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Many witnesses, many layers: the digital scholarly edition of the *Iudicium coci et pistoris iudice Vulcano*

(Più testimoni, più livelli: l'edizione critica digitale del Iudicium coci et pistoris iudice Vulcano)



Musical score for three staves, measures 109, 113, and 118. The notation includes dynamic markings (mp, mf), articulation (col legno, nat.), and phrasing slurs.

First Annual Meeting of the
Associazione Informatica Umanistica e Cultura Digitale
Florence, 14 December 2012



The text I am publishing

- *Vespa, Iudicium coci et pistoris iudice Vulcano*
 - Mock court debate in verse between a cook and a baker
 - Codex Salmasianus (VI century CE)
- Why did I choose this text?
 - Latin Late Antiquity text
 - More than one witness (collation)
 - Why are there no digital scholarly editions of "classical" texts? →



Issues

- Manuscripts
- Collation
 - Digital scholarly editions



Proof of concept

- T. Orlandi, R. Mordenti
 - Textual layers (graphical, linguistic...)
 - Collation at each layer
 - Tables of signs
- Challenge
 - Sophisticated textual model
 - 'Sustainable' workflow



Post-Gutenberg

Iudicium coci et pistoris iudice Vulcano

Ter ternae, varias, cunctae, quae traditis artes,
linquite Pierios colles et scribite mecum!

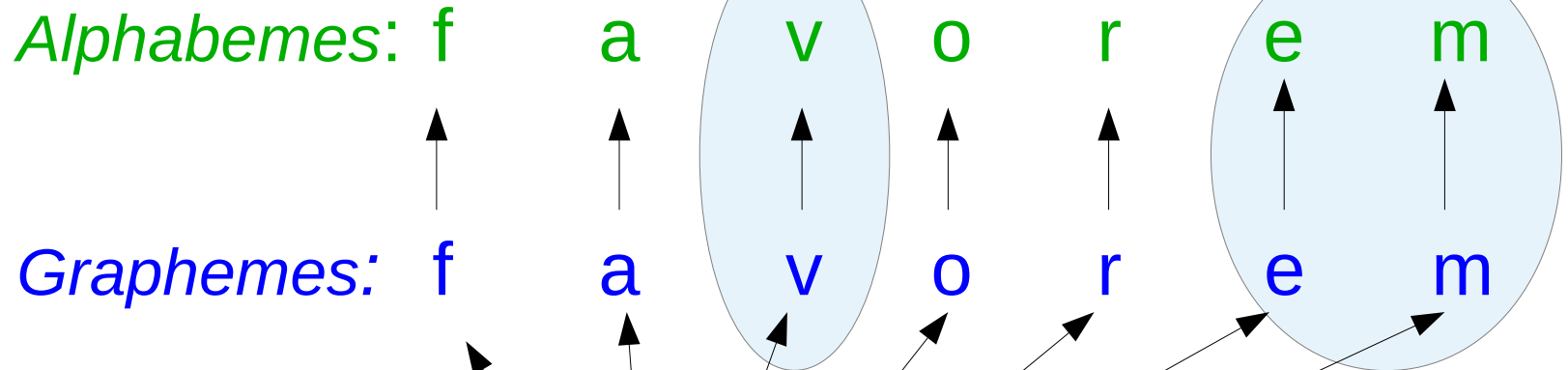
Ille ego Vespa precor, cui divae saepe dedistis
per multas urbes populo spectante favorem.

5

Scribere maius opus et dulcia carmina quaero;
nec mel erit solum: aliquid quoque iuris habebit.

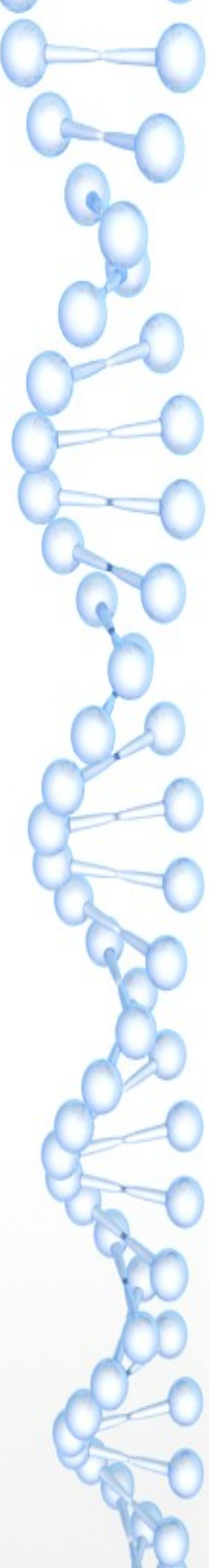
Post-Gutenberg

Word: [Perseus/1999.04.0059/favor,
acc., sing.]



spectante favorem.

