡ φορὰ γίγνεται κατὰ τὴν εὐθυπορίαν, φανερόν ἐστιν ἐπὶ τῶν ἰσίων καὶ ὅλως ἐπὶ τῶν ξύλων τῶν μεγάλων, ὅταν αὐτὰ βασανίζωσιν. ὅταν γὰρ κροῦσωσιν ἐκ τοῦ ἑτέρου ἄκρου, κατὰ τὸ ἕτερον ὁ ἠχὸς φέρεται συνεχής, ἐὰν μή τι ἔχῃ σύντριμμα τὸ ξύλον· se εἰ δὲ μή, μέχρι τούτου προελθὼν αὐτοῦ καταπαύεται διασπασθείς. περικάμπτει δὲ καὶτοὺς ὄζους, καὶ οὐ δυνατὸς δι' αὐτῶν εὐθυπορεῖν. κατάδηλον δὲ τοῦτό ἐστι καὶ ἐπὶ τῶν χαλκείων, ὅταν ῥινῶσι τὰς ἀπηρτημένας στολίδας τῶν ἀνδριάντων ἢ τὰ πτερύγια, τῷ συμμύειν· διὸ ῥοῖζον καὶ πολὺν ἦχον 4ο ἀφιᾶσι καὶ ψόφον. ἂν δέ τις αὐτὰ ταινίᾳ διαδήσῃ, CC:CCC CCt.xx
so2 b κόν, αὐτοῦ ποιεῖται τὴν κατάπαυσιν.
Πολύ δὲ καὶ ἡ ὄπτησις ἡ τῶν κεράτων αυμβάλλεται καὶ πρὸς εὐφωνίαν. μᾶλλον μὲν γὰρ κατοπτηθέντα παραπλήσιον τὸν ἠχον ἔχουσι τῷ κεράμῳ διὰ τὴν σκληρότητα καὶ τὴν σύγκαυσιν· ἐὰν δέ τις ο αὐτὰ καταδεέστερον ὀπτήσῃ, ἁπαλώτερον μὲν ἀφίησι διὰ τὴν μαλακότητα τὸν ἦχον, οὐ δύναται δὲ γεγωνεῖν ὁμοιως. διὸ καὶ τὰς ἡλικίας ἐκλέγονται· τὰ μὲν γὰρ τῶν γερόντων ἐστὶ ξηρὰ καὶ πεπωρωμένα καὶ χαῦνα, τὰ δὲ τῶν νέων ἁπαλὰ παντελῶς 15 καὶ πολλὴν ἔχοντα ἐν αὐτοῖς ὑγρασίαν. δεῖ δὲ εἶναι, καθάπερ εἴρηται, τὸ κέρας ξηρὸν καὶ πυκνὸν ὁμαλῶς καὶ εὐθύπορον καὶ λεῖον. οὕτω γὰρ ἄν μάλιστα συμβαίνοι καὶ τοὺς ἤχους πυκνοὺς καὶ λείους καὶ ὁμαλοὺς φέρεσθαι δι' αὐτῶν, καὶ τοῦ ἔξωθεν ἀέρος τὰς πληγὰς γίγνεαθαι τοιαύτας, ἐπεὶ 10 καὶ τῶν χορδῶν εἰσὶν αἱ λειόταται βέλτισται καὶ τοῖς πᾶσιν ὁμαλώταται, καὶ τὴν κατεργασίαν ἔχουσι. 64.

