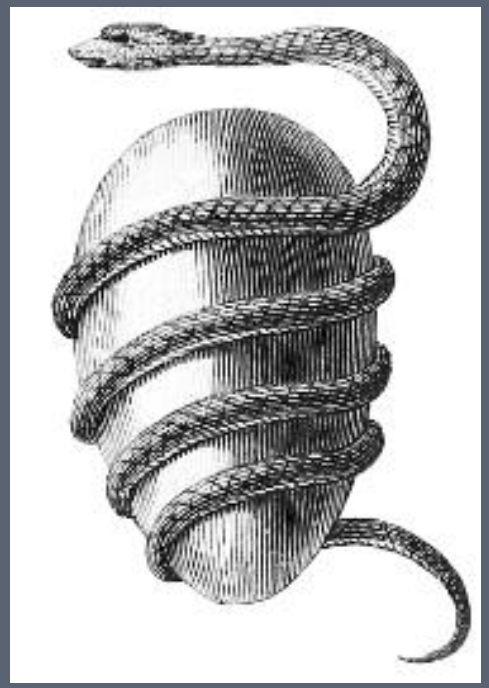

LEARNING AND TRAINING
BLENDED INTENSIVE PROGRAMME 2022/23
Digitizing a lexicon. How to work with words for the study of Religions in the Graeco-Roman World
(organizers: Giuseppina Paola Viscardi, Gaetano Spampinato)

What is a lexicon of religious terms and the advantages of the Digital Humanities
The Digital Lexicon LARES

Online
21/04/23

1. Printed Lexicon vs Digital Lexicon
2. How LARES works (from a front-end perspective)
3. What does semantic markup mean and its advantages
4. The basic rules of XML
5. EpiDoc for LARES
6. Set-up of the work environment (in view of May)
7. How LARES works (from a back-end perspective)

Slightly modified from Digital editions and semantic markup: XML, TEI, EpiDoc (Irene Vagionakis - Gabriel Bodard)

1. Printed Lexicon vs Digital Lexicon

"A digital edition cannot be given in print without significant loss of content and functionality". (Patrick Sahle)

scans in image format: text available online, archiving (e.g. Gesenius Hebrew Lexicon online)

⇩

digitization as 'typed text' (TXT, PDF, HTML...): searchable text

⇩

relational databases: searches by fields (useful for metadata, less for texts)

⇩

semantic markup (XML): improved search functionalities, indexing and much more!

2. How LARES works (from a front-end perspective)

LARES

Home | Language | Lexicon | Book chapters | Bibliography | Indices | Search | Team | Admin | Search

LARES - Language and Religion

Lexical Change and Variation
in Religious Enculturation / Acculturation phenomena of the Ancient World

LARES Language and Religion: Lexical Change and Variation in Religious Enculturation / Acculturation phenomena of the Ancient World (https://site.unibo.it/lares/en/) is a research forsight project funded by the action 'seed funding' of the UNA-Europa Network and it is promoted jointly by: Alma Mater Studiorum – Università di Bologna, Helsingin Yliopisto, Uniwersytet Jagielloński w Krakowie, Universidad Complutense de Madrid.

μηρία

Original publication: "Animal Sacrifice in Ancient Greece" database (

Authors: Lech Trzcionkowski (2015-03-31: written contents); Irene Vag

Show/hide: links practice belief fiction sign sense

μηρία mēría, subst. n., plurale tantum, femur, femora (1.sing. femur).

Etymology

The participial adjective μηρία "femur, thighbone" (< "thigh", default. ὅστε 115); used in the plural in the technical sense of "thigh bones of cattle, shee less commonly: δημός, ἐπιπόλαιον, πιμελή) and then burned on an altar. (→ μῆρα ↗), in later texts it has almost completely replaced it (Chantraine 1

Testimonies

The verb μηρία appears in the context of activities comprising three successive phases of the ritual process: (1) the preparation of the part of the sacrificial animal destined for the gods, i.e. (1a) the cutting off of the legs and the trimming of the μηρία ἐκτάμνω/ἐκτέμνω, 'I cut off, I cut out, I trim', cf. Meuli, 1946, 216-7), (1b) 'hiding' the μηρία by wrapping them bilaterally with a fatty peritoneal membrane ([κνίση] κατακαλύπτω, 'I cover (with fat)', and (1c) placing raw pieces of meat from other parts of the animal on them (ἐπ' αὐτῶν ὠμοθετέω, 'on them (i.e. legs) I lay the pieces of meat"); (2) the laying of the portion destined for the gods on the altar: ἐπιτίθημι, 'I arrange, lay on (the default. altar)'; (3) burning: καίω, 'I burn, I burn', δαύω, 'I burn'. To this should be added references to (4) the use of the ashes resulting from the burnt bones.