Pre-Gutenberg



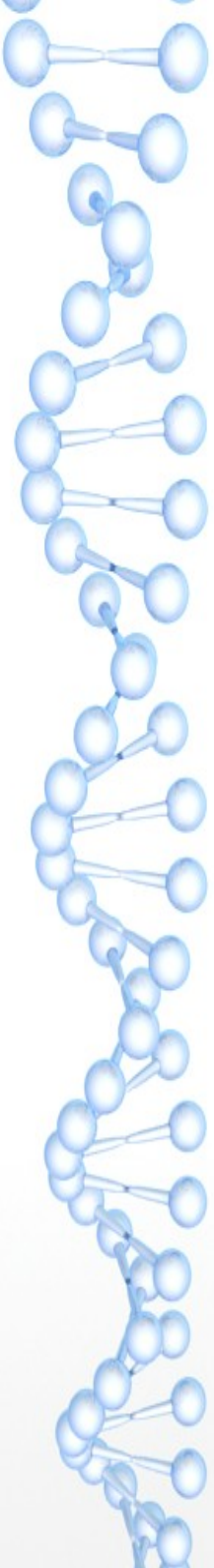
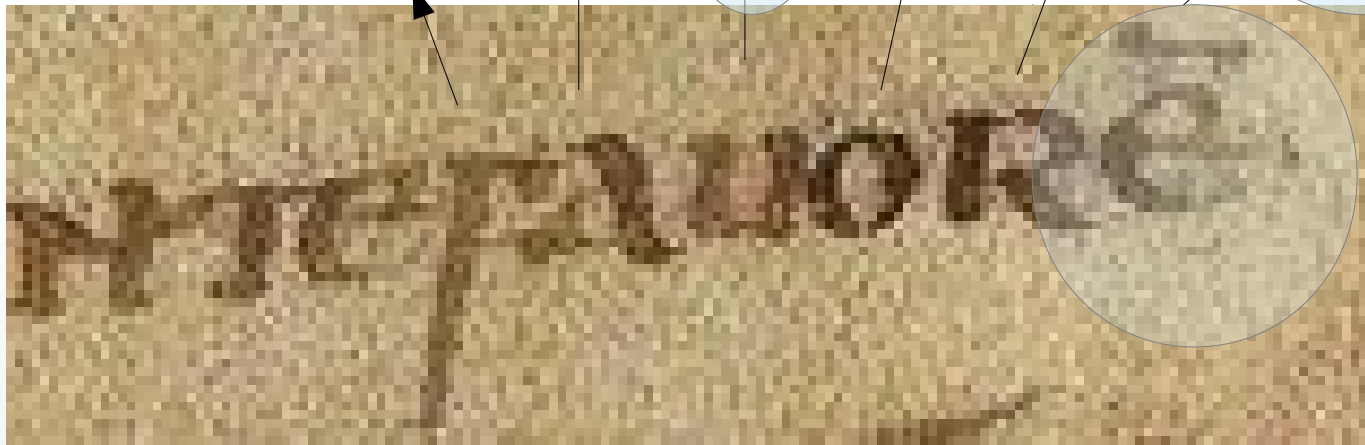
Judiciū coe et pistoris
vespe iudicium. cano
TERTERNE uarias cunctas; traditis artes
Linguas perieros colles. et scribiæ mecum;
Lecoes papyrus cor. cuius sepe dedistis
per multas urbes. populospectantefauore.
Scribere manus opus. et dulcia carmina quo
Nec mel, erit sol. ut. aliquid quoque iuris habebit

Pre-Gutenberg

Word: [Perseus/1999.04.0059/favor,
acc., sing.]

