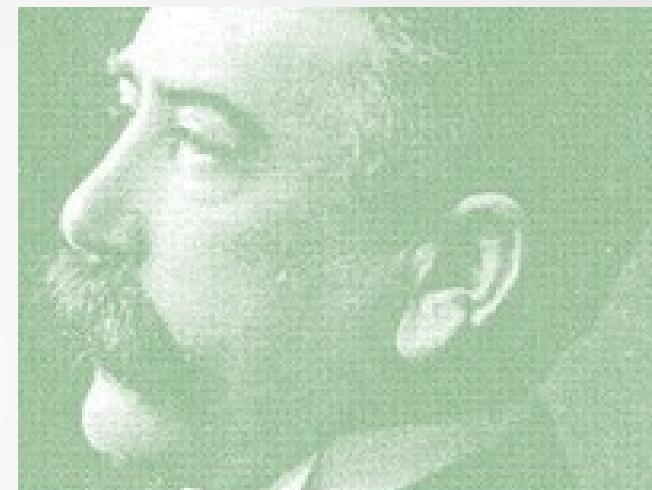


Paolo Monella

La tabella dei segni
nell'edizione scientifica digitale:
un approccio saussuriano

The table of signs
in the scholarly digital edition:
a Saussurian approach



Ceci n'est pas un linguiste.

paolo.monella@unipa.it
<http://www1.unipa.it/paolo.monella/calabriatabella2019/index.html>

Philosophy of Language and Digital Humanities
University of Calabria (Rende, CS, Italy)
Saussurian tradition session
May 8, 2019



Outline

- Digital encoding of handwritten writing systems
 - Saussure
 - Table of signs (of all graphemes in a witness)
 - Possible implementations
 - Processing

Saussure

Ferdinand De
Saussure

Relational nature
of signs
within a semiotic
system



Ceci n'est pas un linguiste.

Saussure

MSA

a b c d e f g h i l m n o p q r s t u z . :

1

MS B

a b c d e f g h i j l m n o p q r s t u v z . , :

2

Saussure

MSA

a b c d e f g h i l m n o p q r s t u z . :

MS B

a b c d e f g h i j l m n o p q r s t u v z . , :

Saussure

MSA

a b c d e f g h i l m n o p q r s t u z . :

Euery noun

U+0075

≠

U+0076

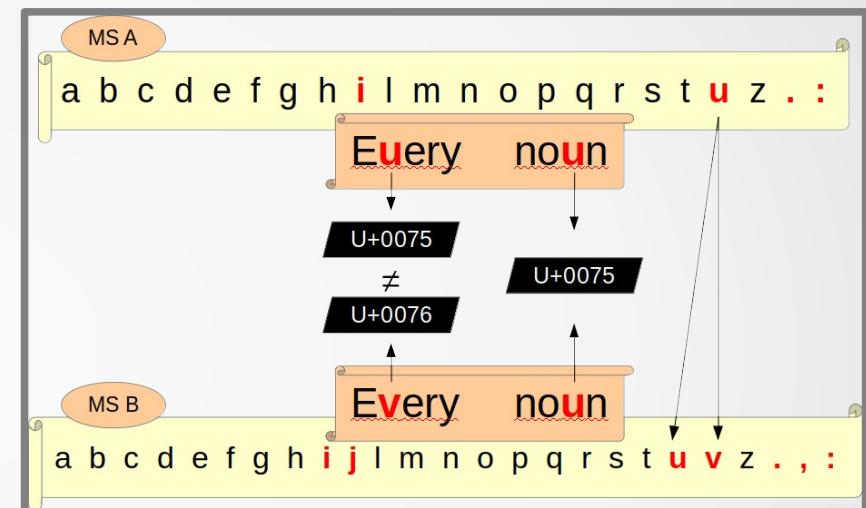
MS B

a b c d e f g h i j l m n o p q r s t u v z . , :

