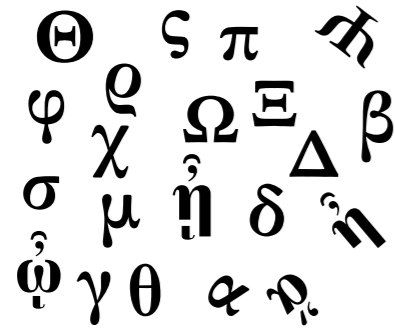


Named Entity Annotation for Ancient Greek with INCEpTION

Monica Berti
(Universität Leipzig)

CLARIN Annual Conference 2019
Leipzig, Germany
September 30 – October 2, 2019

Outline



- **NE Recognition and Annotation for ancient Greek**



- **NE Extraction in Athenaeus of Naucratis**



- **Annotating NEs with WebAnno and INCEpTION**

1. Named Entity Recognition and Annotation for ancient Greek

Θ ς π ϗ
φ ρ Ω Ξ β
σ χ η̇ δ̇ η̇
ψ̇ γ θ ε ϑ



- **Herodotos Project NER Annotation and Tagger**

(Latin)

- <https://github.com/alexerdmann/Herodotos-Project-Latin-NER-Tagger-Annotation>
- <https://www.aclweb.org/anthology/W16-4012>



- **Recogito**

(beta support for Latin)

- <https://recogito.pelagios.org>
- <https://doi.org/10.1080/15420353.2017.1307303>



- **Trismegistos People (Egypt)**

(experimental NER for ancient Greek and Latin)

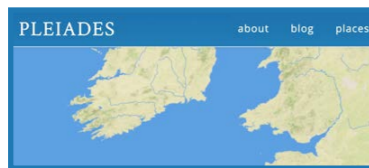
- <https://www.trismegistos.org/ref/index>
- https://doi.org/10.1007/978-3-319-15168-7_38

Authority Lists and Knowledge Bases

LEXICON OF GREEK PERSONAL NAMES

- **Lexicon of Greek Personal Names (LGPN)**

<http://www.lgpn.ox.ac.uk>



- **Pleiades Gazetteer**

<https://pleiades.stoa.org>



- **Trismegistos People** (beta version)

<https://www.trismegistos.org/ref/>

Standards for Networking Ancient Prosopographies

- **Standards for Networking Ancient Prosopographies (SNAP:DRGN)**

<https://snapdrgn.net>



- **Virtual International Authority File (VIAF)**

<https://viaf.org>



- **DBpedia**

<https://wiki.dbpedia.org>



- **Wikidata**

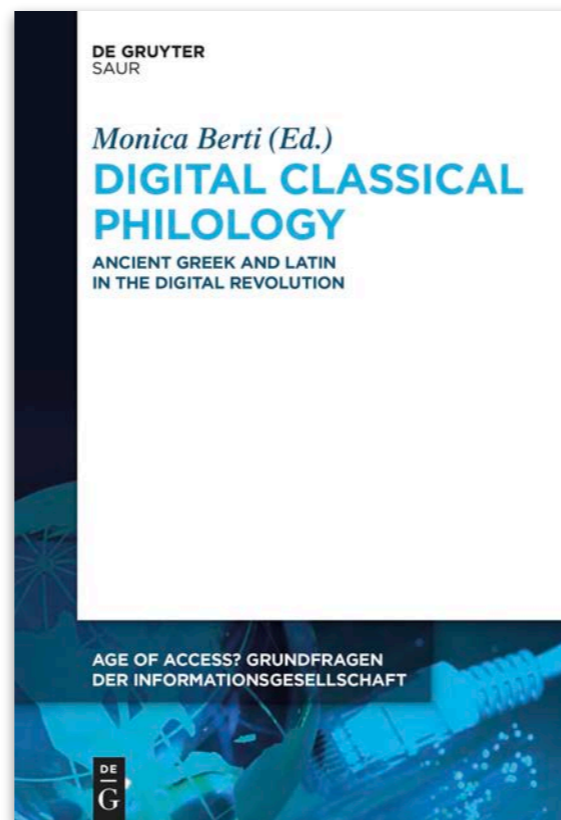
<https://www.wikidata.org>

✦ The Classical Language Toolkit

(Greek and Latin)

