



# ***Annotating in a Digital World***

*Introduction to Digital Classics (course 74086)*

*Dr. Matteo Romanello*

## Scholarly primitives & HC/DH

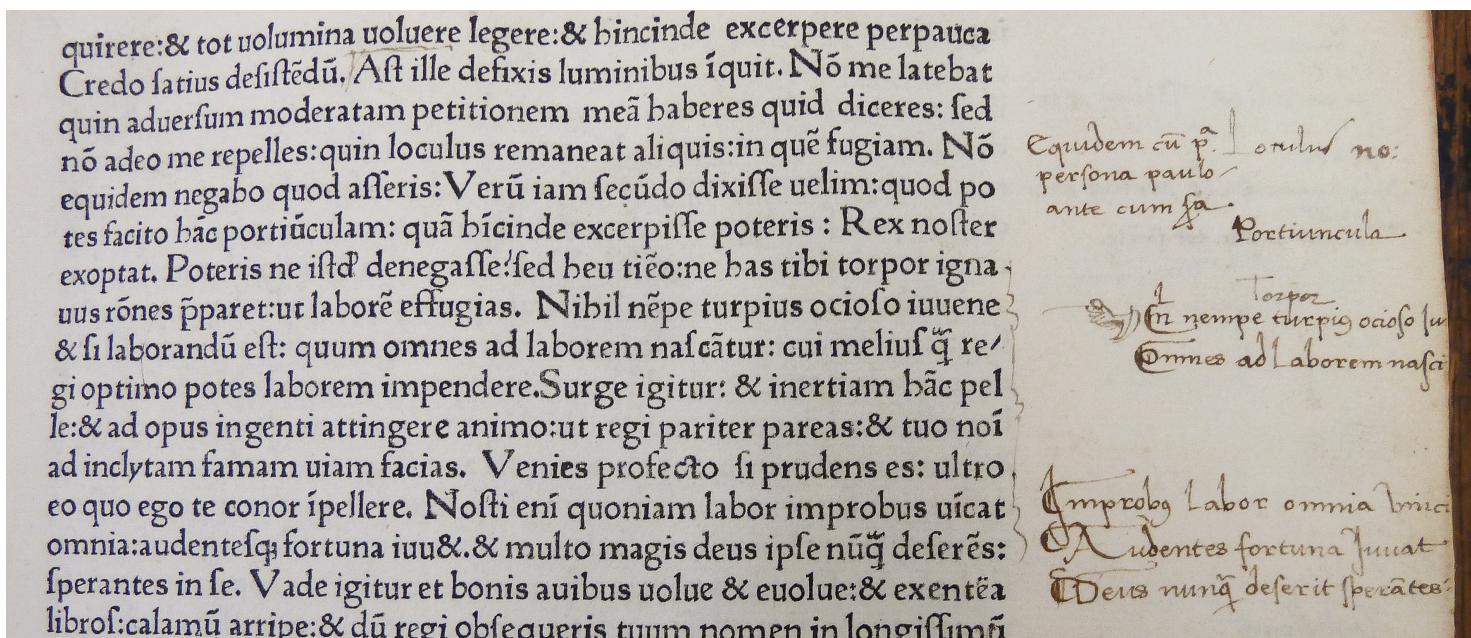
J. Unsworth (2010) "Scholarly Primitives: what methods do humanities researchers have in common, and how might our tools reflect this?"

- Discovering
- **Annotating**
- Comparing
- Referring
- Sampling
- Illustrating
- Representing

"My immediate intention in presenting these is to suggest a list of functions (recursive functions) that could be the basis for a manageable but also useful tool-building enterprise in humanities computing. [...] With respect to the list as a whole, my argument is that these activities are basic to scholarship across eras and across media, yet my particular interest is in scholarship that is based on digital information, and in particular, *networked* digital information."



## Annotating as a scholarly primitive



[“Early ms. annotations with manicule” by POP](#) is licensed under [CC BY 2.0](#)

# Annotating as a scholarly primitive

"Scholarly Primitives: what methods do humanities researchers have in common, and how might our tools reflect them?"  
 part of a symposium on "Humanities Computing: formal methods, experimental practice" sponsored by King's College, London, May 13, 2011.

By John Unsworth

According to Aristotle, scientific knowledge (episteme) must be expressed in statements that follow deductively from a finite list of self-evident statements (axioms) and only employ primitives. [Stanford Encyclopedia of Philosophy]

The notion of "primitives" as the "finite list of self-understood terms" from which, without recourse to further definitions or explanations, axiomatic logic may proceed, has (as you mathematics, especially in the 20<sup>th</sup> century, but it's not my purpose here to sort that out—I'm using the term "primitives" in a self-consciously analogical way, to refer to some basic time, and independent of theoretical orientation. These "self-understood" functions form the basis for higher-level scholarly projects, arguments, statements, interpretations—in terms of which we can think about the nature of scholarship.