Every noun

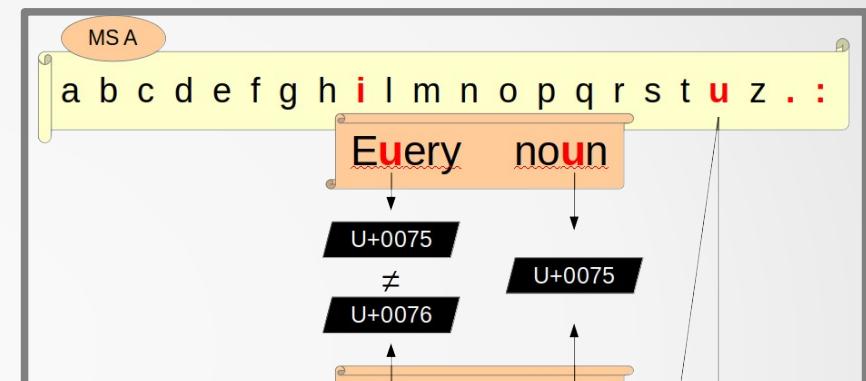
T. Orlandi: “table of signs”

- Tito Orlandi,
Informatica testuale. Teoria e prassi, Laterza, 2010



T. Orlandi: “table of signs”

- Tito Orlandi,
Informatica testuale. Teoria e prassi, Laterza, 2010



Graphemes	Alphabemes	Grapheme Visualization	Type	Notes
a	a	a	Alphabetic	
b	b	b	Alphabetic	
c	c	c	Alphabetic	
d	d	d	Alphabetic	
e	e	e	Alphabetic	
æ	ae	ę	Alphabetic	An 'e'
ſ	ſ	ſ	Alphabetic	

TEI XML → Unicode

- Unicode
(a “u”
is a “u”)

The screenshot shows the homepage of the TEI P5 Guidelines. The header features the TEI logo and the text "<Text Encoding Initiative>". A navigation bar includes links for Home, Guidelines, Activities, Tools, Membership, Support, About, and News. Below the navigation is a search bar with a dropdown set to "P5 Guidelines — English" and a "Search" button. The main content area is titled "P5: Guidelines for Electronic Text Encoding and In..." and indicates "Version 2.5.0. Last updated on...". On the left, a "Table of contents" sidebar lists chapters 5.1 through 5.6. The main content starts with a section titled "5 Non-standard Characters and Glyphs", which discusses the limitations of Unicode and the creation of non-standard characters or glyphs. It then leads into the first chapter of this section, "5.1 Is Your Journey Really Necessary?", which poses the question of whether such characters are truly necessary.

P5: Guidelines for Electronic Text Encoding and In...

Version 2.5.0. Last updated on

Table of contents

- 5.1 Is Your Journey Really Necessary?
- 5.2 Markup Constructs for Representation of Characters and Glyphs
- 5.3 Annotating Characters
- 5.4 Adding New Characters
- 5.5 How to Use Code Points from the Private Use Area
- 5.6 Module Character and Glyph Documentation

5 Non-standard Characters and Glyphs

Despite the availability of Unicode, text encoders still sometimes find that the published available characters is inadequate to their needs. This is particularly the case when dealing with languages, for which encoding standards do not yet exist, or where an encoder wishes to provide variant forms of a character or *glyphs*. The module defined by this chapter provides a way to satisfy that need, while retaining compatibility with standards.

5.1 Is Your Journey Really Necessary?

When encoders encounter some graphical unit in a document which is to be represented electronically, the first issue to be resolved should be 'Is this really a

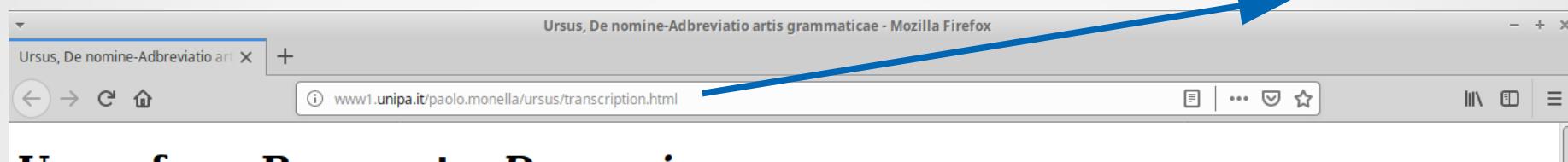
TEI XML → Unicode

- Unicode
(a “u”
is a “u”)



Ursus edition

<http://www.unipa.it/paolo.monella/ursus>



Ursus from Benevento, *De nomine*

From the *Adbreviatio artis grammatica*, codex Casanatensis 1086, ff. 1r-11r

An experimental scholarly digital edition of section *De nomine* (folia 1r-11r) of the *Adbreviatio artis grammatica* by Ursus from Benevento from codex [Casanatensis 1086](#) (IX century), edited by [Paolo Monella](#) within the [ALIM Project](#) (2017). [Click here](#) for the table of the signs (graphemes) found in the manuscript.