<http://docs.cltk.org/en/latest/greek.html#named-entity-recognition>

<http://docs.cltk.org/en/latest/latin.html#named-entity-recognition>



“[...] a lack of annotated texts and robust language models underlies the problem”
(P. J. Burns)

<https://doi.org/10.1515/9783110599572-010>



Digital Classics: A Survey on the Needs of Ancient Greek Scholars in Italy

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Abstract

This paper presents and discusses the findings of a survey carried out in order to assess the use of digital resources and digital technologies with respect to work in Ancient Greek scholarship, as well as to identify the factors that are likely to constrain its use and to elicit needs and requirements of Ancient Greek scholars in Italy. The survey is in line with the principles behind the recent user engagement strategy developed by CLARIN-ERIC and constitutes one of the national efforts undertaken by CLARIN-IT to contribute to the wider impact of CLARIN on Digital Classicists.

1 Motivation and Background

Interest in language technologies is never been as strong as it is now. The main conferences in Digital Humanities are seeing more participation by computational linguists while at Computational Linguistics conferences the humanities and social sciences are now an important line of research. The necessity to meet the needs of an audience of different users opens new challenges for language technologies: easily usable tools, adaptable to different types of content become crucial. Texts in the humanities can often be heterogeneous and the quality of resources, in particular the quality of digital editions of texts, is receiving increasing attention.

CLARIN-ERIC (www.clarin.eu), the European research infrastructure for the Humanities and Social Sciences, was created to promote the development of technological solutions aimed at making language resources available to scholars, researchers, students of the Humanities and Social Sciences through a unified and standardized mode of access to data and computational tools. This involves making available digital repositories where data, corpora, lexicons, tools and language services are catalogued, stored, retrieved and used in a simple and intuitive way by users. It represents the perfect solution for bringing together producers and developers of language technology with its users. The idea that user needs should be a central part of the design and development process of any ITC infrastructure is not necessarily new, and pointing out that the CLARIN audience are Humanists and Social Scientists is not enough. There is a wide range of people working within the academic sector; one set might be more proficient in one area but less in another, so there are different needs and different ways of engaging with users.

In order to study the current interest in the use of digital resources and related tools in one specific context of the Humanities, Ancient Greek scholarship, we performed a survey based on a questionnaire to ascertain the current practice and the related needs of a group of practitioners in the field. At a larger scale, the work represents one of the first attempts undertaken within the context of CLARIN-IT ([Monachini and Frontini, 2016](#)) to contribute to the wider impact of CLARIN on the specific Italian community of those interested in the application of Digital Humanities to the field of Classics and to ancient world studies. Similar surveys were sporadically performed during the last decade, pertaining to fields that do not strictly concern Digital

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CLARIN 2017

Linked Open Data and the Enrichment of Digital Editions: the Contribution of CLARIN to the Digital Classics

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Abstract

Semantic Web technologies allow scholars in the humanities to make links and connections between the multitude of digitised cultural artifacts which are now available on the World Wide Web, thus facilitating the making of new scientific discoveries and the opening up of new avenues of research. Semantic Web and Linked Data technologies, by their very nature, are complex and require the adoption of a sustainable, long term approach that takes research infrastructures like CLARIN into consideration. In this paper, we present the case-study of a project (DEA) on an augmented digital edition of fragmentary Ancient Greek texts using Linked Data; this will highlight a number of the core issues that working in the Digital Classic brings up. We will discuss these issues as well as touching on the role CLARIN can play in the overall linked data lifecycle and in particular on humanities datasets.

1 Introduction

The Semantic Web and the Linked Data (LD) publishing paradigm allow the World Wide Web to be used as a means for data and knowledge integration wherein both documents/texts and other kinds of data are linked together. Publishing datasets as linked data has become an important way of sharing valuable structured information in a flexible and extensible manner across the Web, this is especially true in the humanities. Indeed the Semantic Web puts an emphasis on interoperability and interlinking between datasets; it can therefore be viewed as playing a similar role as that played in the past by artifacts such as the Rosetta Stone.