1. The preparation of the part destined for the gods.

In the Homeric epic, the expression ἐκ μηρία τάμνον ("they cut out the femurs", with the thesis Od. 3.456) appears in a detailed description of the sacrifice made by Nestor to Athena (Od. 3. 456b-457): ἄφαρ δ' ἐκ μηρία τάμνον / πάντα κατὰ μοῖραν, κατά τε κνίση ἐκάλυψαν ('when they cut out the femurs, all as they should be, and hid them in the fat of the peritoneum'), which is a variant of a more common version of the description of the procedure for preparing the thighs (μηρούς) for burning (Il. 1.464-5 = Il. 2.427-8 = Od. 12. 364-5): μηρούς τ' ἐξέταμον κατά τε κνίση ἐκάλυψαν / δίπτυχα ποιήσαντες, ἐπ' αὐτῶν δ' ὠμοθέτησαν, 'they cut out the hind legs and hid them in the fat of the peritoneum, / doubly wrapped, and laid raw trimmings on them'. In the mentions of sacrifices embedded in the characters' utterances, the wrapping of μηρία with fat is metonymically signalled by the adjectives πίων 'fat' (7x in the Homeric epic), ἀγλαά "shiny" (Hes. Op.337), the noun δημός "fat" (2x) or the expression καλύψας πίονι δημῷ (1x).

In the Room of Aristophanes (Pax 1025) it is recommended that the femurs be cut out after the sacrifice, i.e. after the ritual slaughter of the animal in the skene, and brought to the orchestra: θύσας τὰ μηρί' ἐξελὼν δευρ' ἔκφερε. The word μηρία probably appears in a fragment of Eubulos' comedy Semele Eubulos (fr. 94 Kassel-Austin = fr. 95 Kock, corrupted text, crux philologorum), where Dionysus complains about the composition of the parts of the sacrificial animal intended for the gods: πρῶτον μὲν ὅταν ἐμοί τι θύωσίν τινες, / αἷμα, κύστιν, ἦπαρ, καρδίαν, / ὑμέν' ἐπιπόλαιον- οὐδ' ἐγὼ γὰρ ἐσθίω / γλυκεῖαν οὐδὲ μηρία. "First, when any offerings they give me, / It is only blood and bladder, heart, liver also, / And the thin outer membrane, but I eat not, / Neither gall nor bone from the hip taken after all. / (...) and the upper part of the hip (translated by Janina Niemirska-Pliszczyńska).

Ancient sources

Source	Type	Documents
Aesch. Ch. 129-30	Literary source	chernips
Androtion, FGrH III B 324 F 30	Literary source	aphetos
Ap. Rhod. 2.691	Literary source	m
Ar. Av. 890–1060	Literary source	1(
Ar. Lys. 293–305	Literary source	01
Ar. Pax 392	Literary source	11
Ar. Pax 948	Literary source	sp
Ar. Pax 956–61	Literary source	07
Ar. Plut. 594–597	Literary source	09
Ar. Th. 447–452	Literary source	01
Ath. 139a	Literary source	k(
Ath. 5.7	Literary source	at
Call. fr. 75.11	Literary source	d(

Greek and Latin terms

Term	Documents
Bomos	03_supplices
hiera	02_septem_contra_thebas
Jus gladii	bareia_cheir
relegere	religio
religare	religio
religio	religio
rhabdos	bareia_cheir
sphagia	02_septem_contra_thebas
splanchna	02_septem_contra_thebas
theoksenia	02_pax
thysia	02_pax 02_septem_cont
trapezoma	02_pax
μιαίφονος	bareia_cheir
μίασμα	bareia_cheir

Literary and mythological characters

Name	Type	Documents
Aeneas	Mythological character	religio
Agamemnon	Mythological character	bareia_cheir meria pelekys
Apollo	Deity	11_plutus bareia_cheir chrysokeros religio thyepoleo trittoia_bouarchos
Artemis Tauropolos	Deity	phasganon
Artemis	Deity	chrysokeros
Calchas	Mythological character	bareia_cheir
Clitemnestra	Mythological character	mythos pelekys
Demeter	Deity	07_lysistrata
Diktynna	Deity	athytos athytos
Electra	Mythological character	chernips
Hades	Deity	krites_en_hadou
Helen	Mythological character	phasganon
Herakles	Hero	meros