What you see on this page is the JavaScript visualization of the XML/TEI source code. For more information on the Ursus Project, the full documentation and the source code (including XML/TEI and JavaScript), see the [project home page on GitHub](#).

Recommended browser: Mozilla Firefox. The page was also tested on Chrome.

Note: Please allow about 10 seconds for the page to load (or to reload after checking/unckecking one of the checkboxes).

- Show Alphabetic Layer (blue)
- Show Graphemic Layer (black)

Legenda

1. The black row below (*pertinet*, **Graphemic Layer**) encodes the graphemes.
2. The blue row above (*pertinet*, **Alphabetic Layer**) encodes the alphabetic letters (alphabemes) represented by those graphemes. In this case, grapheme "p" (in green) represents the three underlined alphabetic letters "p", "e" and "r".
3. The black box appearing when the user hovers a word with their mouse (*pertinet*: [pertineo] Verbal, II conjug, Active indicative, resent, III singular, **Linguistic Layer**) unambiguously encodes the linguistic word beyond any spelling or graphical differences, through a combination of lemma (*pertineo*) and morphology (Verbal, II conjug, Active indicative, Present, III singular).

praepositio
Nominal,
Positive, III decl., Singular, Nominative,
Feminine,

prepositio
 positio



Start of new **folio** (hover for folio number, click to see manuscript page image). Note: images are currently unavailable due to copyright restrictions

GToS: Graphemic Table of Signs

Grapheme	Alpha-beme(s)	Grapheme visualization	Type	Notes	Image(s)	Found	Found Where
a	a	a	Alphabetic		a.png	1	
b	b	b	Alphabetic		b.png	1	
c	c	c	Alphabetic		c1.png c2.png	1	
d	d	d	Alphabetic		d.png	1	
e	e	e	Alphabetic	The grapheme has many allographs	e1.png e2.png	1	
æ	ae	æ	Alphabetic	This is an "e caudatum": an "e" grapheme with a tail	ecaudatum1.png	1	1r.a.9
f	f	f	Alphabetic		f.png	1	
g	g	g	Alphabetic		g.png	1	1r.a.7
h	h	h	Alphabetic		h.png	1	
i	i	i	Alphabetic		i.png	1	
k	k	k	Alphabetic	First found in 5r.a.9 when transliterating	k.png	1	5r.a.9
l	l	l	Alphabetic		l.png	1	
m	m	m	Alphabetic		m.png	1	
n	n	n	Alphabetic		n.png	1	
o	o	o	Alphabetic		o.png	1	
p	p	p	Alphabetic		p.png	1	
q	q	q	Alphabetic		q.png	1	
r	r	r	Alphabetic		r.png	1	

<http://www1.unipa.it/paolo.monella/ursus/GToS.csv>

<https://github.com/paolomonella/ursus/blob/master/GToS.csv>

GToS: Graphemic Table of Signs

Grapheme	Alpha-beme(s)	Grapheme visualization	Type	Notes	Image(s)	Found	Found Where
a	a	a	Alphabetic		a.png	1	
b	b	b	Alphabetic		b.png	1	
c	c	c	Alphabetic		c1.png c2.png	1	
d	d	d	Alphabetic		d.png	1	
e	e	e	Alphabetic	The grapheme has many allographs	e1.png e2.png	1	
æ	ae	æ	Alphabetic	This is an "e caudatum": an "e" grapheme with a tail	ecaudatum1.png	1	1r.a.9
f	f	f	Alphabetic		f.png	1	
g	g	g	Alphabetic		g.png	1	1r.a.7
h	h	h	Alphabetic		h.png	1	
i	i	i	Alphabetic		i.png	1	
k	k	k	Alphabetic	First found in 5r.a.9 when transliterating	k.png	1	5r.a.9
l	l	l	Alphabetic		l.png	1	
m	m	m	Alphabetic		m.png	1	
n	n	n	Alphabetic		n.png	1	
o	o	o	Alphabetic		o.png	1	
p	p	p	Alphabetic		p.png	1	
q	q	q	Alphabetic		q.png	1	
r	r	r	Alphabetic		r.png	1	