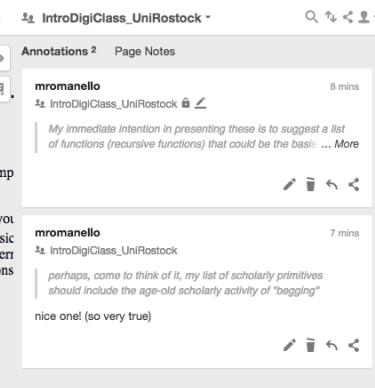
My list of scholarly primitives is not meant to be exhaustive, I won't give each of them equal attention today, and I would welcome suggested additions and debate over alterations

**Discovering**  
**Annotating**  
**Comparing**  
**Referring**  
**Sampling**  
**Illustrating**  
**Representing**

My immediate intention in presenting these is to suggest a list of functions (recursive functions) that could be the basis for a manageable but also useful tool-building enterprise in order—in fact, the two that seem to me to be the true primitives here are "referring" and "representing" since each of these is in some way involved in all the others. More on those argument is that these activities are basic to scholarship across eras and across media, yet my particular interest is in scholarship that is based on digital information, and in particular on the web.

My grappling with the term and the idea of "scholarly primitives" began about a year and a half ago, here at King's College, as part of an ultimately unsuccessful effort to fund something to think of it, my list of scholarly primitives should include the age-old scholarly activity of "begging". That proposal didn't actually use the term "primitives," but it did imagine some tools which, given a common architecture, could be combined to accomplish higher-order (axiomatic) functions.

The next iteration of this proposal, also unsuccessful, was addressed to the National Endowment for the Humanities and actually used the term and described the idea. In a section