http://heml.mta.ca/lace/index.html

# Character Encoding

| Decimal | Hexadecimal | Binary | Octal | Char | Decimal | Hexadecimal | Binary | Octal | Char | Decimal | Hexadecimal | Binary | Octal | Char |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | *[NULL]* | 48 | 30 | 110000 | 60 | **0** | 96 | 60 | 1100000 | 140 | ` |
| 1 | 1 | 1 | 1 | *[START OF HEADING]* | 49 | 31 | 110001 | 61 | **1** | 97 | 61 | 1100001 | 141 | **a** |
| 2 | 2 | 10 | 2 | *[START OF TEXT]* | 50 | 32 | 110010 | 62 | **2** | 98 | 62 | 1100010 | 142 | **b** |
| 3 | 3 | 11 | 3 | *[END OF TEXT]* | 51 | 33 | 110011 | 63 | **3** | 99 | 63 | 1100011 | 143 | **c** |
| 4 | 4 | 100 | 4 | *[END OF TRANSMISSION]* | 52 | 34 | 110100 | 64 | **4** | 100 | 64 | 1100100 | 144 | **d** |
| 5 | 5 | 101 | 5 | *[ENQUIRY]* | 53 | 35 | 110101 | 65 | **5** | 101 | 65 | 1100101 | 145 | **e** |
| 6 | 6 | 110 | 6 | *[ACKNOWLEDGE]* | 54 | 36 | 110110 | 66 | **6** | 102 | 66 | 1100110 | 146 | **f** |
| 7 | 7 | 111 | 7 | *[BELL]* | 55 | 37 | 110111 | 67 | **7** | 103 | 67 | 1100111 | 147 | **g** |
| 8 | 8 | 1000 | 10 | *[BACKSPACE]* | 56 | 38 | 111000 | 70 | **8** | 104 | 68 | 1101000 | 150 | **h** |
| 9 | 9 | 1001 | 11 | *[HORIZONTAL TAB]* | 57 | 39 | 111001 | 71 | **9** | 105 | 69 | 1101001 | 151 | **i** |
| 10 | A | 1010 | 12 | *[LINE FEED]* | 58 | 3A | 111010 | 72 | **:** | 106 | 6A | 1101010 | 152 | **j** |
| 11 | B | 1011 | 13 | *[VERTICAL TAB]* | 59 | 3B | 111011 | 73 | **;** | 107 | 6B | 1101011 | 153 | **k** |
| 12 | C | 1100 | 14 | *[FORM FEED]* | 60 | 3C | 111100 | 74 | **<** | 108 | 6C | 1101100 | 154 | **l** |
| 13 | D | 1101 | 15 | *[CARRIAGE RETURN]* | 61 | 3D | 111101 | 75 | **=** | 109 | 6D | 1101101 | 155 | **m** |
| 14 | E | 1110 | 16 | *[SHIFT OUT]* | 62 | 3E | 111110 | 76 | **>** | 110 | 6E | 1101110 | 156 | **n** |
| 15 | F | 1111 | 17 | *[SHIFT IN]* | 63 | 3F | 111111 | 77 | **?** | 111 | 6F | 1101111 | 157 | **o** |
| 16 | 10 | 10000 | 20 | *[DATA LINK ESCAPE]* | 64 | 40 | 1000000 | 100 | **@** | 112 | 70 | 1110000 | 160 | **p** |
| 17 | 11 | 10001 | 21 | *[DEVICE CONTROL 1]* | 65 | 41 | 1000001 | 101 | **A** | 113 | 71 | 1110001 | 161 | **q** |
| 18 | 12 | 10010 | 22 | *[DEVICE CONTROL 2]* | 66 | 42 | 1000010 | 102 | **B** | 114 | 72 | 1110010 | 162 | **r** |
| 19 | 13 | 10011 | 23 | *[DEVICE CONTROL 3]* | 67 | 43 | 1000011 | 103 | **C** | 115 | 73 | 1110011 | 163 | **s** |
| 20 | 14 | 10100 | 24 | *[DEVICE CONTROL 4]* | 68 | 44 | 1000100 | 104 | **D** | 116 | 74 | 1110100 | 164 | **t** |
| 21 | 15 | 10101 | 25 | *[NEGATIVE ACKNOWLEDGE]* | 69 | 45 | 1000101 | 105 | **E** | 117 | 75 | 1110101 | 165 | **u** |
| 22 | 16 | 10110 | 26 | *[SYNCHRONOUS IDLE]* | 70 | 46 | 1000110 | 106 | **F** | 118 | 76 | 1110110 | 166 | **v** |
| 23 | 17 | 10111 | 27 | *[ENG OF TRANS. BLOCK]* | 71 | 47 | 1000111 | 107 | **G** | 119 | 77 | 1110111 | 167 | **w** |
| 24 | 18 | 11000 | 30 | *[CANCEL]* | 72 | 48 | 1001000 | 110 | **H** | 120 | 78 | 1111000 | 170 | **x** |
| 25 | 19 | 11001 | 31 | *[END OF MEDIUM]* | 73 | 49 | 1001001 | 111 | **I** | 121 | 79 | 1111001 | 171 | **y** |
| 26 | 1A | 11010 | 32 | *[SUBSTITUTE]* | 74 | 4A | 1001010 | 112 | **J** | 122 | 7A | 1111010 | 172 | **z** |
| 27 | 1B | 11011 | 33 | *[ESCAPE]* | 75 | 4B | 1001011 | 113 | **K** | 123 | 7B | 1111011 | 173 | **{** |
| 28 | 1C | 11100 | 34 | *[FILE SEPARATOR]* | 76 | 4C | 1001100 | 114 | **L** | 124 | 7C | 1111100 | 174 | **\|** |
| 29 | 1D | 11101 | 35 | *[GROUP SEPARATOR]* | 77 | 4D | 1001101 | 115 | **M** | 125 | 7D | 1111101 | 175 | **}** |
| 30 | 1E | 11110 | 36 | *[RECORD SEPARATOR]* | 78 | 4E | 1001110 | 116 | **N** | 126 | 7E | 1111110 | 176 | **~** |
| 31 | 1F | 11111 | 37 | *[UNIT SEPARATOR]* | 79 | 4F | 1001111 | 117 | **O** | 127 | 7F | 1111111 | 177 | *[DEL]* |
| 32 | 20 | 100000 | 40 | *[SPACE]* | 80 | 50 | 1010000 | 120 | **P** | | | | | |
| 33 | 21 | 100001 | 41 | **!** | 81 | 51 | 1010001 | 121 | **Q** | | | | | |
| 34 | 22 | 100010 | 42 | **"** | 82 | 52 | 1010010 | 122 | **R** | | | | | |
| 35 | 23 | 100011 | 43 | **#** | 83 | 53 | 1010011 | 123 | **S** | | | | | |
| 36 | 24 | 100100 | 44 | **$** | 84 | 54 | 1010100 | 124 | **T** | | | | | |
| 37 | 25 | 100101 | 45 | **%** | 85 | 55 | 1010101 | 125 | **U** | | | | | |
| 38 | 26 | 100110 | 46 | **&** | 86 | 56 | 1010110 | 126 | **V** | | | | | |
| 39 | 27 | 100111 | 47 | **'** | 87 | 57 | 1010111 | 127 | **W** | | | | | |
| 40 | 28 | 101000 | 50 | **(** | 88 | 58 | 1011000 | 130 | **X** | | | | | |
| 41 | 29 | 101001 | 51 | **)** | 89 | 59 | 1011001 | 131 | **Y** | | | | | |
| 42 | 2A | 101010 | 52 | * | 90 | 5A | 1011010 | 132 | **Z** | | | | | |
| 43 | 2B | 101011 | 53 | **+** | 91 | 5B | 1011011 | 133 | **[** | | | | | |
| 44 | 2C | 101100 | 54 | **,** | 92 | 5C | 1011100 | 134 | **** | | | | | |
| 45 | 2D | 101101 | 55 | **-** | 93 | 5D | 1011101 | 135 | **]** | | | | | |
| 46 | 2E | 101110 | 56 | **.** | 94 | 5E | 1011110 | 136 | **^** | | | | | |
| 47 | 2F | 101111 | 57 | / | 95 | 5F | 1011111 | 137 | **_** | | | | | |

THESAURUS LINGUAE GRAECAE ®
A Digital Library of Greek Literature
Project Director: Maria Pantelia

# Beta Code

| | | | |
|---|---|---|---|
| Alpha | A | Nu | N |
| Beta | B | Xi | C |
| Gamma | G | Omicron | O |
| Delta | D | Pi | P |
| Epsilon | E | Rho | R |
| Zeta | Z | Sigma | S |
| Eta | H | Tau | T |
| Theta | Q | Upsilon | U |
| Iota | I | Phi | F |
| Kappa | K | Chi | X |
| Lambda | L | Psi | Y |
| Mu | M | Omega | W |

| | | | |
|---|---|---|---|
| Smooth breathing | ) | Period | . |
| Rough breathing | ( | Apostrophe | , |
| Acute | / | Colon | : |
| Grave | \ | Question Mark | ; |
| Circumflex | = | Hyphen | - |
| Iota subscript | \| | Dash | _ |

Uppercase Letters

- To type uppercase letters, prefix each letter with an asterisk, *. E.g. *P*L*A*T*W*N

Diacritics

- On lowercase letters these are keyed in the order: (1) letter, (2) breathing, (3) accent, (4) iota subscript. E.g. W(=|
- On uppercase letters these are keyed in the order: (1) asterisk, (2) breathing, (3) accent, (4) letter, (5) iota subscript. E.g. *(=W|

http://stephanus.tlg.uci.edu/encoding.php

# Beta Code → Unicode

## The TLG® Beta Code Manual

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## Unicode 12.1 Character Code Charts