<http://www1.unipa.it/paolo.monella/ursus/GToS.csv>

<https://github.com/paolomonella/ursus/blob/master/GToS.csv>

GToS: Graphemic Table of Signs

Grapheme	Alpha-beme(s)	Grapheme visualization	Type	Notes	Image(s)	Found	Found Where
a	a	a	Alphabetic		a.png	1	
b	b	b	Alphabetic		b.png	1	
c	c	c	Alphabetic		c1.png c2.png	1	
d	d	d	Alphabetic		d.png	1	
e	e	e	Alphabetic	The grapheme has many allographs	e1.png e2.png	1	
æ	ae	æ	Alphabetic	This is an "e caudatum": an "e" grapheme with a tail	ecaudatum1.png	1	1r.a.9
f	f	f	Alphabetic		f.png	1	
g	g	g	Alphabetic		g.png	1	1r.a.7
h	h	h	Alphabetic		h.png	1	
i	i	i	Alphabetic		i.png	1	
k	k	k	Alphabetic	First found in 5r.a.9 when transliterating	k.png	1	5r.a.9
l	l	l	Alphabetic		l.png	1	
m	m	m	Alphabetic		m.png	1	
n	n	n	Alphabetic		n.png	1	
o	o	o	Alphabetic		o.png	1	
			Alphabetic		p.png	1	
			Alphabetic		q.png	1	
			Alphabetic		r.png	1	

quæ



<http://www1.unipa.it/paolo.monella/ursus/GToS.csv>

<https://github.com/paolomonella/ursus/blob/master/GToS.csv>

GToS: Graphemic Table of Signs

<u>Grapheme</u>	<u>Alpha-beme(s)</u>	<u>Grapheme visualization</u>	<u>Type</u>
a	a	a	Alphabetic
b	b	b	Alphabetic
c	c	c	Alphabetic
d	d	d	Alphabetic
e	e	e	Alphabetic
æ	ae	ɛ	Alphabetic
f	f	f	Alphabetic
g	g	g	Alphabetic
h	h	h	Alphabetic
i	i	i	Alphabetic

GToS: Graphemic Table of Signs

<u>Grapheme</u>	<u>Alpha-beme(s)</u>	<u>Grapheme visualization</u>	<u>Type</u>
k	k	k	Alphabetic
l	l	l	Alphabetic
m	m	m	Alphabetic
n	n	n	Alphabetic
o	o	o	Alphabetic
p	p	p	Alphabetic
q	q	q	Alphabetic
r	r	r	Alphabetic
s	s	s	Alphabetic
t	t	t	Alphabetic

GToS: Graphemic Table of Signs

<u>Grapheme</u>	<u>Alpha-beme(s)</u>	<u>Grapheme visualization</u>	<u>Type</u>
u	u	u	Alphabetic
x	x	x	Alphabetic
y	y	y	Alphabetic
z	z	z	Alphabetic
			Space
.		.	Punctuation
.		.	Punctuation
		,	Punctuation
~		~	Punctuation
:		:	Punctuation

GToS: Graphemic Table of Signs

Grapheme	Alpha-beme(s)	Grapheme visualization	Type
ł		;	Punctuation
ń		;	Punctuation
ł		;	Punctuation
8		ö	Abbreviation mark
2		ö	Abbreviation mark
7		ö	Abbreviation mark

GToS: Graphemic Table of Signs

Grapheme	Alpha-beme(s)	Grapheme visualization	Type
-		ö	Abbreviation mark
;		;	Abbreviation mark
ü	u	ö	Abbreviation mark
b	per	p	Brevigraph
n	pro	p	Brevigraph
c	qui	q	Brevigraph
÷	est	÷	Logograph