<https://hypothes.is/groups/o9YMZZzj/introdigiclass-unirostock?q=>

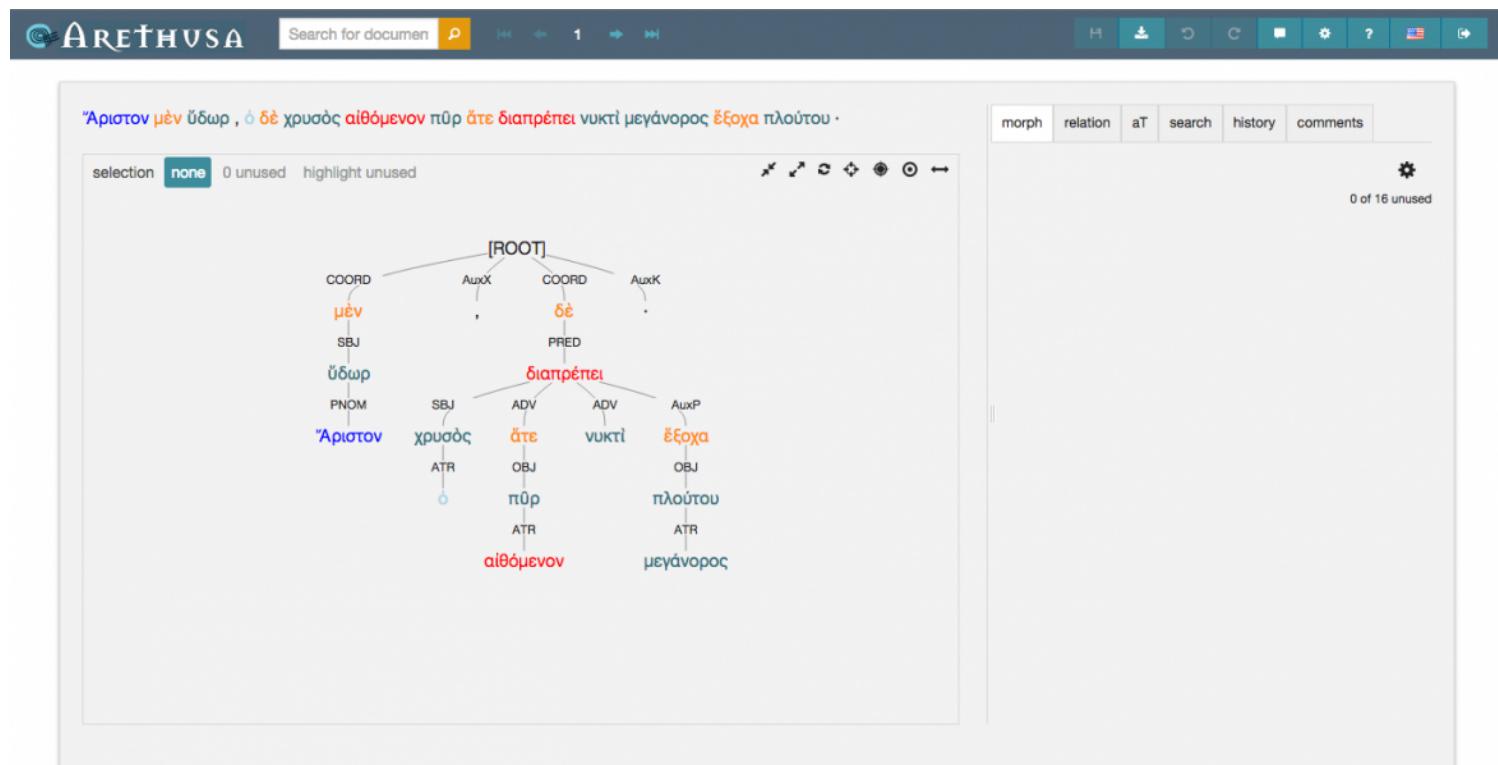


## Annotations

### Types:

- text => linguistic annotations
  - syntactic annotations (treebanks)
  - named entities
  - etc.
- annotations on media other than texts:
  - images (maps, manuscripts, etc.)
  - movies
  - audio (e.g. interviews)
  - web pages
  - etc.
- human readable / machine readable

## Syntactic annotations in Perseids



<http://sites.tufts.edu/perseids/>



## Movie annotation

## Annotation of named entities in text

[/epische\\_bauformen/ann/Sample\\_Bauformen.txt-doc-1](#)

future – but the individual is not so much part of a “timeless” state or affairs, but only a short-lived member of a long chain. This difference is borne out by the fact that genealogy and aetiology can, but need not occur together. While the Homeric heroes, for example, are fundamentally defined by their genealogies, actual aetia, as defined above, are fairly rare in the Iliad and the Odyssey.

9 Relevant passages

10 Homer, Iliad and Odyssey

11 In Homer, as Bing notes, “there is [...] little attempt to link the Homeric world to the poet’s present. The Age of Heroes stays remote : that is part of its affect.”<sup>8</sup> Rather than linking the past and his own present through aetiologies, the Homeric narrator by contrast, distinguishes the time of his poetic heroes from the time of “men as they are now” (*οῖοι νῦν βροτοί εἰσαν*, Hom. Il. 5.304 ; 12.383 ; 20.287).<sup>9</sup> What is almost paradigmatic in this regard is the Iliadic passage on the Achaean wall (Hom. Il. 12.3-35) : the wall around which the Trojans and Achaeans are fighting has been built against the will of the gods, and so “it was not firm for long” (*οὐ τι πολὺν χρόνον ἐμπεδον ἤσεν*, Hom. Il. 12.9).

12.9). After the Greeks have departed, Poseidon, Apollo, and Zeus destroy the wall by turning the rivers of the area against it.<sup>10</sup> Rather than continuity, there is a sharp break between what Poseidon and Apollo “were to do later” (???) and the time of the narrative (*τότε δέ*, Hom. Il. 12.34-5).

12 What is essential for the way this ‘negated action’ is expressed is the future tense (cf.). The same is true for three equally hypothetical aetiologies contained in three speeches of characters of the Iliad and Odyssey, which refer to monuments that will be visible to later generations of men. Such passages could potentially be the beginning, i.e. the first idea of a monument still visible among much later ages. In Book 7 of Iliad, when Hector exhorts the Achaeans to enter into a duel with him, he imagines how the opponent whom he might kill will have a burial mound that will be seen by the “men who are yet to be” (*οὐλύγονον αὐθεύστων, insert line*), and which will proclaim his fame (Hom. Il. 7.84-91). Yet when the duel between Hector and Aias comes to a halt at night (Hom. Il. 7.273-305), it becomes clear that what could have been an action of an enduring burial mound must remain a mere hypothesis, yet one that at the same time fulfills a powerful rhetorical function in Hector’s speech. By contrast, the two references to burial mounds to will be present among “men born hereafter” (insert Greek or delete “ ” Hom. Il. 24.84) in the Odyssey, that of Elpenor (Hom. Od. 11.72-80) and Achilles (Hom. Od. 24.71-84) could, at least potentially, be present for the epic audience as well, although the text leaves this question open.<sup>11</sup>