Alphabemes: f a uv o r e m

Graphemes: f a uv o r e_





My proposed innovations

- Textual layers
- Tables of signs



Textual layers

- Textual layers in my edition:
 - Linguistic (inflected words)
 - Alphabetic (alphabemes)
 - Graphical (graphemes, paragraphem., breaks)
- (Also possible: lemmas, allographs, idiographs...)
- Assumptions:
 - Graphemes ↔ Alphabemes (compare TEI: <abbr>/<expand>)
 - Sequence of alphabemes ↔ Inflected word

Textual layers

- “Musical score” edition model
 - Parallel sequences of aligned *tokens*

The image displays a musical score snippet consisting of three staves. The first staff is numbered 109 and contains a sequence of notes with annotations: 'col legno' above the first measure, 'nat.' above the fifth measure, and 'col legno' above the eighth measure. Dynamics 'mp' are indicated below the first and eighth measures, and 'mf' is indicated below the fifth measure. The second staff is numbered 113 and contains a sequence of notes with annotations: 'col legno' above the first measure, 'nat.' above the second measure, 'col legno' above the fourth measure, 'nat.' above the sixth measure, and 'col legno' above the eighth measure. The dynamic 'mp' is indicated below the fourth measure. The third staff is numbered 118 and contains a sequence of notes with annotations: 'nat.' above the first measure, 'col legno' above the second measure, and 'nat.' above the fifth measure. The dynamic 'mp' is indicated below the second measure.

Table of signs

- *Complete* set of discrete signs that the editor *interpretively* singled out from the graphical *continuum*, at each layer
 - Example: all graphemes that one singles out in a MS

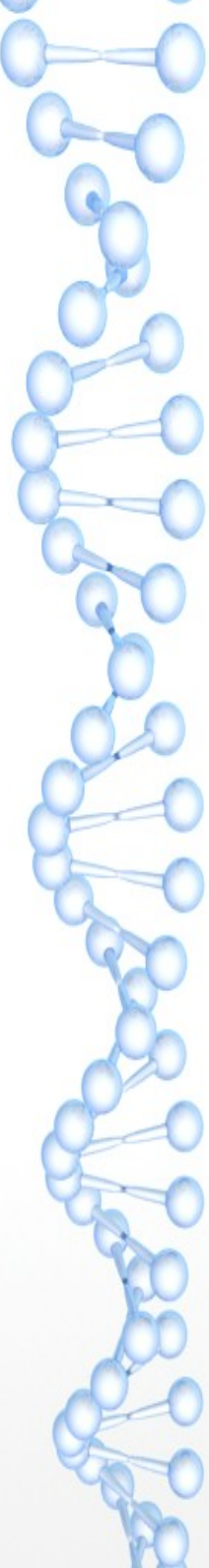




Table of signs CSV (graph. layer)

Graphemes ID	Content (alphabemes ID)	Expression
t	t	Latin minuscule uncial t
u	uv	Latin minuscule uncial u/v (u-shaped, not v-shaped)
ae	a, e	Latin minuscule uncial e with tail bottom left: img/ax.jpg
b_	b, i, s	Latin minuscule uncial b with macron top right
.		Middle dot

Transcription CSV



Graphemes ID	Words ID
Judici(u_)	nou,[iudicium],n,s,iudicium
coci	nou,[cocus],g,s,coci
et	con,[et],et
pistoris	nou,[pistor],g,s,pistoris
-lb	

Current workflow

Table of signs CSV

(graphic layer)

Col. 1

Col. 2

Graph. ID → Alph. ID

CSV Tabella dei segni (liv. grafico)

ID grafemi	Significato (ID alfabeti)	Significante
t	t	t latina onciale minuscola
u	uv	uv latina onciale minuscola (a forma di u, non di v)
ae	a, e	e latina onciale minuscola con una coda in basso a sinistra, img/ae.jpg
b_	b, i, s	b latina onciale minuscola con macron in alto a destra
.		Punto al mezzo

Transcription CSV

Col. 1

Col. 2

Graph. ID ↔ (Words ID)

CSV Trascrizione

ID grafemi	ID parole
Judici(u_)	nou,[iudiciu]m,n,s,iudiciu
coci	nou,[cocu]s,g,s,coci
et	con,[et],et
pistoris	nou,[pistor]g,s,pistoris
-lb	

Python

Alph. ID

Future Workflow

Table of signs CSV

(graphical layer)

Col. 1

Col. 2

Graph. ID → Alph. ID

Transcription JavaScript

Input field

Graphemes ID

ID grafemi	Significato (ID alfabeti)	Significante
t	t	t latina onciale minuscola
u	uv	uv latina onciale minuscola (a forma di u, non di v)
ae	a, e	e latina onciale minuscola con una coda in basso a sinistra, img/ax.jpg
b_	b, i, s	b latina onciale minuscola con macron in alto a destra
.		Punto al mezzo