SCRIPTS | SYMBOLS & PUNCTUATION | NAME INDEX

Find chart by hex code: Go Help Conventions Terms of Use

### Scripts

| European Scripts | African Scripts | South Asian Scripts | Indonesia & Oceania Scripts |
|---|---|---|---|
| Armenian | Adlam | Ahom | Balinese |
| Armenian Ligatures | Bamum | Bengali and Assamese | Batak |
| Carian | Bamum Supplement | Bhaiksuki | Buginese |
| Caucasian Albanian | Bassa Vah | Brahmi | Buhid |
| Cypriot Syllabary | Coptic | Chakma | Hanunoo |
| Cyrillic | Coptic in Greek block | Devanagari | Javanese |
| Cyrillic Supplement | Coptic Epact Numbers | Devanagari Extended | Makasar |
| Cyrillic Extended-A | Egyptian Hieroglyphs (1MB) | Dogra | Rejang |
| Cyrillic Extended-B | Egyptian Hieroglyph Format Controls | Grantha | Sundanese |
| Cyrillic Extended-C | Ethiopic | Gujarati | Sundanese Supplement |
| Elbasan | Ethiopic Supplement | Gunjala Gondi | Tagalog |
| Georgian | Ethiopic Extended | Gurmukhi | Tagbanwa |
| Georgian Extended | Ethiopic Extended-A | Kaithi | **East Asian Scripts** |
| Georgian Supplement | Medefaidrin | Kannada | Bopomofo |
| Glagolitic | Mende Kikakui | Kharoshthi | Bopomofo Extended |
| Glagolitic Supplement | Meroitic | Khojki | CJK Unified Ideographs (Han) (35MB) |
| Gothic | Meroitic Cursive | Khudawadi | CJK Extension-A (6MB) |
| Greek | Meroitic Hieroglyphs | Lepcha | CJK Extension B (40MB) |
| Greek Extended | N'Ko | Limbu | CJK Extension C (3MB) |
| Ancient Greek Numbers | Osmanya | Mahajani | CJK Extension D |
| Latin | Tifinagh | Malayalam | CJK Extension E (3.5MB) |
| Basic Latin (ASCII) | Vai | Masaram Gondi | CJK Extension F (4MB) |
| Latin-1 Supplement | **Middle Eastern Scripts** | Meetei Mayek | (see also Unihan Database) |
| Latin Extended-A | Anatolian Hieroglyphs | Meetei Mayek Extensions | CJK Compatibility Ideographs |
| Latin Extended-B | Arabic | Modi | CJK Compatibility Ideographs Supplement |
| Latin Extended-C | Arabic Supplement | Mro | CJK Radicals / KangXi Radicals |
| Latin Extended-D | Arabic Extended-A | Multani | CJK Radicals Supplement |
| Latin Extended-E | Arabic Presentation Forms-A | Nandinagari | CJK Strokes |
| Latin Extended Additional | Arabic Presentation Forms-B | Newa | Ideographic Description Characters |
| Latin Ligatures | Aramaic, Imperial | Ol Chiki | Hangul Jamo |
| Fullwidth Latin Letters | Avestan | Oriya (Odia) | Hangul Jamo Extended-A |
| IPA Extensions | Cuneiform (1MB) | Saurashtra | Hangul Jamo Extended-B |
| Phonetic Extensions | Cuneiform Numbers and Punctuation | Sharada | Hangul Compatibility Jamo |
| Phonetic Extensions Supplement | Early Dynastic Cuneiform | Siddham | Halfwidth Jamo |
| Linear A | Old Persian | Sinhala | Hangul Syllables |
| Linear B | Ugaritic | Sinhala Archaic Numbers | Hiragana |
| Linear B Syllabary | Elymaic | Sora Sompeng | Kana Extended-A |
| Linear B Ideograms | Hatran | Syloti Nagri | Kana Supplement |
| Aegean Numbers | Hebrew | Takri | Small Kana Extension |
| Lycian | Hebrew Presentation Forms | Tamil | Kanbun |
| Lydian | Mandaic | Tamil Supplement | Katakana |
| Ogham | Nabataean | Telugu | Katakana Phonetic Extensions |
| Old Hungarian | Old North Arabian | Thaana | Halfwidth Katakana |
| Old Italic | Old South Arabian | Tirhuta | Lisu |
| Old Permic | Pahlavi, Inscriptional | Vedic Extensions | Miao |
| Phaistos Disc | Pahlavi, Psalter | Wancho | Nushu |
| Runic | Palmyrene | Warang Citi | |

Unicode 12.0: 137,929 characters

# Character Encoding

3. Ἀφ ’ οὗ δίκη Ἀθήνησι[ν ἐγέ]νετο Ἄρει καὶ Ποσειδῶνι ὑπὲρ Ἁλιῤῥοθίου τοῦ Ποσειδῶνος, καὶ ὁ τόπος ἐκλήθη Ἄρειος πάγος, ἔτη ΧΗΗ[144]ΔΓΙΙΙ, βασιλεύοντος Ἀθηνῶν Κρ[ανα]οῦ.

*Marmor Parium* A 3

**ΧΗΗΓΔΓΙΙΙ**

**=**

**1268**

**=**

**(1531/30 BC)**

Χ = 1000
Η = 100
Γ = 5
Δ = 10
Ι = 1

http://www.dfhg-project.org/DFHG/index.php?volume=Volumen primum#urn:lofts:fhg.1.marmor_parium.i:3

# Character Encoding

3. Ἀφ ’ οὗ δίκη Ἀθήνησι[ν ἐγέ]νετο Ἄρει καὶ Ποσειδῶνι ὑπὲρ Ἁλιῤῥοθίου τοῦ Ποσειδῶνος, καὶ ὁ τόπος ἐκλήθη Ἄρειος πάγος, ἔτη ΧΗΗ[10144]ΔΓΙΙΙ, βασιλεύοντος Ἀθηνῶν Κρ[ανα]οῦ.

*Marmor Parium* A 3

ΧΗΗ[Δ]ΔΓΙΙΙ

=

1268

=

(1531/30 BC)

Χ = 1000
Η = 100
Γ = 5
Δ = 10
Ι = 1

10144 GREEK ACROPHONIC ATTIC FIFTY

http://www.dfhg-project.org/DFHG/index.php?volume=Volumen primum#urn:lofts:fhg.1.marmor_parium.i:3
https://epigraphy.packhum.org/text/77668

# Character Encoding

## Combining Characters

The relevant Combining Diacritical Marks in the 0300–036F range are:

| code | char | name | category | combining | decomposition |
|---|---|---|---|---|---|
| U+0300 | ◌̀ | COMBINING GRAVE ACCENT | Mn | 230 | |
| U+0301 | ◌́ | COMBINING ACUTE ACCENT | Mn | 230 | |
| U+0304 | ◌̄ | COMBINING MACRON | Mn | 230 | |
| U+0306 | ◌̆ | COMBINING BREVE | Mn | 230 | |
| U+0308 | ◌̈ | COMBINING DIAERESIS | Mn | 230 | |
| U+0313 | ◌̓ | COMBINING COMMA ABOVE | Mn | 230 | |
| U+0314 | ◌̔ | COMBINING REVERSED COMMA ABOVE | Mn | 230 | |
| U+0342 | ◌͂ | COMBINING GREEK PERISPOMENI | Mn | 230 | |
| U+0343 | ◌̓ | COMBINING GREEK KORONIS | Mn | 230 | 0313 |
| U+0344 | ◌̈́ | COMBINING GREEK DIALYTIKA TONOS | Mn | 230 | 0308 0301 |
| U+0345 | ◌ͅ | COMBINING GREEK YPOGEGRAMMENI | Mn | 240 | |

Note that there is a COMBINING CIRCUMFLEX ACCENT at U+0302 but that's, not what we think of as a circumflex. In Greek we use U+0342, the COMBINING GREEK PERISPOMENI.