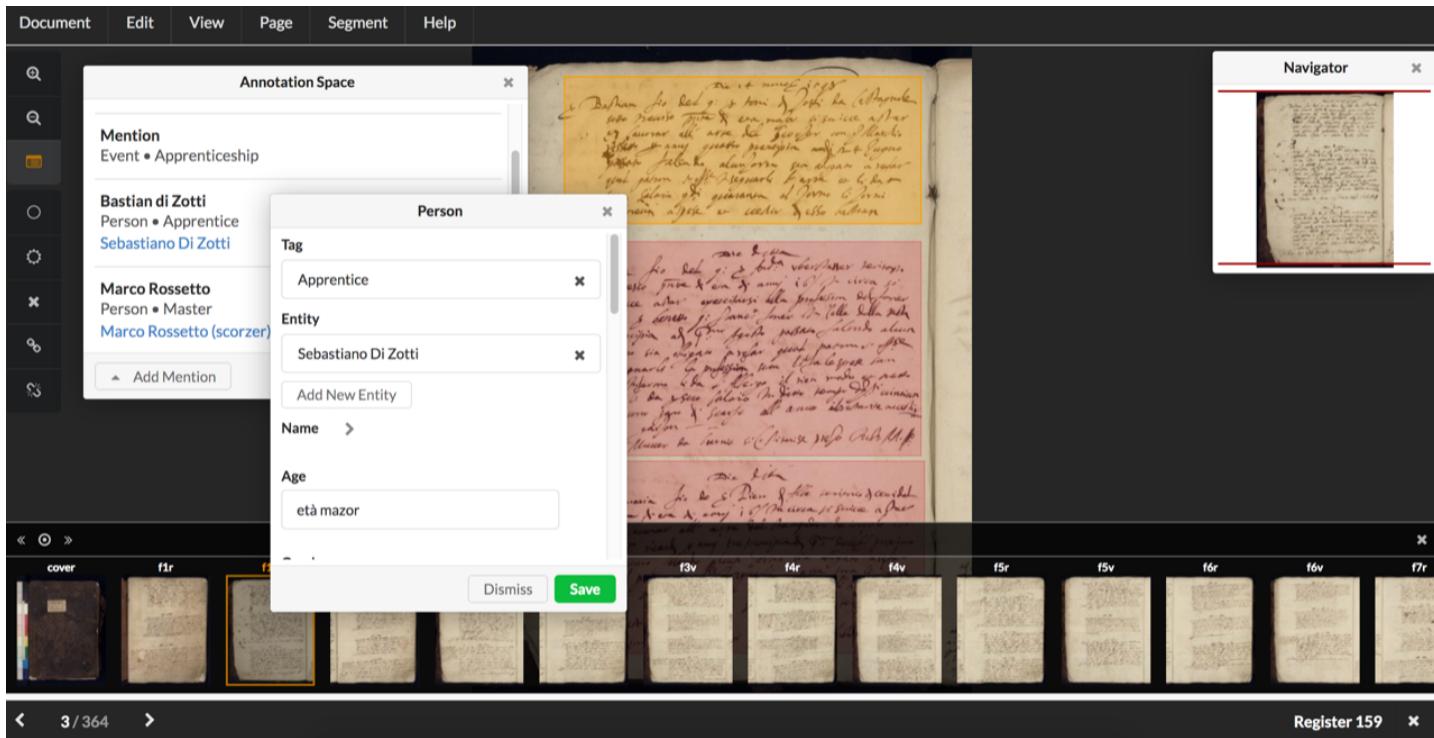
13 Overall, then, the connection of the world of the epic heroes with the present of Homer’s audience, as implied in these references to future monuments, is tenuous at best. Within the plot of both the Iliad and the Odyssey, however, aetiological narratives do fulfill an important function at central points of the epic action. In the Iliad, Agamemnon gives a fairly

[http://nlp.dainst.org/brat/#/epische\\_bauformen/ann/Sample\\_Bauformen.txt-doc-1](http://nlp.dainst.org/brat/#/epische_bauformen/ann/Sample_Bauformen.txt-doc-1)



## Annotating in the DH Canvas

DH Canvas: image annotation/transcription tool developed at the EPFL for the Venice Time machine project





## Annotating in the DH Canvas

Garzoni	Documents	Search	Entity Types	Cache	Help		English ▾	maud_ehrmann ▾
---------	-----------	--------	--------------	-------	------	--	-----------	----------------

### Register 159

Page 1 	Page 2 	Page 3 	Page 4 	Page 5 
Page 6 	Page 7 	Page 8 	Page 9 	Page 10 

<https://garzoni.dhlabdemo.org/iiif/pres/402d6768-3cf8-416a-a5d0-f06722db7057/manifest>



## DH Canvas: under the hood IIIF

```
  {
    "@id": "https://garzoni.dhlabdemo.org/iiif/pres/annotation/034f4e20-03b6-43e4-88a1-3be532b878b2",
    "@type": "oa:Annotation",
    "motivation": "oa:linking",
    "resource": {
      "@id": "urn:uuid:294792e4-1f58-4204-afe3-72aa7c909a4b",
      "@type": "grz:PersonMention",
      "properties": {
        "age": "15",
        "name": {
          "forename": "Bernardo",
          "quondam1": false,
          "quondam2": false,
          "patronymic1": "Benetto"
        },
        "gender": "grz:Male",
        "details": "Bernardo fiol de ser Benetto de Vanin?",
        "geoOrigin": {
          "transcript": "Val [...]"
        },
        "professions": [
          {
            "transcript": "fruttarol"
          }
        ]
      }
    },
    "created": "2017-02-08T14:21:22Z",
    "creator": {
      "id": "https://garzoni.dhlabdemo.org/user/view/6",
      "type": "Person",
      "name": "Andrea Erboso"
    },
    "on": "urn:uuid:0e9a97ae-b0e8-4033-96d5-497538323e72"
  },
  {
    "@id": "https://garzoni.dhlabdemo.org/iiif/pres/annotation/10b196c7-4590-4322-b0e4-58d713555f99",
    "@type": "oa:Annotation",
    "motivation": "oa:linking",
    "resource": {
      "@id": "urn:uuid:c087ec2a-769b-41b2-a252-5d5bb1da5fad",
      "@type": "grz:HostingConditionMention",
      "properties": {
        "paidBy": "grz:MasterPayer",
        "paidInGoods": false
      }
    }
  }
}
```