Fields and realms

Field and realm	Specific term	Documents
1.1: Representation. Practice (rite)	spada puntuta	bareia_cheir
1.1: Representation. Practice (rite)	θυμίαμα	bareia_cheir
1.1: Representation. Practice (rite)	μάχαιρα	bareia_cheir
1.1: Representation. Practice (rite)	ξίφος	bareia_cheir
1.1: Representation. Practice (rite)	φάσγανον	bareia_cheir
1.2: Representation. Belief (myth)	aor	bareia_cheir
1.2: Representation. Belief (myth)	rhabdos	bareia_cheir
1.2: Representation. Belief (myth)	ἄορ	bareia_cheir
1.2: Representation. Belief (myth)	θυμός	bareia_cheir
1.2: Representation. Belief (myth)	ξίφος	bareia_cheir
1.2: Representation. Belief (myth)	φάσγανον	bareia_cheir
2.3: Communication. Speech (rhetoric)	Jus gladii	bareia_cheir
2.3: Communication. Speech (rhetoric)	mano pesante	bareia_cheir
2.3: Communication. Speech (rhetoric)	βαρείας χεῖρας	bareia_cheir
2.3: Communication. Speech (rhetoric)	χεῖρα βαρεῖαν	bareia_cheir
3.1: Fruition. Systems	uccisa di spada	bareia_cheir
3.1: Fruition. Systems	ἑκαινόμην ξίφει	bareia_cheir
3.2: Fruition. Instruments	Jus gladii	bareia_cheir

FIELD 1: Communication

- REALM of the practice (rite)
- REALM of the belief (myth)
- REALM of the fiction (symbol)

FIELD 2: Representation

- REALM of the sign (semiotics)
- REALM of the meaning (semantics)
- REALM of the speech (rhetoric)

FIELD 3: Fruition

- REALM of the systems
- REALM of the instruments
- REALM of the structures

βαρεῖα χείρ

Original publication: LARES born digital document.

Authors: Giuseppina Paola Viscardi (2021-11-15: written contents); Irene Vagionakis (2021-11-15: encoded in XML)

Show/hide: links practice belief fiction sign sense speech systems instruments structures

Morfologia

Βαρεῖα ↗, agg., *f* (*βᾰρῠ́ς m*, *βᾰρύ n*). Dal proto-ellenico **gʷarus*, dal proto-indoeuropeo **gʷr̥h₁us*. Affine al sanscrito *guru-* (da cui il sost. *guru*, cfr. GUSMANI 1971, 98-105), latino *gravis* (da cui *gravitas*, cfr. WAGENVOORT 1941; vedi anche GONDA 1947, 124).

Χείρ ↗, sost., *f* (*genitivo* χειρός). Dal proto-ellenico **kʰḗhɜr*, dal proto-indoeuropeo **ǵʰésōr*. Affine all'antico armeno (grabar o krapar) *jeṅ*, persiano antico *d-s-t* /dasta/, albanese *dorë*, tocario A (tocario orientale) *tsar*, latino *hir*.

Credenziali

La prima attestazione del sintagma βαρεῖα χείρ si ha in *Ilias* I.219 ↗ (χεῖρα βαρεῖαν; attestato al plurale già in *Ilias* I.89 ↗: βαρείας χεῖρας). Siamo alla scena della lite iniziale tra Achille e Agamennone che scatenerà l'ira funesta dell'eroe di Ftia e il suo temporaneo ritiro dalla guerra contro Troia (vv. 84-100): l'indovino Calcante ha appena vaticinato che Apollo Lungisaettante getterà gran pena sui Danai finché Criseide – fatta prigioniera a Troia e andata, come bottino di guerra, al re degli Argivi Agamennone – non sarà liberata e restituita al padre Crise, sacerdote del dio; costretto perciò dal Pelide a restituire a suo padre Criseide, il tracotante Agamennone decide allora di prendersi Briseide, bottino di guerra di Achille, come atto di forza sul re dei Mirmidoni. Accecato dall'ira, Achille «fu incerto tra due: se sfilare la **spada puntuta** ↗ via dalla coscia (**φάσγανον** ↗ ↗ ↗ = **μάχαιρα** ↗ ↗ ↗) e uccidere l'Atride o se calmare l'ira e contenere il cuore»; ma interviene Atena a fermare l'eroe, prendendolo per la chioma, e a placarne l'animo, inducendolo a «trattenere la **mano pesante** ↗ sull'elsa d'argento» e a «rinfoderare la spada (**ξίφος** ↗ ↗ = **ἄορ** ↗ ↗)»:

Search

Search terms

Search also in the metadata

Greek keyboard | Reset search

Date -200 – 1400 A.D.