## Precomposed verses Decomposed Characters

An alpha with smooth breathing (or *psili*) is available at U+1F00 but it's also possible with U+03B1 and U+0313.

| | | | | | |
|---|---|---|---|---|---|
| U+1F00 | ἀ | GREEK SMALL LETTER ALPHA WITH PSILI | Ll | 0 | 03B1 0313 |
| U+03B1 | α | GREEK SMALL LETTER ALPHA | Ll | 0 | |
| U+0313 | ◌̓ | COMBINING COMMA ABOVE | Mn | 230 | |

U+1F00 is referred to as *precomposed* and its decomposition is U+03B1 U+0313.

https://jktauber.com/articles/python-unicode-ancient-greek/

http://docs.cltk.org/en/latest/greek.html#accentuation-and-diacritics

# Character Encoding

ἄ

pre-composed form: U+1F04

1F04 ἄ GREEK SMALL LETTER ALPHA WITH PSILI AND OXIA

**is canonically equivalent to**

| U+03B1 | U+0313 | U+0301 |
|---|---|---|
| GREEK SMALL LETTER ALPHA | COMBINING COMMA ABOVE | COMBINING ACUTE ACCENT |

(canonical decomposition of U+1F04)

# The Classical Language Toolkit

http://cltk.org/

| Greek | Latin |
| --- | --- |
| Alphabet | Corpus Readers |
| Accentuation and diacritics | Clausulae Analysis |
| Converting Beta Code to Unicode | Converting J to I, V to U |
| Converting TLG texts with TLGU | Converting PHI texts with TLGU |
| Corpus Readers | Information Retrieval |
| Information Retrieval | Declining |
| Lemmatization | Lemmatization |
| Lemmatization, backoff method | Lemmatization, backoff method |
| Named Entity Recognition | Line Tokenization |
| Normalization | Macronizer |
| POS tagging | Making POS training sets |
| Prosody Scanning | Named Entity Recognition |
| Sentence Tokenization | PHI Indices |
| Stopword Filtering | POS tagging |
| Swadesh | Prosody Scanning |
| TEI XML | Scansion of Poetry |
| Text Cleanup | Semantics |
| TLG Indices | Sentence Tokenization |
| Transliteration | Semantics |
| Word Tokenization | Stemming |
| Word2Vec | Stoplist Construction |
| | Stopword Filtering |
| | Swadesh |
| | Syllabifier |
| | Text Cleanup |
| | Transliteration |
| | Word Tokenization |
| | Word2Vec |

# The Classical Language Toolkit

http://cltk.org/

| | Akkadian | Arabic | Bengali | Chinese | Classical Hindi | Coptic | Egyptian | Greek | Gujarati | Hebrew | Javanese | Latin | Malayalam | Marathi | Middle English | Middle High German | Middle Low German | Odia | Old Church Slavonic | Old English | Old French | Old Norse | Old Swedish | Pali | Persian | Prakrit | Punjabi | Sanskrit | Telugu | Tibetan | Urdu |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Corpora | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • | • |
| Stoplist | • | • | | | • | | | • | | | | • | | • | • | • | | | | • | • | • | | | | | • | • | | | |
| Sentence Tokenizer | | | | | | | | • | | | | • | | | | | | | | | • | | | | | | | | | | |
| Word Tokenizer | • | • | | | | | | • | | | | • | | | • | • | | | | | • | • | | | | | | • | | | |
| Stemmer | • | | | | | | | | | | | • | | | • | • | | | | | • | | | | | | | • | | | |
| Lemmatizer | | | | | | | | • | | | | • | | | | | | | | | • | | | | | | | | | | |
| POS Tagger | | | | | | | | • | | | | • | | | | | • | | | • | | • | | | | | | | | | |
| Prosody Tagger | | | | | | | | • | | | | • | | | | • | | | | | | • | | | | | | | | | |
| NER | | | | | | | | • | | | | • | | | | | | | | | • | | | | | | | | | | |

P.J. Burns, "Bulding a Text Analysis Pipeline for Classical Languages", in M. Berti (ed.), *Digital Classical Philology. Ancient Greek and Latin in the Digital Revolution*. Age of Access? Grundfragen der Informationsgesellschaft 10. Berlin and Boston: De Gruyter 2019, pp. 159-176

# Text Alignment

## Book 1

Paragraph 5

τοιούτους ἔδει καὶ τοὺς λοιποὺς εἶναι πλείους ὡς τοῖς γε μὴ τοῦτο ποιοῦσιν ἐρεῖ τις τί μικρολόγος εἶ; — πλεῖαί τοι οἴνου κλισίαι· δαίνυ δαῖτα γέρουσι θάλειαν· ἔοικέ τοι. τοιοῦτος ἦν τῇ μεγαλοψυχίᾳ ὁ μέγας Ἀλέξανδρος. Κόνων δὲ τῇ περὶ Κνίδον ναυμαχίᾳ νικήσας Λακεδαιμονίους καὶ τειχίσας τὸν Πειραιᾶ ἑκατόμβην τῷ ὄντι θύσας καὶ οὐ ψευδωνύμως πάντας Ἀθηναίους εἱστίασεν. Ἀλκιβιάδης δὲ Ὀλύμπια νικήσας ἅρματι πρῶτος καὶ δεύτερος καὶ τέταρτος, εἰς ἃς νίκας καὶ Εὐριπίδης ἔγραψεν ἐπινίκιον, θύσας Ὀλυμπίῳ Διὶ τὴν πανήγυριν πᾶσαν εἱστίασε. τὸ αὐτὸ ἐποίησε καὶ Λεώφρων Ὀλυμπίασιν, ἐπινίκιον γράψαντος τοῦ Κείου Σιμωνίδου. Ἐμπεδοκλῆς δ’ ὁ Ἀκραγαντῖνος ἵπποις Ὀλύμπια νικήσας, Πυθαγορικὸς ὢν καὶ ἐμψύχων ἀπεχόμενος, ἐκ σμύρνης καὶ λιβανωτοῦ καὶ τῶν πολυτελεστάτων ἀρωμάτων βοῦν ἀναπλάσας διένειμε τοῖς εἰς τὴν πανήγυριν ἀπαντήσασιν. ὁ δὲ Χῖος Ἴων τραγῳδίαν νικήσας Ἀθήνησιν ἑκάστῳ τῶν Ἀθηναίων ἔδωκε Χίου κεράμιον. τοῦ γάρ τις ἄλλου πρὸς θεῶν ἂν οὕνεκα εὔξαιτο πλουτεῖν εὐπορεῖν τε χρημάτων ἢ τοῦ δύνασθαι παραβοηθεῖν τοῖς φίλοις σπείρειν τε καρπὸν Χάριτος, ἡδίστης θεῶν; τοῦ μὲν πιεῖν γὰρ καὶ φαγεῖν τὰς ἡδονὰς ἔχομεν ὁμοίας· οὐδὲ τοῖς λαμπροῖσι γὰρ δείπνοις τὸ πεινῆν παύεται, Ἀντιφάνης φησίν. ὅτι Ξενοκράτης ὁ Χαλκηδόνιος καὶ Σπεύσιππος ὁ Ἀκαδημαικὸς καὶ Ἀριστοτέλης βασιλικοὺς νόμους ἔγραψε. ἀλλὰ μὴν καὶ ὁ Ἀκραγαντῖνος Τελλίας, φιλόξενος ὢν καὶ πάντας πολυωρῶν, πεντακοσίοις ἱππεῦσιν ἐκ Γέλας ποτὲ καταλύσασιν ὡς αὐτὸν χειμῶνος ὥρᾳ ἔδωκεν ἑκάστῳ χιτῶνα καὶ ἱμάτιον.