Informed by the success of the Semantic Web in other fields, efforts to use LD technologies to enable open access to cultural data are emerging. A crucial example is represented by the Digital Classics. Indeed the “Graph of the Ancient World”, as it is often dubbed, is considered to be one of the most well developed parts of the Social Sciences and Humanities linked data cloud. It encompasses resources developed by classicists and archaeologists and is at least in part supported by dedicated tools¹. The existence of large repositories of freely available digitised texts and other datasets, such as the Perseus Library (Crane, 2012) and gazetteers such as Pleiades, is encouraging a greater uptake of linked data technologies in the classics and especially for use in enriching digital editions. At the same time the advantages offered by the Semantic Web to publishers of data are only fully available to institutions who are able to make the technological investment and to develop tools for the (manual and automatic) linking of editions to datasets, and interfaces for the exploitation of such links for querying and research. Several ongoing projects are contributing towards the provision of the necessary support; for instance, the Recogito annotation system in Pelagios (Simon et al., 2015; Simon et al., 2017) aims to provide a graphic online environment for the manual annotation of digital editions with references to ancient places; automatic linking tools such as REDEN (Brando et al., 2016; Frontini et al., 2016), are built to cater specifically for the needs of the DH community (with TEI support and the possibility to

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²We refer to (Isaksen et al., 2014) for a thorough description of this ecosystem and of the reason why this area was particularly susceptible to a Semantic Web turn.

CLARIN 2018

2. Named Entity Extraction in Athenaeus of Naucratis



Athenaeus, *Deipnosophists*

NEs disambiguation
(single entities)

NE Class	Semantic sub-classes	Number of occurrences
LOC	<i>cities, regions, islands, mountains, rivers, etc.</i>	2,151
LOCderiv	<i>location_deriv</i>	4,377
ORG	<i>festivals and Panhellenic games</i>	129
ORGderiv	<i>organization_deriv</i>	17
OTH	<i>works, months, constellations, currencies, languages, groups, etc.</i>	1,916
PER	<i>gods, persons, personifications, authors, etc.</i>	14,043
PERderiv	<i>person_deriv</i>	291
Total		22,924

Athenaeus, *Deipnosophists*

NEs disambiguation (single entities)

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PER	<i>gods, persons, personifications, authors, etc.</i>	14,043
PERderiv	<i>person_deriv</i>	291
Total		22,924

automatically detected (through lemmata)

LGPN (personal names): ca. 63%

Pleiades (place names): ca. 17%



- Named entity recognition (NER) tools:
 - **Index to Text**: automatic alignment of index entries with the Greek text of the *Deipnosophists* based on the Levenshtein distance;
 - **Named Entities Digger**: named entities detection in the Greek text of the *Deipnosophists*;
 - **Named Entities Concordance**: concordance of detected named entities in the Greek text of the *Deipnosophists*.

<http://www.digitalathenaeus.org>

Ἀρχέστρατος [Archestratos] (lemma)

Submit

Lemma: Ἀρχέστρατος [Archestratos]
lemma in LOGEION

Inflected form: Ἀρχέστρατον [Archestraton] - [search in Kaibel](#) **Q**

inflected form in TLG

Named Entity Class: PER

7 . 23 [πυρός ἐν τοῖς τηγάνοις οἱ περὶ Ἀρχέστρατον ἐπιβαλόντας κελεύουσιν ἐπὶ θερμὸν τήγανον σίζουσαν]
7 . 24 [τὴν ἐπιθυμίαν ἀδικία κτήσασθαι τὴν ὀψοφαγίαν. Ἀρχέστρατον λέγει τὸν τένθη ὁ Λυγκεύς, ὃς]

Inflected form: Ἀρχέστρατόν [Archestraton] - [search in Kaibel](#) **Q**

inflected form in TLG

Named Entity Class: PER

7 . 46 [δ' ἐν Κύκλωπι ὑπερακοντίζων τὸν τένθη Ἀρχέστρατόν φησιν· ἔστω δ' ἡμῖν κεστρεὺς τμητός,]

Inflected form: Ἀρχέστρατον [Archestraton] - [search in Kaibel](#) **Q**

inflected form in TLG

Named Entity Class: PER

7 . 94 [κακῶς λέγειν παρεστηκότα τοὺς ἰχθύας, ἐπαγόμενον Ἀρχέστρατον τὸν γράψαντα τὴν Ἡδυπάθειαν ἢ τῶν]
8 . 13 [ἐπαινῶ τὸν πολυθρύλητον ἐπὶ τῇ ὀψολογίᾳ Ἀρχέστρατον αἰεὶ ποτε μετὰ Φιλαινίδος κατατάπτοντα, εἰς]