## DH Canvas: under the hood IIIF

Change Layout   Full Screen

**x Close**

Filter objects:  Add new object from URL: <https://garzoni.dhlabdemo.org/iiif/pr>

 Register 151 <small>(Added from URL)</small>	356 items		...
 The clans of the Scottish Highlands <small>Stanford University</small>	360 items		...
 New Haven, Beinecke Rare Book and Manuscript Library, Yale University, Osborn fa1 <small>Yale Beinecke</small>	401 items		...
 Catholic Church. Heures de Nôtre Dame (use of Troyes and Sens) : manuscript, [ca. 1470]. MS Richardson 7. Houghton Library, Harvard University, Cambridge, Mass. <small>Harvard University</small>	480 items		
 City of Dublin : sheet 21 <small>University College Dublin</small>	1 item		

<https://garzoni.dhlabdemo.org/iiif/pres/402d6768-3cf8-416a-a5d0-f06722db7057/manifest>

## Small digression: the IIIF protocol

### International Image Interoperability Framework

- a set of APIs and protocols to publish images on the Web in an interoperable way
  - *interoperable*: allows for plug 'n' play behavior of client applications
- architecture components:
  - **image server(s)**
    - expose images and their metadata in a IIIF-compliant way
  - **image viewers:**
  - **IIIF APIs**
    - describe how server and viewer can dialogue (interact)



## Hypothes.is

**Mission:** To enable a conversation over the world's knowledge



[https://www.youtube.com/watch?time\\_continue=1&v=QCkm0IL-6lc](https://www.youtube.com/watch?time_continue=1&v=QCkm0IL-6lc)



## Setting up Hypothes.is

- check out <https://web.hypothes.is/start>
- create an account at <https://hypothes.is/signup>
- install the Hypothesis browser plugin (Chrome)
- join the group for this course <https://hypothes.is/groups/o9YMZZzj/introdigiclass-unirostock>
- go to any web page and create your first annotation
  - **NB:** make sure you create it within the group



# Hypothes.is

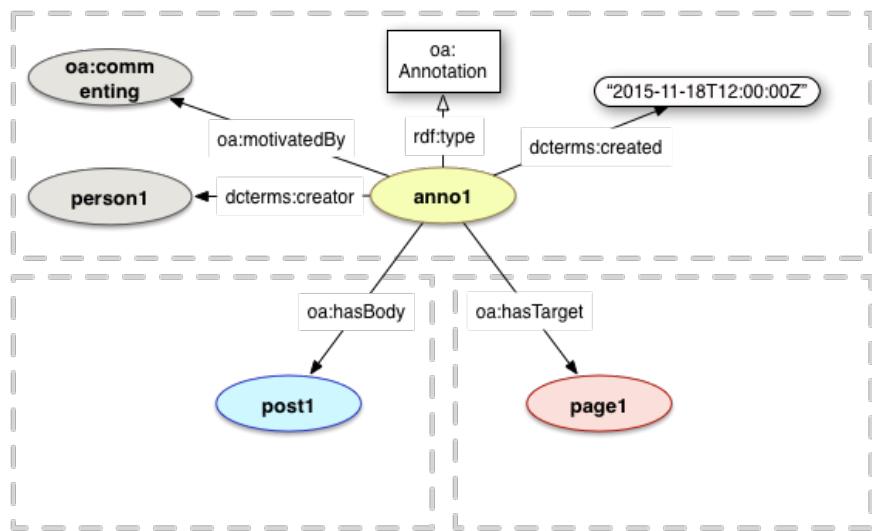
## What for?

- bookmarking
- highlighting
- note taking

The screenshot shows the Hypothes.is group page for 'IntroDigiClass\_UniRostock'. At the top, there's a search bar with 'group: IntroDigiClass\_UniRostock' and a 'Search...' placeholder. To the right are user profile links for 'mrromanello', 'Groups', and a gear icon. Below the search bar, the group name 'IntroDigiClass\_UniRostock' is displayed in bold, with a description: 'A group for the course "Introduction to Digital Classics" (course 74086), taught at the University of Rostock (a.a. 2017/2018).'. It shows '2 Matching Annotations' from the last 7 days. One annotation is visible, pointing to a quote from Aristotle. On the right side, there are sections for 'Shared annotations: 1' (with a link to 'Edit group' or 'Leave this group'), 'Top tags 0', and 'Members 1' (listing 'mrromanello 2'). At the bottom, there's an 'Invite new members' section with a sharing link: <https://hypothes.is/groups/o9YMZZj/intro>. The footer includes links for 'Hypothes.is', 'About', 'Blog', 'Bioscience', 'Education', 'Jobs', 'Help', 'Contact', 'Terms of Service', and 'Privacy Policy'.