Facets

- Entry Type
- Field
- Realm
- Places
- Literary and Mythological Characters

- Book chapter: Comedy. Acharnenses (Ἀχαρνῆς, Acharnaeans)
- Book chapter: Comedy. Aves (Ὄρνιθες, Birds)
- Book chapter: Comedy. Bibliography
- Book chapter: Comedy. Ecclesiazusae (Ἐκκλησιάζουσαι, Assemblywomen)
- Book chapter: Comedy. Equites (Ἱππεῖς, Knights)
- Book chapter: Comedy. Fragments of works by Aristophanes and other authors of the old Attic comedy
- Book chapter: Comedy. Introduction
- Book chapter: Comedy. Lysistrata (Λυσιστράτη, Lysistrata)
- Book chapter: Comedy. Nubes (Νεφέλαι, Clouds)
- Book chapter: Comedy. Pax (Εἰρήνη, Peace)
- Book chapter: Comedy. Plutus (Πλοῦτος, Plutus)
- Book chapter: Comedy. Ranae (Βάτραχοι, Frogs)
- Book chapter: Comedy. Thesmophoriazousae (Θεσμοφοριάζουσαι, Thesmophoriazousae)
- Book chapter: Comedy. Vespae (Σφῆκες, The Wasps)
- Book chapter: Tragedy. Agamemnon (Ἀγαμέμνων, Agamemnon)
- Book chapter: Tragedy. Aias (Αἴας, Ajax)
- Book chapter: Tragedy. Alcestis (Ἄλκηστις, Alcestis)
- Book chapter: Tragedy. Andromache (Ἀνδρομάχη, Andromache)
- Book chapter: Tragedy. Antigone (Ἀντιγόνη, Antigone)

Slightly modified from Digital editions and semantic markup: XML, TEI, EpiDoc (Irene Vagionakis - Gabriel Bodard)

3. What does semantic markup mean and its advantages

Semantic Markup: based on **XML** (eXtensible Markup Language), it operates semantic distinctions by adding information about the text, resulting in several advantages:

- It facilitates indexing (creation of indices of mentioned elements)
- It makes searches by filters more accurate (browse also by mentioned elements)
- It facilitates data processing and analysis (frequency, relations...)
- It enables multiple outputs from a single input (HTML, PDF, ePub...)
- It gives more control over documents and facilitates their updating
- It facilitates data reuse (own or others', also in the future)
- It facilitates data aggregation and exchange and links between online resources (LOD)
- It provides long-term sustainability: compatibility, low risk of obsolescence, LOCKSS ("lots of copies keep stuff safe")

Slightly modified from Digital editions and semantic markup: XML, TEI, EpiDoc (Irene Vagionakis - Gabriel Bodard)

RENDITIONAL MARKUP VS SEMANTIC MARKUP

Renditional markup (e.g. HTML: HyperText Markup Language)
Structural and graphic features of a text

Divina Commedia ⇒ *Divina Commedia*
ad maiora ⇒ *ad maiora*

Semantic markup (XML: eXtensible Markup Language)
Structural and semantic features of a text

<title>Divina Commedia</title> ⇒ *Divina Commedia*
<foreign>ad maiora</foreign> ⇒ *ad maiora*

Slightly modified from Digital editions and semantic markup: XML, TEI, EpiDoc (Irene Vagionakis - Gabriel Bodard)

SEMANTIC MARKUP IN XML: AN EXAMPLE

authors year

Bodard, Gabriel, and Yordanova, Polina. 2020. "Publication, Testing and Visualization With EFES: A Tool for All Stages of the EpiDoc XML Editing Process". *Studia Universitatis Babeș-Bolyai Digitalia* 65: 17-35.

paper title

pages number

journal title

issue number

SEMANTIC MARKUP IN XML: AN EXAMPLE

Slightly modified from Digital editions and semantic markup: XML, TEI, EpiDoc (Irene Vagionakis - Gabriel Bodard)

```
<bibl>
    <author>Bodard, Gabriel</author>,
    <author>Yordanova, Polina</author>.
    <date>2020</date>.
    <title level="a">Publication, Testing and Visualization
    with EFES: A Tool for All Stages of the EpiDoc XML
    Editing Process</title>.
    <title level="j">Studia Universitatis Babeș-Bolyai
    Digitalia</title>
    <biblScope unit="volume">65</biblScope>:
    <biblScope unit="page">17–35</biblScope>.
</bibl>
```