Inflected form: ΑΡΧΕΣΤΡΑΤΟΝ [ARCHESTRATON] - [search in Kaibel](#) **Q**

inflected form in TLG

Named Entity Class: PER

Ἀρχέστρατος [Archestratos] (lemma)

ΛΟΓΕΙΟΝ

Lemma: Ἀρχέστρατος [Archestratos]
lemma in LOGEION

LEXICON OF
GREEK PERSONAL NAMES

Inflected form: Ἀρχέστρατον [Archestraton] - [search in Kaibel](#) Q

inflected form in TLG

Named Entity Class: PER

7 . 23 [πυρὸς ἐν τοῖς τηγάνοις οἱ περὶ Ἀρχέστρατον ἐρμὸν τήγανον σίζουσαν]
7 . 24 [τὴν ἐπιθυμίαν ἀδικία κτήσασθαι τὴν ὄψοφαγίαν. Ἀρχέστρατον λέγει τὸν τένθην ὁ Λυγκεύς, ὃς]



Inflected form: Ἀρχέστρατόν [Archestraton] - [search in Kaibel](#) Q

inflected form in TLG

Named Entity Class: PER

7 . 46 [δ' ἐν Κύκλωπι ὑπερακοντίζων τὸν τένθην Ἀρχέστρατόν φησιν· VI AF κεστρεὺς τμητός,]

Inflected form: Ἀρχέστρατον [Archestraton] - [search in Kaibel](#) Q

inflected form in TLG

Named Entity Class: PER

7 . 94 [κακῶς λέγειν παρεστηκότα τοὺς ἰχθύας, ἐπαγόμενον Ἀρχέστρατον τὸν γρὶς Ἰδυπάθειαν ἢ τῶν]
8 . 13 [ἐπαινῶ τὸν πολυθρύλητον ἐπὶ τῇ ὄψολογίᾳ Ἀρχέστρατον αἰεὶ ποτὶ τὴν Ἰνίδος κατατάπτοντα, εἰς]



Inflected form: ΑΡΧΕΣΤΡΑΤΟΝ [ARCHESTRATON] - [search in Kaibel](#) Q

inflected form in TLG

Named Entity Class: PER

The CITE Architecture

http://www.digitalathenaeus.org/tools/KaibelText/named_entities_concordance.php?what=Ἀρχέστρατος|lemma

NEs – automatic disambiguation of author names

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 μεγαλοψυχία ὁ μέγας Ἀλέξανδρος. Κόνων δὲ τῇ περὶ Κνίδον ναυμαχία νικήσας Λακεδαιμονίους καὶ τειχίσας τὸν Πειραιᾶ ἑκατόμβην τῶ ὄντι θύσας καὶ οὐ ψευδωνύμως πάντας Ἀθηναίους εἰστήσασεν. Ἀλκιβιάδης δὲ Ὀλύμπια νικήσας ἄρματι πρῶτος καὶ δεύτερος καὶ τέταρτος, εἰς ἅς νίκας καὶ Εὐριπίδης ἔγραψεν ἐπινίκιον, θύσας Ὀλυμπίῳ Διὶ τὴν πανήγυριν πᾶσαν εἰστήσασε. τὸ αὐτὸ ἐποίησε καὶ Λεώφρων Ὀλυμπίασιν, ἐπινίκιον γράψαντος τοῦ Κεῖου Σιμωνίδου. Ἐμπεδοκλῆς δ' ὁ Ἄκραγαντῖνος 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 Χίος Ἴων τραγωδίαν νικήσας Ἀθήνησιν ἐκάστω τῶν Ἀθηναίων ἔδωκε Χίου κεράμιον. τοῦ γὰρ τις ἄλλου πρὸς θεῶν ἂν οὐνεκα εὐξαιτο πλουτεῖν εὐπορεῖν τε χρημάτων ἢ τοῦ δύνασθαι παραβοηθεῖν τοῖς φίλοις σπεῖρειν τε καρπὸν Χάριτος, ἡδίστης θεῶν; τοῦ μὲν πειν γὰρ καὶ φαγεῖν τὰς ἡδονὰς ἔχομεν ὁμοίαις· οὐδὲ τοῖς λαμπροῖσι γὰρ δειπνοῖς τὸ πεινῆν παύεται, Ἀντιφάνης φησίν. ὅτι Ξενοκράτης ὁ Χαλκηδόνιος καὶ Σπεύσιππος ὁ Ἀκαδημαϊκὸς καὶ Ἀριστοτέλης βασιλικούς νόμους ἔγραψε. ἀλλὰ μὴν καὶ ὁ Ἄκραγαντῖνος Τελλίας, φιλόξενος ὢν καὶ πάντας πολυωρῶν, πεντακοσίοις ἵππεῦσιν ἐκ Γέλας ποτὲ καταλύσασιν ὡς αὐτὸν χειμῶνος ὥρα ἔδωκεν ἐκάστω 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