## Web Annotation data model



```
<http://example.org/anno1> a oa:Annotation ;
  oa:hasBody <http://example.org/post1> ;
  oa:hasTarget <http://example.com/page1> ;
  oa:motivatedBy oa:commenting ;
  dcterms:creator <http://example.org/person1> ;
  dcterms:created "2015-11-18T12:00:00Z" .
```

<https://www.w3.org/TR/annotation-model/>

## Semantic Web: main principles

- **Vision:** Web of documents => Web of data
- shared syntax to describe the content of what's published
  - this syntax is the **Resource Description Framework (RDF)**
- URLs / IRIs
  - = **identifiers** for the *things* we talk about (thing: company, place, inscription, etc.)
  - machine-actionable descriptions published on the Web
  - SW will (eventually) enable e.g.:
    - development of *agents* that carry out certain tasks
    - *aggregation* of data from multiple sources



## One URI, many (serialization) formats

<https://pleiades.stoa.org/places/570028#this> identifies the region Achaea/Achaia

```
@prefix cito: <http://purl.org/spar/cito/> .  
@prefix dcterms: <http://purl.org/dc/terms/> .  
@prefix foaf: <http://xmlns.com/foaf/0.1/> .  
@prefix owl: <http://www.w3.org/2002/07/owl#> .  
@prefix pleiades: <https://pleiades.stoa.org/places/vocab#> .  
@prefix prov: <http://www.w3.org/TR/prov-o/#> .  
@prefix rdfs: <http://www.w3.org/2000/01/rdf-schema#> .  
@prefix skos: <http://www.w3.org/2004/02/skos/core#> .  
@prefix spatial: <http://geovocab.org/spatial#> .  
  
<https://pleiades.stoa.org/places/570028#this> a <http://geovocab.org/spatial#Feature>;  
rdfs:label "Achaea/Achaia (region)";  
spatial:C <https://pleiades.stoa.org/places/570040#this>,  
          <https://pleiades.stoa.org/places/570415#this>,  
          <https://pleiades.stoa.org/places/570576#this>,  
          <https://pleiades.stoa.org/places/570577#this>,  
          <https://pleiades.stoa.org/places/570700#this>;  
rdfs:comment "An ancient Greek region on the northern coast of the Peloponnese. ";  
foaf:primaryTopicOf <https://pleiades.stoa.org/places/570028> .
```



## One URI, many (serialization) formats

```
curl --header "Accept: application/json" https://pleiades.stoa.org/places/570028
```

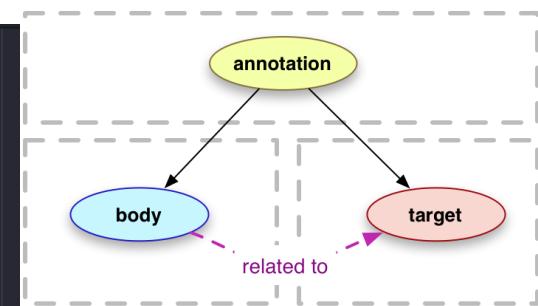
```
curl --header "Accept: text/turtle" https://pleiades.stoa.org/places/570028
```

```
curl --header "Accept: application/rdf+xml" https://pleiades.stoa.org/places/570028
```



## Annotation Example from Pelagios

```
@prefix xsd: <http://www.w3.org/2001/XMLSchema> .  
@prefix pelagios: <http://pelagios.github.io/vocab/terms#> .  
@prefix relations: <http://pelagios.github.io/vocab/relations#> .  
@prefix dcterms: <http://purl.org/dc/terms/> .  
@prefix foaf: <http://xmlns.com/foaf/0.1/> .  
@prefix pleiades: <http://pleiades.stoa.org/vocabularies/time-periods> .  
@prefix oa: <http://www.w3.org/ns/oa#> .  
@prefix cnt: <http://www.w3.org/2011/content#> .  
@prefix svcs: <http://rdfs.org/sioc/services#> .  
  
<http://edh-www.adw.uni-heidelberg.de/edh.inscriptions.n3#HD057360> a pelagios:AnnotatedThing ;  
dcterms:title "Inscription of Andros (modern Andros) HD057360" ;  
dcterms:identifier <http://edh-www.adw.uni-heidelberg.de/edh/inschrift/HD057360> ;  
foaf:homepage <http://edh-www.adw.uni-heidelberg.de/edh/inschrift/HD057360> ;  
dcterms:temporal "-99/-70" ;  
dcterms:language "la" .  
  
<http://edh-www.adw.uni-heidelberg.de/edh.inscriptions.n3#HD057360/annotations/1> a oa:Annotation ;  
oa:hasTarget <http://edh-www.adw.uni-heidelberg.de/edh.inscriptions.n3#HD057360> ;  
oa:hasBody <http://pleiades.stoa.org/places/79294> ;  
oa:hasBody [ cnt:chars "POINT (37.836719368 24.936419904)"; dcterms:format "application/wkt" ] ;  
pelagios:relation relations:foundAt ;  
oa:annotatedBy <http://edh-www.adw.uni-heidelberg.de/edh/bearbeiter/grieshaber> ;  
oa:annotatedAt "2017-11-01T17:45:00Z"^^xsd:date .
```