ID grafemi
Judici(u_)
coci
et
pistoris
-lb

JavaScript

ID parole
nou, [iudicium], n, s, iudicium
nou, [cocus], g, s, coci
con, [et], et
nou, [pistor], g, s, pistoris

Alph. ID

Semi-automatic



Perseus

Words ID

Semi-automatic

Formats: table of signs

CSV Tabella dei segni (liv. grafico)

ID grafemi	Significato (ID alfabem)	Significante
t	t	t latina onciale minuscola
u	uv	u/v latina onciale minuscola (a forma di u, non di v)
ae	a, e	e latina onciale minuscola con una coda in basso a sinistra, img/ax.jpg
b_	b, i, s	b latina onciale minuscola con macron in alto a destra
.		Punto al mezzo

- XML/TEI → `<charDecl>`

```
<charDecl>
  <char xml:id= "uv">
    <charProp>
      <localName>Expression</localName>
      <value>U+0075</value>
      <localName>Content</localName>
      <value>uv</value>
    </charProp>
  </char>
</charDecl>
```

- Issues: 1. only *one* 'table' can be included
2. declare 'standard' Unicode characters ('m')

Formats: multi-layered transcriptions

The image displays three staves of musical notation for a string instrument, likely a cello or double bass. The notation includes various articulations and dynamics. The first staff (measures 109-112) features 'col legno' markings, 'nat.' (natural) markings, and dynamics of *mp* (mezzo-piano) and *mf* (mezzo-forte). The second staff (measures 113-117) continues with 'col legno' and 'nat.' markings, and a *mp* dynamic. The third staff (measures 118-121) includes 'nat.' and 'col legno' markings. The notation consists of eighth and sixteenth notes, often beamed together, with some measures containing rests.

- Issue: aligning ranges from three sequences
 - XML: trees
 - Range-based models
 - Standoff properties (D. Fiormonte & D. Schmidt)
 - LMNL (W. Piez)
 - Gregor Middel (Faust Project / Interedition)
 - Extended strings (M. Thaller) etc.

Formats: XML/TEI transcriptions



graphematic.xml

- `<g id="1.1" ref="#J" />`
- `<g id="1.2" ref="#u" />`
- `<g id="1.3" ref="#d" />`
- `<g id="1.4" ref="#i" />`
- `<g id="1.5" ref="#c" />`
- `<g id="1.6" ref="#i" />`
- `<g id="1.7" ref="#u_" />`

alphabetic.xml

- `<c id="1.1.1" ref="#j" />`
- `<c id="1.2.1" ref="#uv" />`
- `<c id="1.3.1" ref="#d" />`
- `<c id="1.4.1" ref="#i" />`
- `<c id="1.5.1" ref="#c" />`
- `<c id="1.6.1" ref="#i" />`
- `<c id="1.7.1" ref="#uv" />`
- `<c id="1.7.2" ref="#m" />`

linguistic.xml

- `<w id="1">`
`nou,[iudicium],n,s,iudicium`
`</w>`

Formats: XML/TEI alignment



graphematic.xml

- `<g id="1.1" ref="#J" />`
- `<g id="1.2" ref="#u" />`
- `<g id="1.3" ref="#d" />`
- `<g id="1.4" ref="#i" />`
- `<g id="1.5" ref="#c" />`
- `<g id="1.6" ref="#i" />`
- `<g id="1.7" ref="#u_" />`

alphabetic.xml

- `<c id="1.1.1" ref="#j" />`
- `<c id="1.2.1" ref="#uv" />`
- `<c id="1.3.1" ref="#d" />`
- `<c id="1.4.1" ref="#i" />`
- `<c id="1.5.1" ref="#c" />`
- `<c id="1.6.1" ref="#i" />`
- `<c id="1.7.1" ref="#uv" />`
- `<c id="1.7.2" ref="#m" />`

align_alph_graph.xml

- `<link targets="graphematic.xml#1.7 #1.7" />`
- `<ptr id="1.7" targets="alphabetic.xml#1.7.1
alphabetic.xml#1.7.2" />`



Open issues

- Workflow
 - Semi-automatic
- Table of signs → What to declare?
 - Only 'non-standard' (TEI / Unicode)
 - All
- Textual layers → How to align?
 - XML
 - Range-based
- Collation at each layer



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109 col legno nat. col legno nat.
mp mf mp

113 col legno nat. col legno nat. col legno
mp

118 nat. col legno nat.

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