3.

Annotating Named Entities with WebAnno and INCEpTION



- 264,750 tokens
- 15 books
- 1,328 paragraphs
- 21,460 sentences

```
#FORMAT=WebAnno TSV 3.2
#T_SP=de.tudarmstadt.ukp.dkpro.core.api.ner.type.NamedEntity|identifier|value
#T_SP=de.tudarmstadt.ukp.dkpro.core.api.segmentation.type.Lemma|value

#Text=ὅτι Ἀρχέστρατος ὁ Συρακούσιος ἢ Γελῶος ἐν τῇ ὡς Χρῦσιππος ἐπιγράφει Γαστρονομία, ὡς
δὲ Λυγκεύς καὶ Καλλίμαχος Ἡδυπαθεία, ὡς δὲ Κλέαρχος Δειπνολογία, ὡς δ' ἄλλοι Ὀψοποιία –
ἐπικὸν δὲ τὸ ποίημα, οὗ ἡ ἀρχή·
1-1 0-3 ὅτι _ _ _
1-2 4-15 Ἀρχέστρατος * PER Αρχέστρατος
1-3 16-17 ὁ _ _
1-4 18-29 Συρακούσιος * LOCderiv Συρακούσιος
1-5 30-31 ἢ _ _
1-6 32-38 Γελῶος * LOCderiv Γελῶος
1-7 39-41 ἐν _ _
1-8 42-44 τῇ _ _
1-9 45-47 ὡς _ _
1-10 48-57 Χρῦσιππος * PER Χρῦσιππος
1-11 58-67 ἐπιγράφει _ _
1-12 68-79 Γαστρονομία * OTH γαστρονομία
1-13 79-80 , _ _
1-14 81-83 ὡς _ _
1-15 84-86 δὲ _ _
1-16 87-94 Λυγκεύς * PER Λυγκεύς
1-17 95-98 καὶ _ _
1-18 99-109 Καλλίμαχος * PER Καλλίμαχος
1-19 110-119 Ἡδυπαθεία * OTH ἡδυπάθεια
1-20 119-120 , _ _
1-21 121-123 ὡς _ _
1-22 124-126 δὲ _ _
1-23 127-135 Κλέαρχος * PER Κλέαρχος
1-24 136-147 Δειπνολογία * OTH δειπνολογία
1-25 147-148 , _ _
1-26 149-151 ὡς _ _
1-27 152-154 δ' _ _
1-28 155-160 ἄλλοι _ _
1-29 161-169 Ὀψοποιία * OTH ὀψοποιία
1-30 170-171 – _ _
1-31 172-178 ἐπικὸν _ _
1-32 179-181 δὲ _ _
1-33 182-184 τὸ _ _
1-34 185-191 ποίημα _ _
1-35 191-192 , _ _
1-36 193-195 οὗ _ _
1-37 196-197 ἡ _ _
1-38 198-202 ἀρχή _ _
1-39 202-203 · _ _
```



INCEPTION Projects Dashboard Help Administration berti Log out (automatically in 29 min)

Document: Open Prev. Next Export Settings
Page: First Prev. Go to 1 Next Last
Script: LTR/RTL
Help: Guidelines
Workflow: Reset Finish

Deipnosophists/01-007.tsv Showing 1-5 of 9 sentences [document 7 of 249]