<http://edh-www.adw.uni-heidelberg.de/download/edh.inscriptions.n3>



# Linked Open data

## Principles [\[edit\]](#)



Tim Berners-Lee outlined four principles of linked data in his "Linked Data" note of 2006, [\[2\]](#) paraphrased along the following lines:

1. Use [URLs](#) to name (identify) things.
2. Use [HTTP](#) URLs so that these things can be looked up (interpreted, "dereferenced").
3. Provide useful information about what a name identifies when it's looked up, using open standards such as [RDF](#), [SPARQL](#), etc.
4. Refer to other things using their HTTP URI-based names when publishing data on the Web.

Tim Berners-Lee gave a presentation on linked data at the [TED 2009 conference](#). [\[3\]](#) In it, he restated the linked data principles as three "extremely simple" rules:

1. All kinds of conceptual things, they have names now that start with [HTTP](#).
2. If I take one of these [HTTP](#) names and I look it up...I will get back some data in a standard format which is kind of useful data that somebody might like to know about that thing, about that event.
3. When I get back that information it's not just got somebody's height and weight and when they were born, it's got relationships. And when it has relationships, whenever it expresses a relationship then the other thing that it's related to is given one of those names that starts with [HTTP](#).



## LOD Cloud

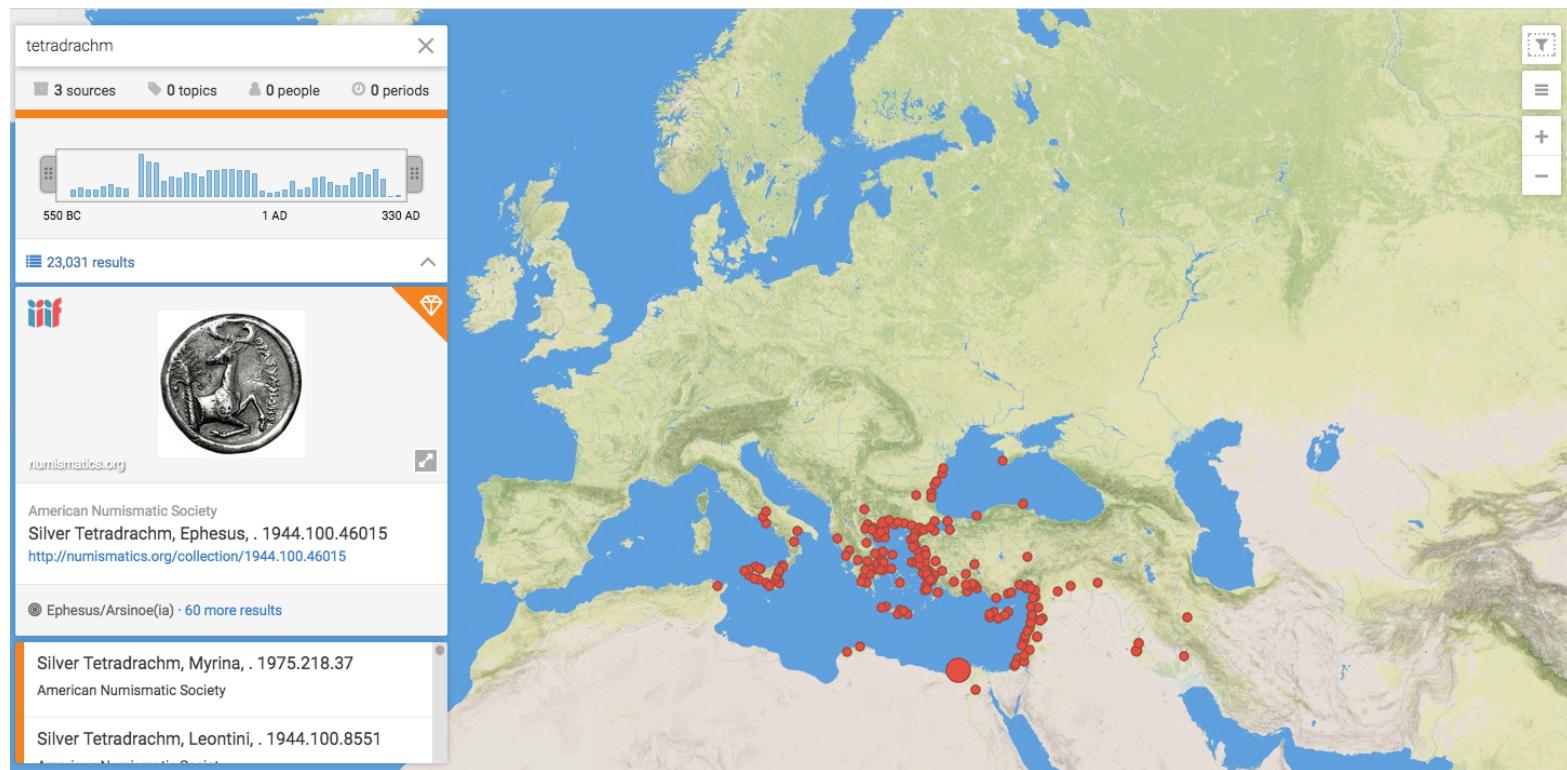


## Graph of Ancient World Data (GAWD)

(image?)



## Peripleo: <http://peripleo.no5.at/>



(try searching for *tetradrachm*)

## Recogito: [recogito.pelagios.org](http://recogito.pelagios.org)

“Linked Data annotation without the pointy brackets”

Matteo Romanello  
@56k

[Sample\\_Bauformen.txt](#)

Aetiology and Genealogy in Ancient Epic

439 Annotations · No Other Contributors

ANNOTATION MODE: NORMAL QUICK COLOR: BY ENTITY TYPE BY VERIFICATION STATUS

Aetiology and Genealogy in Ancient Epic

Definition

a) Aetiology