Slightly modified from Digital editions and semantic markup: XML, TEI, EpiDoc (Irene Vagionakis - Gabriel Bodard)

4. The basic rules of XML

1. Use of **tags**, delimited by angle brackets

<placeName>Bologna</placeName>

2. Base XML element

(opening tag + content + closing tag)

<element attribute="value">content</element>

Example: <coord type="latitude">7.175</coord>

Slightly modified from Digital editions and semantic markup: XML, TEI, EpiDoc (Irene Vagionakis - Gabriel Bodard)

3. Empty XML element, for punctual features

(unique opening and closing tag, with no content)

<element attribute="value"/>

Example: <lb n="1"/>

4. Avoid < > & within the text since they are special characters dedicated to indicate tags and entities: replace them with < > &

<	becomes	<
>	becomes	>
&	becomes	&

Slightly modified from Digital editions and semantic markup: XML, TEI, EpiDoc (Irene Vagionakis - Gabriel Bodard)

5. There is no difference between having one space or many spaces

<w>town</w> <w>of</w> <placeName>Bologna</placeName>

<w>town</w> <w>of</w> <placeName>Bologna</placeName>

<w>town</w>
<w>of</w>
<placeName>Bologna</placeName>

6. There is a difference between having a space or not having a space:

- do not omit necessary spaces
- do not add extra spaces inside the elements

<w>town</w><w>of</w><placeName>Bologna</placeName> NO

<w>town </w><w>of </w><placeName> Bologna</placeName> NO

<w>town</w> <w>of</w> <placeName>Bologna</placeName> YES

Slightly modified from Digital editions and semantic markup: XML, TEI, EpiDoc (Irene Vagionakis - Gabriel Bodard)

7. Each element can have multiple attributes, the order of which is irrelevant

<placeName type="town" sameAs="Bononia">Bologna</placeName>

=

<placeName sameAs="Bononia" type="town">Bologna</placeName>

8. All opening tags must be followed by a closing tag (if not empty)

<w>town <w>of</w> <placeName>Bologna</placeName> NO

<w>town</w> <w>of</w> <placeName>Bologna</placeName> YES

9. Each element must be opened and closed within its ancestor element, in a hierarchical nesting

<w><placeName>town</w> <w>of</w> Bologna</placeName> NO

<placeName><w>town</w> <w>of</w> Bologna</placeName> YES

Slightly modified from Digital editions and semantic markup: XML, TEI, EpiDoc (Irene Vagionakis - Gabriel Bodard)

10. The entire document must be contained in a root element

```
<w>town</w> <w>of</w> <placeName>Bologna</placeName>
<w>town</w> <w>of</w> <placeName>Florence</placeName>
```

NO

```
<document>
<w>town</w> <w>of</w> <placeName>Bologna</placeName>
<w>town</w> <w>of</w> <placeName>Florence</placeName>
</document>
```

YES

11. Attribute values can only contain plain text, not markup

```
<placeName sameAs="<foreign>Bononia</foreign>">Bologna</placeName>
```

NO

```
<placeName sameAs="Bononia">Bologna</placeName>
```

YES

XML SYNTAX: WELL-FORMEDNESS

If the syntax rules are followed, the document is said to be **well-formed**

Examples of syntax errors:

```
<book>
  <page>
    <paragraph>.....</paragraph>
    <paragraph>...
  </page>
  <page>
    ...</paragraph>
    <paragraph>.....</paragraph>
  </page>
</book>
```

```
<w lemma="<i>lex</i>">legis</w>
```

```
<name>Valent<in>iani</name>
```

```
<bibl><author>Bodard & Yordanova</author>...</bibl>
```

Slightly modified from Digital editions and semantic markup: XML, TEI, EpiDoc (Irene Vagionakis - Gabriel Bodard)

XML allows the creation of elements and attributes at will for example: **<chapter>**, **<chap>**, **<capitulum>**, **<cap>**, but needs a shared standard guaranteed by the XML schema

The XML schema defines a set of available elements, attributes and values and determines which elements, attributes and values can (or should) be used in a given context