**Olson Index**
Alcibiades
Antiphanes
Aristotle of Stagira
Empedocles of Acragas
Empedocles
Euripides
Ion of Chios
Leophron
Simonides of Ceos
Speusippus of Athens
Xenocrates of Chalcedon
Zeus

Alexander III (the Great)
Apollodorus of Carystus? or Gela?
Charmus of Syracuse
Clearchus of Soli
Conon of Athens
Homer
Larensius of Rome
Tellias of Acragas

**Kaibel Index Scriptorum**
ANTIPHANES
ARISTOTELES
EVRIPIDES
SIMONIDES
XENOCRATES

CLEARCHVS
HOMERVS

**Kaibel Dialogi Personae**
LARENSIS

**Meineke Index Scriptorum**
Antiphanes
Aristoteles
Empedocles
Euripides
Ion
Speusippus
Xenocrates

Clearchus
Homerus

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# Text Reuse Detection

## DFHG Witnesses Catalog - Text Reuse Detection

Insert one or more entry... OR

https://raw.githubusercontent.com/PerseusDL/canonical-greekL Submit

### Where author="HELLANICUS"

**Harpocration, Valerius - Lexicon in decem oratores Atticos (tlg1389.tlg001.perseus-grc2)**

Searching HELLANICUS fr.4 [Harpocration]

**Στεφανηφόρου ἠρῷον, ὡς ἔοικεν, ἦν ἐν ταῖς Ἀθήναις· εἷη δ ' ἂν ὁ Στεφανηφόρος, ἤτοι τῶν Ἡρακλέους υἱέων εἷς, τῶν γενομένων ἐκ τῶν Θεστίου θυγατέρων, οὗ μνημονεύει Ἑλλάνικος ἐν δεκάτῳ Φορωνίδος, ἢ μήποτε τοῦ Ἀττικοῦ Στεφανηφόρου τὸ ἠρῷον ἦν, οὗ πάλιν ὁ αὐτὸς Ἑλλάνικος ἐν δευτέρᾳ Ἀθίδος μέμνηται.**

Found in Harpocration, Valerius - Lexicon in decem oratores Atticos

ΣΤΕΦΑΝΗΦΟΡΟΣ Ἀντιφῶν ἐν τῷ πρὸς Νικοκλέα. **Στεφανηφόρου ἠρῷον, ὡς ἔοικεν, ἦν ἐν ταῖς Ἀθήναις. εἷη δ' ἂν ὁ Στεφανηφόρος ἤτοι τῶν Ἡρακλέους υἱέων εἷς τῶν γενομένων ἐκ τῶν Θεστίου θυγατέρων, οὗ μνημονεύει Ἑλλάνικος ἐν ι Φορωνίδος: ἢ μήποτε τοῦ Ἀττικοῦ Στεφανηφόρου τὸ ἠρῷον ἦν, οὗ πάλιν ὁ αὐτὸς Ἑλλάνικος ἐν β Ἀθίδος μέμνηται.**

```
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        <head>ΣΤΕΦΑΝΗΦΟΡΟΣ</head>
        <p ana="DFHG"> Ἀντιφῶν ἐν τῷ πρὸς Νικοκλέα. Στεφανηφόρου ἠρῷον, ὡς ἔοικεν, ἦν ἐν ταῖς Ἀθήναις.
          εἷη δ' ἂν ὁ Στεφανηφόρος ἤτοι τῶν Ἡρακλέους υἱέων εἷς τῶν γενομένων ἐκ τῶν Θεστίου
          θυγατέρων, οὗ μνημονεύει Ἑλλάνικος ἐν <num>ι</num> Φορωνίδος: ἢ μήποτε τοῦ Ἀττικοῦ
          Στεφανηφόρου τὸ ἠρῷον ἦν, οὗ πάλιν ὁ αὐτὸς Ἑλλάνικος ἐν <num>β</num> Ἀθίδος
          μέμνηται. </p>
      </div>
```

Searching HELLANICUS fr.28 [Harpocration]

**Τεττάρων μερῶν ὄντων τῆς θετταλίας, ἕκαστον μέρος Τετρὰς ἐκαλεῖτο, καθά φησιν Ἑλλάνικος ἐν τοῖς Θετταλικοῖς· ὄνομα é φησιν εἶναι ταῖς τετράσι Θετταλιῶτιν, Φθιῶτιν, Πελασγιῶτιν, Ἑστιαιῶτιν.**

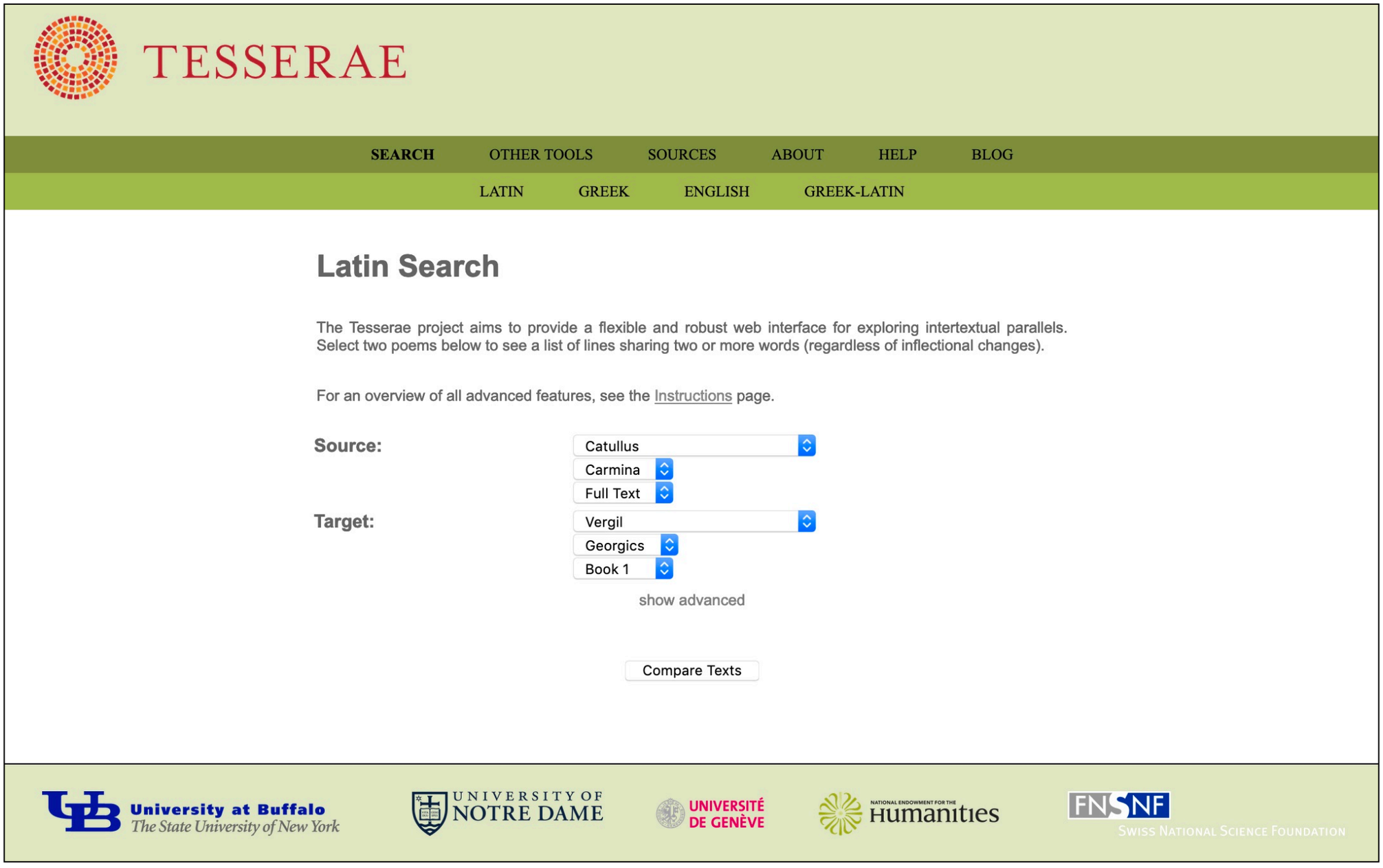
Found in Harpocration, Valerius - Lexicon in decem oratores Atticos