Aetiology, as defined by Marco Fantuzzi, “is the term given to an explanation, generally referring to a mythical past (aetiological myth), of the *oītiov* (aition), i.e. of the origin, of some phenomenon affecting the present-day situation of the author and his public, whether it be an object, a city, a custom, or, as is frequently the case, a religious ritual.”<sup>1</sup> As this definition shows, aetiology is a form of explanation designed to explain, or by the explanatory story they tell – but by their form: that is, by the way they relate the past to the speaker’s present is established. In both Greek and Latin a fairly standard repertoire of such phrases can be found in narrative: phrases such as *enthen*, *hothen*, *ek keinou*, or *unde*, *ex illo*, or *nunc quoque*. Although some of these phrases can express both causal and temporal connections between past and present, and even to someone or something who is responsible for something else (*ouk aitiros eimi*), the term ‘aetiology’ is used here to denote those which tell no stories with a plot of their own, and whose link with the present is merely causal. The difference between narratives using the phrases quoted above, however, is that “ever since” one particular event, or series of events, which persists well into the present. There can, but need not be a strong causal element between the result of a specific past event and the present.<sup>4</sup>

Logged in as Matteo Romanello

Matteo Romanello  
@56k

Massilia

...Sil. 14.221-6 (Aci; transformatio into a river). Sil. 15.168-72 (the city of Massilia, founded by the Greek and preserving the ancient customs). Sil. 15.192f...

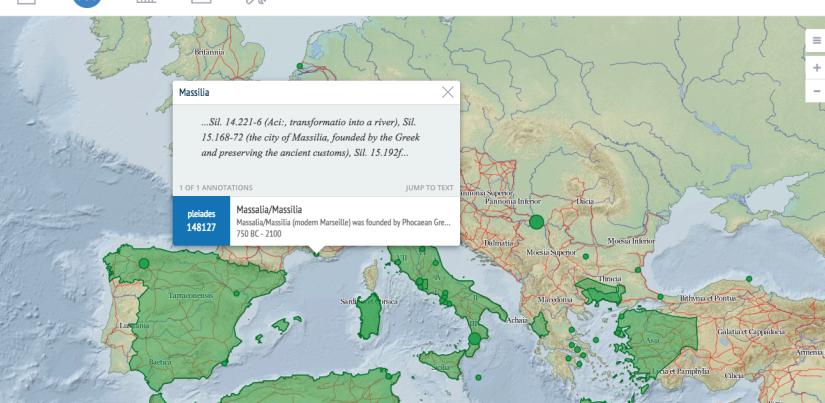
1 OF 1 ANNOTATIONS

plaides 148127

Massalia/Massilia

Massalia/Massilia (modern Marseille) was founded by Phocaeans Gre...  
750 BC - 2100

JUMP TO TEXT





## Practical session

- username: **digiclassrostock**
- password: (see speakup)
  
- let's decide on which texts to work
  - suggestion: Livy, *Ab urbe condita*, book 1
  - or ... ?