Annotation

Layer: Ancient Greek Catalog

Annotation: Delete Clear

Text: Ἀρχέστρατος ὁ Συρακούσιος ἢ Γελῶος

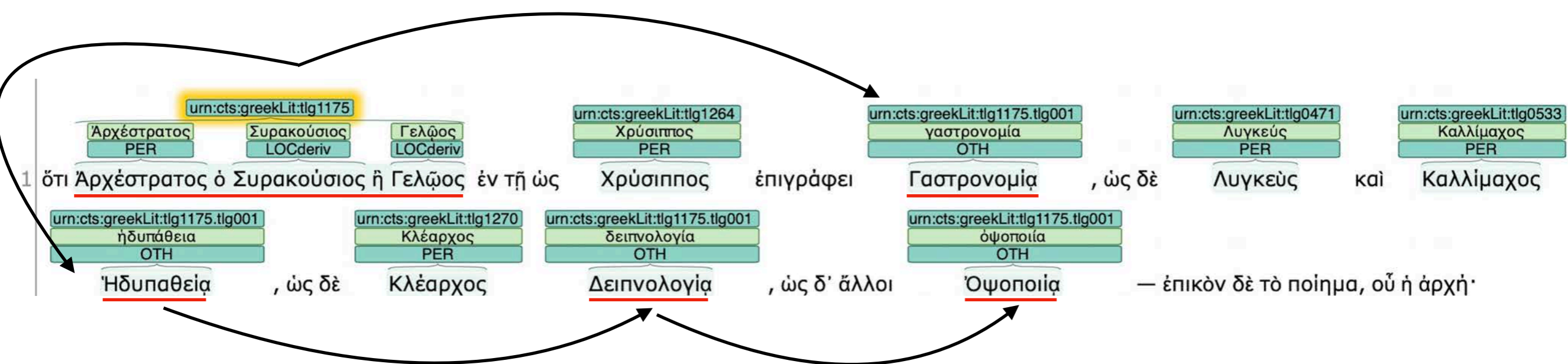
value: urn:cts:greekLit:tlg1175

1 ὅτι Ἀρχέστρατος ὁ Συρακούσιος ἢ Γελῶος ἐν τῇ ὥσ' Χρύσιππος ἐπιγράφει Γαστρονομία, ὡς δὲ Λυγκεύς καὶ Καλλιμαχος ἠδ' Ἰδρυπάθεια, ὡς δὲ Κλέαρχος Δειπνολογία, ὡς δ' ἄλλοι Ὀψοποιία — ἐπικὸν δὲ τὸ ποίημα, οὐ ἡ ἀρχή·

2 ἱστορίας ἐπίδειγμα ποιούμενος Ἑλλάδι πάση — φησί·
3 πρὸς δὲ μιᾷ πάντας δειπνεῖν ἀβρόδαιτι τραπέζῃ.
4 ἔστωσαν δ' ἢ τρεῖς ἢ τέσσαρες οἱ ξυνάπαντες ἢ τῶν πέντε γε μὴ πλείους·
5 ἤδη γὰρ ἂν εἶη μισθοφόρων ἀρπαξιβίων σκηνὴ στρατιωτῶν.

<https://inception-project.github.io/>

text-based catalog of ancient Greek authors and works



- Ἀρχέστρατος ὁ Συρακούσιος ἢ Γελῶς
- Γαστρονομία
- ἠδυπάθεια
- Δειπνολογία
- Ὀψοποιία