ΤΕΤΡΑΡΧΙΑ Δημοσθένης Φιλιππικοῖς. **τεττάρων μερῶν ὄντων τῆς Θετταλίας ἕκαστον μέρος τετρὰς ἐκαλεῖτο, καθά φησιν Ἑλλάνικος ἐν τοῖς Θετταλικοῖς: ὄνομα δέ φησιν εἶναι ταῖς τετράσι Θετταλιῶτιν, Φθιῶτιν, Πελασγιῶτιν, Ἑστιαιῶτιν.** καὶ Ἀριστοτέλης δὲ ἐν τῇ κοινῇ Θετταλῶν πολιτείᾳ ἐπὶ Ἀλεύα τοῦ Πύρρου διῃρῆσθαί φησιν εἰς δ μοίρας τὴν Θετταλίαν. εἶη ἂν οὖν λέγων ὁ Δημοσθένης τὴν τετραρχίαν. ὅτι δὲ Φίλιππος καθ' ἑκάστην τούτων τῶν μοιρῶν ἄρχοντα κατέστησε δεδηλώκασιν ἄλλοι τε καὶ Θεόπομπος ἐν τῇ μδ.

```
<div xml:id="tetrarxia" type="textpart" subtype="entry" org="uniform" sample="complete" part="N" n="tetrarchia">
        <head>ΤΕΤΡΑΡΧΙΑ</head>
        <p ana="DFHG"> Δημοσθένης Φιλιππικοῖς. τεττάρων μερῶν ὄντων τῆς Θετταλίας ἕκαστον μέρος τετρὰς
          ἐκαλεῖτο, καθά φησιν Ἑλλάνικος ἐν τοῖς Θετταλικοῖς: ὄνομα δέ φησιν εἶναι ταῖς
```