Example: for paragraphs we use **<p>** and not **<paragraph>**

Example: **<p>** can be included in ** ** (text division), but not vice versa

If the schema rules are followed, the file is both **well-formed** and **valid**

5. EpiDoc for LARES

EpiDoc is a TEI (Text Encoding Initiative: https://tei-c.org/) sub-standard for epigraphy, papyrology, ancient documents in a broad sense and one of the most structured TEI sub-standards:

Guidelines: https://epidoc.stoa.org/gl/latest/
Markup List: https://lsv.uky.edu/archives/markup.html
Homepage: http://epidoc.sf.net/
EpiDoc on GitHub: https://github.com/EpiDoc
EpiDoc on Digital Classicist: https://wiki.digitalclassicist.org/EpiDoc

6. Set-up of the work environment (in view of May)

XML Editor (Oxygen):
https://www.oxygenxml.com/xml_editor/download_oxygenxml_editor.html
XML Visualization/publication platform (EFES):
https://github.com/EpiDoc/EFES

7. How LARES works (from a back-end perspective)

```xml
<?xml version="1.0" encoding="UTF-8"?>
<?xml-model href="http://www.stoa.org/epidoc/schema/latest/tei-epidoc.rng" schematypens="http://relaxng.org/ns/structure/1.0"?>
<TEI xmlns="http://www.tei-c.org/ns/1.0">
  <teiHeader>
    <fileDesc>
      <titleStmt>
        <title xml:lang="it">TITLE</title>
        <title xml:lang="en">TITLE</title>
        <title xml:lang="pl">TITLE</title>
      </titleStmt>
      <publicationStmt>
        <publisher><ref target="https://site.unibo.it/lares/">LARES Project</ref></publisher>
        <date when="2021"/>
        <idno type="filename">lexicon_XXX</idno>
        <availability>
          <licence target="http://creativecommons.org/licenses/by-sa/4.0/">Creative Commons Attribution-ShareAlike 4.0 International</licence>
        </availability>
      </publicationStmt>
      <sourceDesc>
        <p>Born digital document.</p>
      </sourceDesc>
    </fileDesc>
    <revisionDesc>
      <listChange>
        <change when="2022-02-10" who="NAME">encoded in XML</change>
        <change when="2021-10-12" who="NAME">written contents</change>
      </listChange>
    </revisionDesc>
  </teiHeader>
  <text>
    <body>
      <div type="edition" xml:lang="it">
        <div type="textpart" n="...">
          <head>...</head>
          <p>...</p>
        </div>
      </div>

      <div type="edition" xml:lang="en">
        <div type="textpart" n="...">
      </div>

      <div type="edition" xml:lang="pl">
        <div type="textpart" n="...">
      </div>

      <div type="bibliography">
        <p>...</p>
      </div>
    </body>
  </text>
</TEI>
```

	Used to encode information about text	
	Used to encode information about sections of the text. Possible values (not constrained) in LARES: "morfologia", "credenziali", "bibliography", "osservazioni preliminari"…	

<quote>	Used to encode quotation from ancient sources	<quote><title>Ilias</title> I.188-192
<lb/>	Empty element used to encode the beginning of a line of text (mainly used for ancient sources)	<lb/>Πηλεΐωνι δ' ἄχος γένετ', ἐν δέ οἱ ἦτορ
	Used to encode bibliographic information	

<w lemma="">	Used to encode words in Ancient Greek and Latin and their basic form (with automatic links to Logeion)	<w lemma="βαρύς">
<ref type="">	Used to encode ancient sources. Possible values in LARES: lit/ins/pap	
<rs key="">	Used to encode terms based on fields/realms. Possible values in LARES: "practice", "belief", "fiction", "sign", "sense", "speech", "systems", "instruments", "structures"	<rs key="speech">
<persName type="" key="">	Used to encode literary and mythological characters. Possible values of @type: "divine"/"hero"/"myth"/"literary". The values of @key are the forms in the indices.	<persName type="myth" key="Calchas">
<persName key="">	Used to encode historical figures	<persName key="Augustine">
<placeName key="">	Used to encode places	<placeName key="Troy">
<ref corresp="">	Used to point to external resources, such as TLG, Perseus, LARES entries and LARES bibliography. The values are the links to these resources	<ref corresp="https://www.perseus.tufts.edu/hopper..."> <ref corresp="com_09_ranae.html#Ranae_847–848">

Thanks!

Marta Fogagnolo (marta.fogagnolo2@unibo.it)

ENCODE
BRIDGING THE «GAP» IN ANCIENT WRITING CULTURES ENHANCE COMPETENCES IN THE DIGITAL ERA

https://site.unibo.it/encode/en