urn:cts:greekLit:tlg1175

urn:cts:greekLit:tlg1175.tlg001

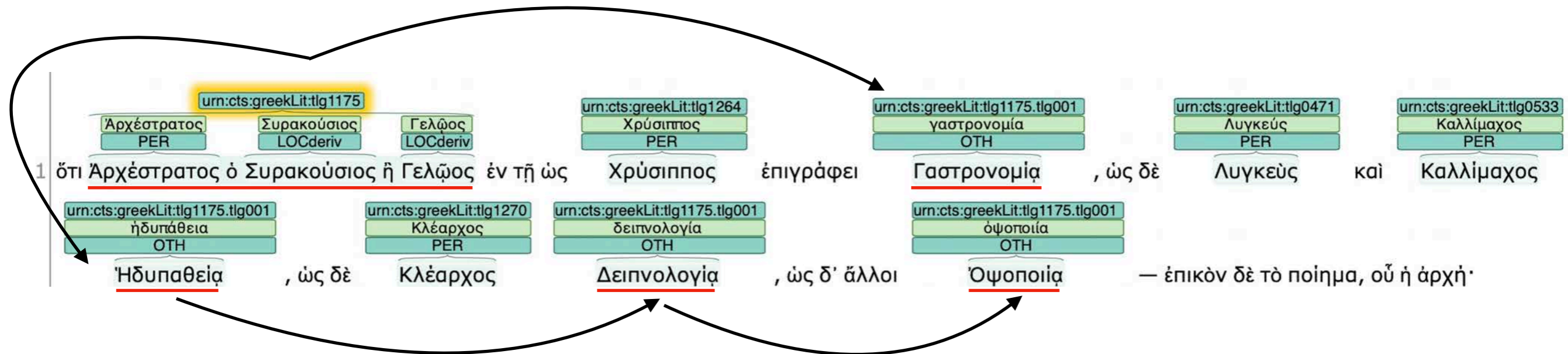
urn:cts:greekLit:tlg1175.tlg001

urn:cts:greekLit:tlg1175.tlg001

urn:cts:greekLit:tlg1175.tlg001

```
#FORMAT=WebAnno TSV 3.2
#T_SP=de.tudarmstadt.ukp.dkpro.core.api.ner.type.NamedEntity|identifier|value
#T_SP=de.tudarmstadt.ukp.dkpro.core.api.segmentation.type.Lemma|value
#T_SP=webanno.custom.AncientGreekCatalog|value

#Text=ὅτι Ἀρχέστρατος ὁ Συρακούσιος ἢ Γελῶος ἐν τῇ ὡς Χρῦσιππος ἐπιγράφει Γαστρονομία, ὡς
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ἐπικὸν δὲ τὸ ποίημα, οὗ ἡ ἀρχή·
1-1 0-3 ὅτι _ _ _ _
1-2 4-15 Ἀρχέστρατος * PER Ἀρχέστρατος urn:cts:greekLit:tlg1175[1]
1-3 16-17 ὁ _ _ _ _ urn:cts:greekLit:tlg1175[1]
1-4 18-29 Συρακούσιος * LOCderiv Συρακούσιος urn:cts:greekLit:tlg1175[1]
1-5 30-31 ἢ _ _ _ _ urn:cts:greekLit:tlg1175[1]
1-6 32-38 Γελῶος * LOCderiv Γελῶος urn:cts:greekLit:tlg1175[1]
1-7 39-41 ἐν _ _ _ _
1-8 42-44 τῇ _ _ _ _
1-9 45-47 ὡς _ _ _ _
1-10 48-57 Χρῦσιππος * PER Χρῦσιππος urn:cts:greekLit:tlg1264
1-11 58-67 ἐπιγράφει _ _ _ _
1-12 68-79 Γαστρονομία * OTH γαστρονομία urn:cts:greekLit:tlg1175.tlg001
1-13 79-80 , _ _ _ _
1-14 81-83 ὡς _ _ _ _
1-15 84-86 δὲ _ _ _ _
1-16 87-94 Λυγκεὺς * PER Λυγκεὺς urn:cts:greekLit:tlg0471
1-17 95-98 καὶ _ _ _ _
1-18 99-109 Καλλίμαχος * PER Καλλίμαχος urn:cts:greekLit:tlg0533
1-19 110-119 Ἦδυπαθεία * OTH ἠδυπάθεια urn:cts:greekLit:tlg1175.tlg001
1-20 119-120 , _ _ _ _
1-21 121-123 ὡς _ _ _ _
1-22 124-126 δὲ _ _ _ _
1-23 127-135 Κλέαρχος * PER Κλέαρχος urn:cts:greekLit:tlg1270
1-24 136-147 Δειπνολογία * OTH δειπνολογία urn:cts:greekLit:tlg1175.tlg001
1-25 147-148 , _ _ _ _
1-26 149-151 ὡς _ _ _ _
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1-29 161-169 Ὀψοποιία * OTH ὀψοποιία urn:cts:greekLit:tlg1175.tlg001
1-30 170-171 - _ _ _ _
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1-36 193-195 οὗ _ _ _ _
1-37 196-197 ἡ _ _ _ _
1-38 198-202 ἀρχή _ _ _ _
1-39 202-203 · _ _ _ _
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- complete NE disambiguation and linking
- coreference resolution
- knowledge bases and structure vocabularies
- extension to other works (e.g., *Suda* and Harpocration)



Thank You

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