http://www.dfhg-project.org

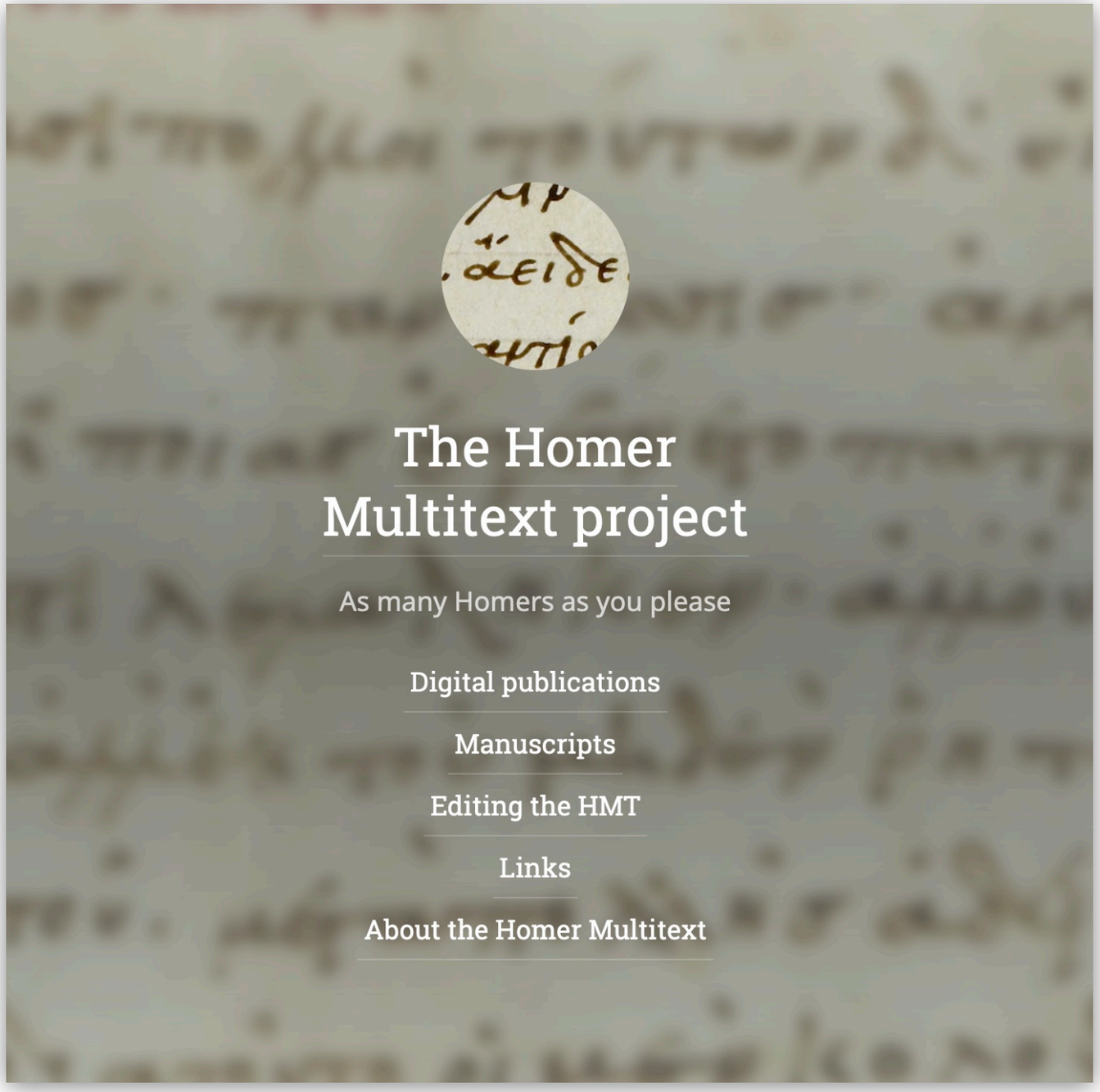
# Intertextuality




http://tesserae.caset.buffalo.edu

# 4

# Critical Editions and Annotations




http://www.homermultitext.org

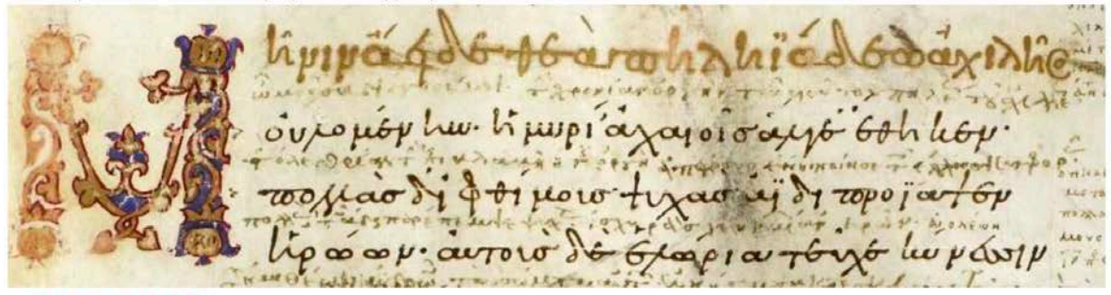
# Manuscript msA, page 12r

Manuscript msA, page 12r

prev: 11v next: 12v

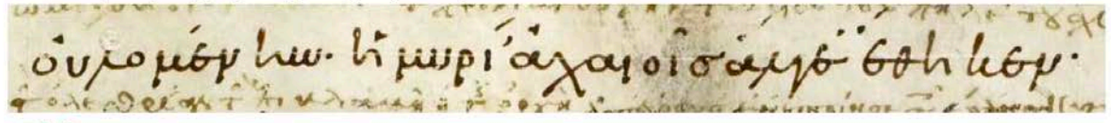
## *Iliad* text

*1.1* Μῆνιν ἄειδε θεὰ Πηληϊάδεω Ἀχιλῆος



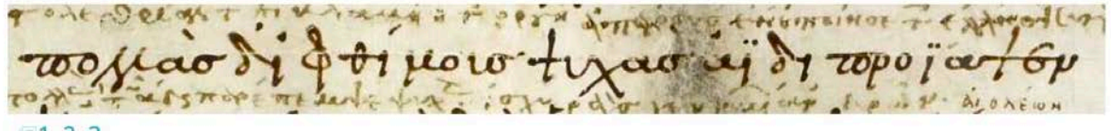
1, 2, 3, 4, 5, 6, 7

*1.2* οὐλομένην· ἡ μυρί’ Ἀχαιοῖς ἄλγε’ ἔθηκεν·



1, 2

*1.3* πολλὰς δ’ ἰφθίμους ψυχὰς Ἄϊδι προΐαψεν



1, 2, 3

*1.4* ἡρώων· αὐτοὺς δὲ ἑλώρια τεῦχε κύνεσσιν

http://www.homermultitext.org/facsimiles/venetus-a/12r/

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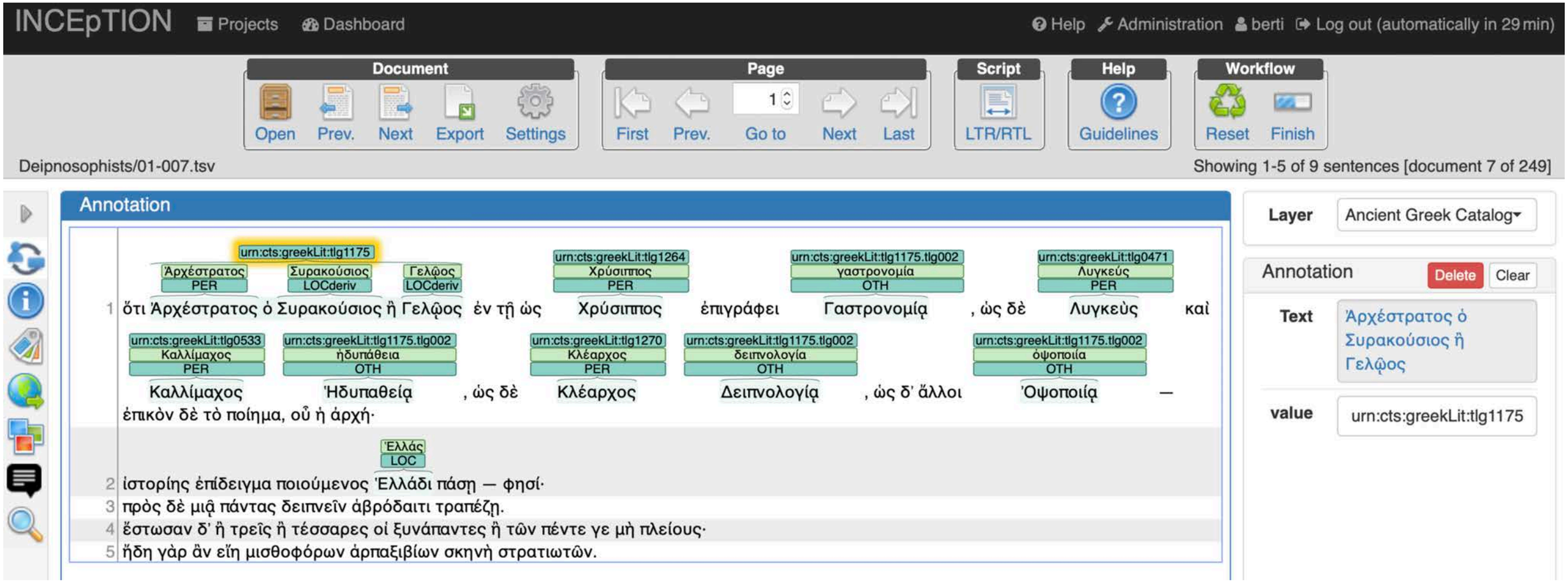
# Semantic Annotations




https://inception-project.github.io//use-case-gallery/digital-athenaeus/

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5

# Linguistic Resources

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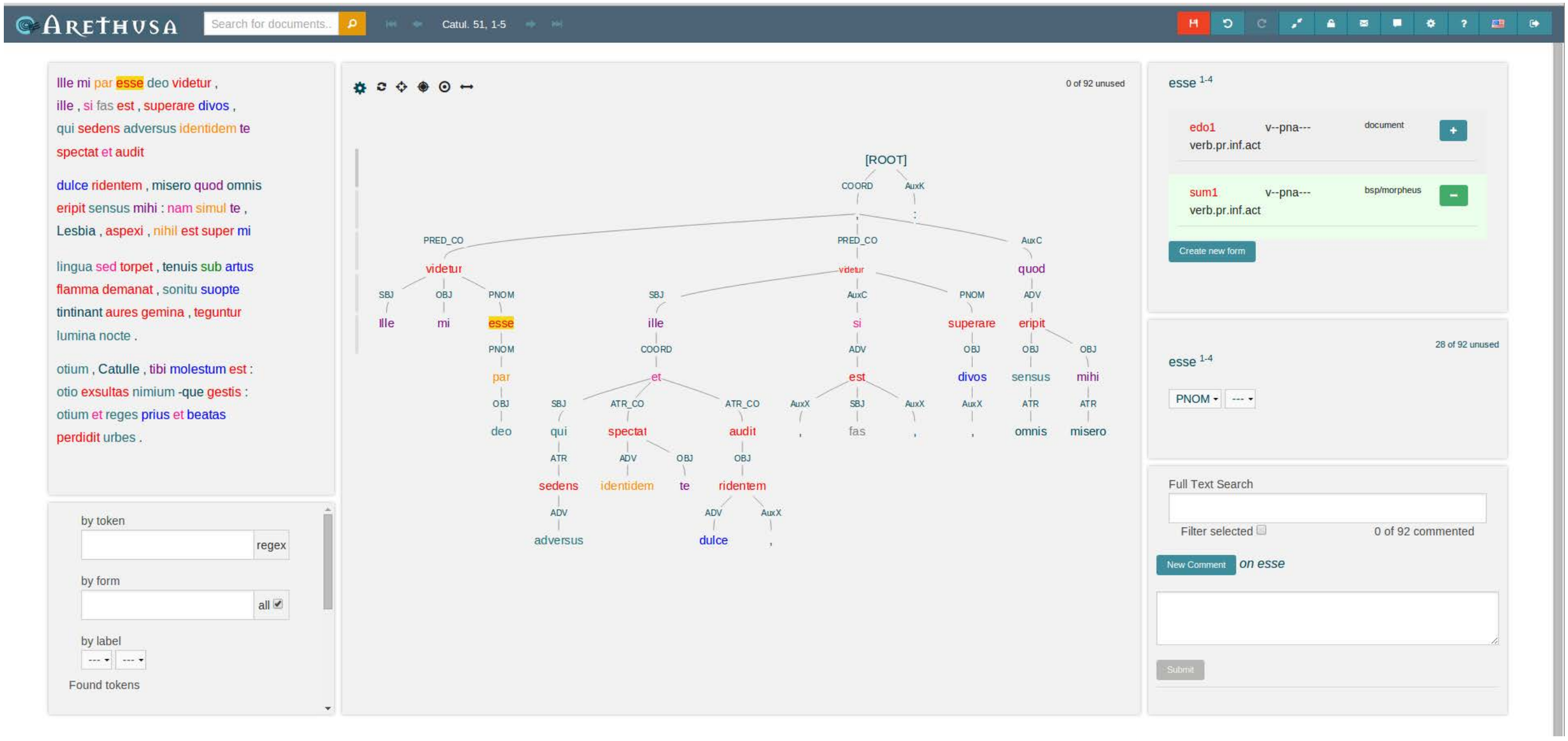
# Morpho-syntactic Annotation




https://perseusdl.github.io/treebank_data/

https://github.com/PerseusDL/treebank_data/blob/master/AGDT2/guidelines/Greek_guidelines.md

# Knowledge Bases

**MISSION**

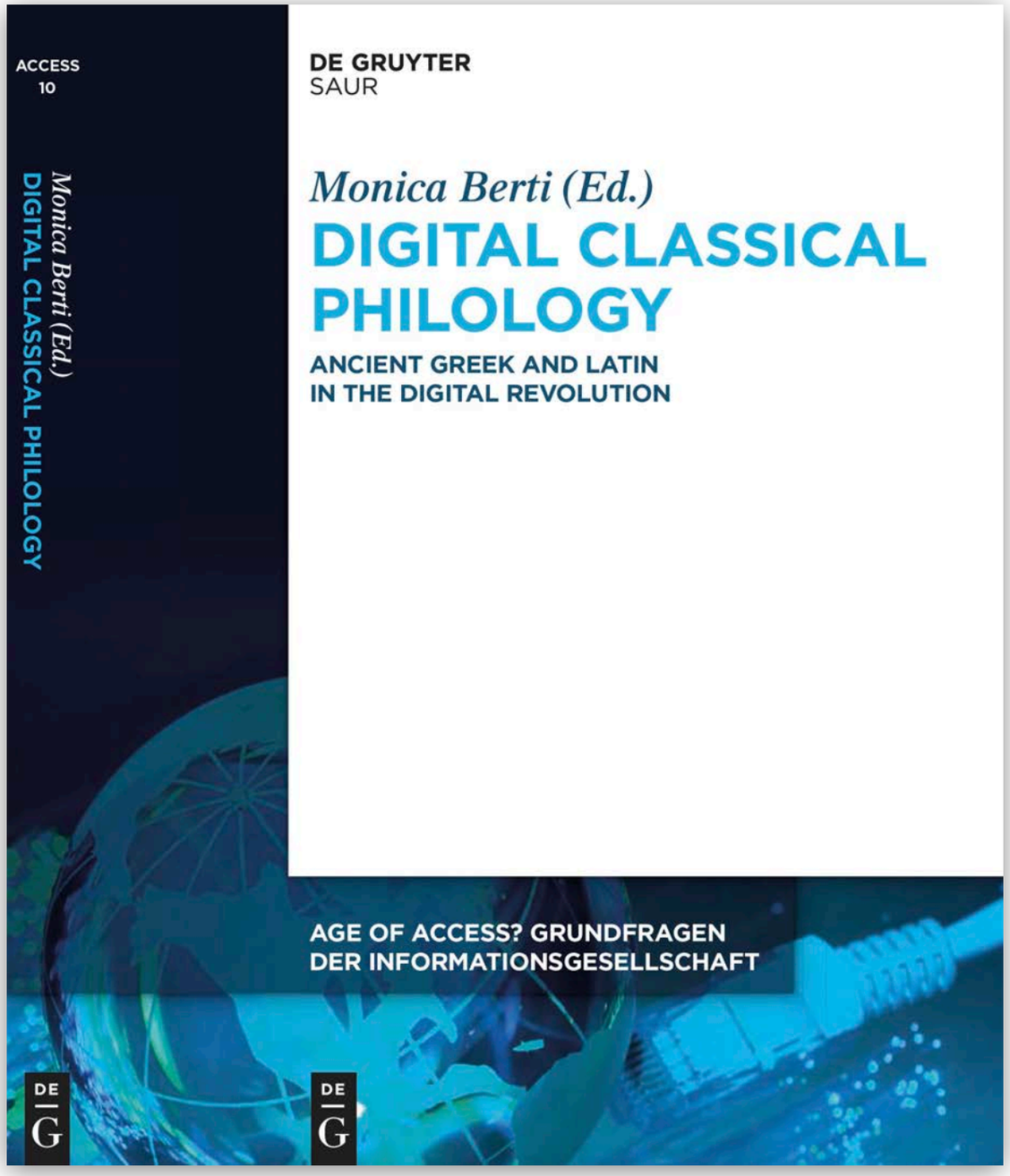
## Linking Latin

Despite the headway made in the last decade in building, sharing and exploiting linguistic resources and tools for the automatic processing of Latin, these remain incompatible.

The **objective** of LiLa (2018-2023) is to connect and ultimately exploit the wealth of linguistic resources and NLP tools for Latin created so far, in order to bridge the gap between raw language data, NLP and knowledge descriptions. To do so, LiLa is building an open-ended Knowledge Base using the Linked Data paradigm, concurrently adding Latin to the multilingual Linguistic Linked Open Data (LLOD) cloud.

Read more →

https://lila-erc.eu




https://www.degruyter.com/view/product/502894

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# Thank You


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