GToS processing: *Grapheme visualization*

```
function graph(myString) {
    for (var igr = 0; igr < gtos.length; igr++) {
        if (gtos[igr][0] != '' && gtos[igr][2] != '') {
            myString = myString.replace(
                gtos[igr][0],
                gtos[igr][2]);
        }
    }
    return myString;
}
```

GToS processing: Grapheme visualization

quæ

```
function graph(myString) {  
    for (var igr = 0; igr < gtos.length; igr++) {  
        if (gtos[igr][0] != '' && gtos[igr][2] != '') {  
            myString = myString.replace(  
                gtos[igr][0],  
                gtos[igr][2]);  
        }  
    }  
    return myString;  
}
```

Grapheme	Alpha-beme(s)	Grapheme visualization	Type
æ	ae	é	Alphabetic

GToS processing: Grapheme visualization

quæ

```
function graph(myString) {  
    for (var igr = 0; igr < gtos.length; igr++) {  
        if (gtos[igr][0] != '' && gtos[igr][2] != '') {  
            myString = myString.replace(  
                gtos[igr][0],  
                gtos[igr][2]);  
        }  
    }  
    return myString;  
}
```

Grapheme	Alpha-beme(s)	Grapheme visualization	Type
æ	ae	€	Alphabetic

GToS processing: Grapheme visualization

quæ

quae

que

```
function graph(myString) {  
    for (var igr = 0; igr < gtos.length; igr++) {  
        if (gtos[igr][0] != '' && gtos[igr][2] != '') {  
            myString = myString.replace(  
                gtos[igr][0],  
                gtos[igr][2]);  
        }  
    }  
    return myString;  
}
```

Grapheme	Alpha-beme(s)	Grapheme visualization	Type
æ	ae	é	Alphabetic

GToS processing: *Alphabeme derivation*

```
function alph(myString) {  
    for (var ialph = 0; ialph < gtos.length; ialph++) {  
        if ( gtos[ialph][0] != ''  
            && gtos[ialph][1] != ''  
            && gtos[ialph][0] != gtos[ialph][1] ) {  
            myString = myString.replace(  
                gtos[ialph][0],  
                gtos[ialph][1]);  
        }  
    }  
    return myString;  
}
```

GToS processing: *Alphabeme derivation*

quæ

```
function alph(myString) {  
    for (var ialph = 0; ialph < gtos.length; ialph++) {  
        if ( gtos[ialph][0] != ''  
            && gtos[ialph][1] != ''  
            && gtos[ialph][0] != gtos[ialph][1] ) {  
            myString = myString.replace(  
                gtos[ialph][0],  
                gtos[ialph][1]);  
        }  
    }  
    return myString;  
}
```

Grapheme	Alpha-beme(s)	Grapheme visualization	Type
æ	ae	é	Alphabetic

GToS processing: *Alphabeme derivation*

quæ

```
function alph(myString) {  
    for (var ialph = 0; ialph < gtos.length; ialph++) {  
        if ( gtos[ialph][0] != ''  
            && gtos[ialph][1] != ''  
            && gtos[ialph][0] != gtos[ialph][1] ) {  
            myString = myString.replace(  
                gtos[ialph][0],  
                gtos[ialph][1]);  
        }  
    }  
    return myString;  
}
```

Grapheme	Alpha-beme(s)	Grapheme visualization	Type
æ	ae	€	Alphabetic

GToS processing: *Alphabeme derivation*

quæ
↓
quae
que

```
function alph(myString) {  
    for (var ialph = 0; ialph < gtos.length; ialph++) {  
        if ( gtos[ialph][0] != ''  
            && gtos[ialph][1] != ''  
            && gtos[ialph][0] != gtos[ialph][1] ) {  
            myString = myString.replace(  
                gtos[ialph][0],  
                gtos[ialph][1]);  
        }  
    }  
    return myString;  
}
```

Grapheme	Alpha-beme(s)	Grapheme visualization	Type
æ	ae	é	Alphabetic

Abbreviations: *Alphabeme encoding*

```
<choice>
  <abbr>qm̄</abbr>
  <expan>quoniam</expan>
</choice>
```



quoniam

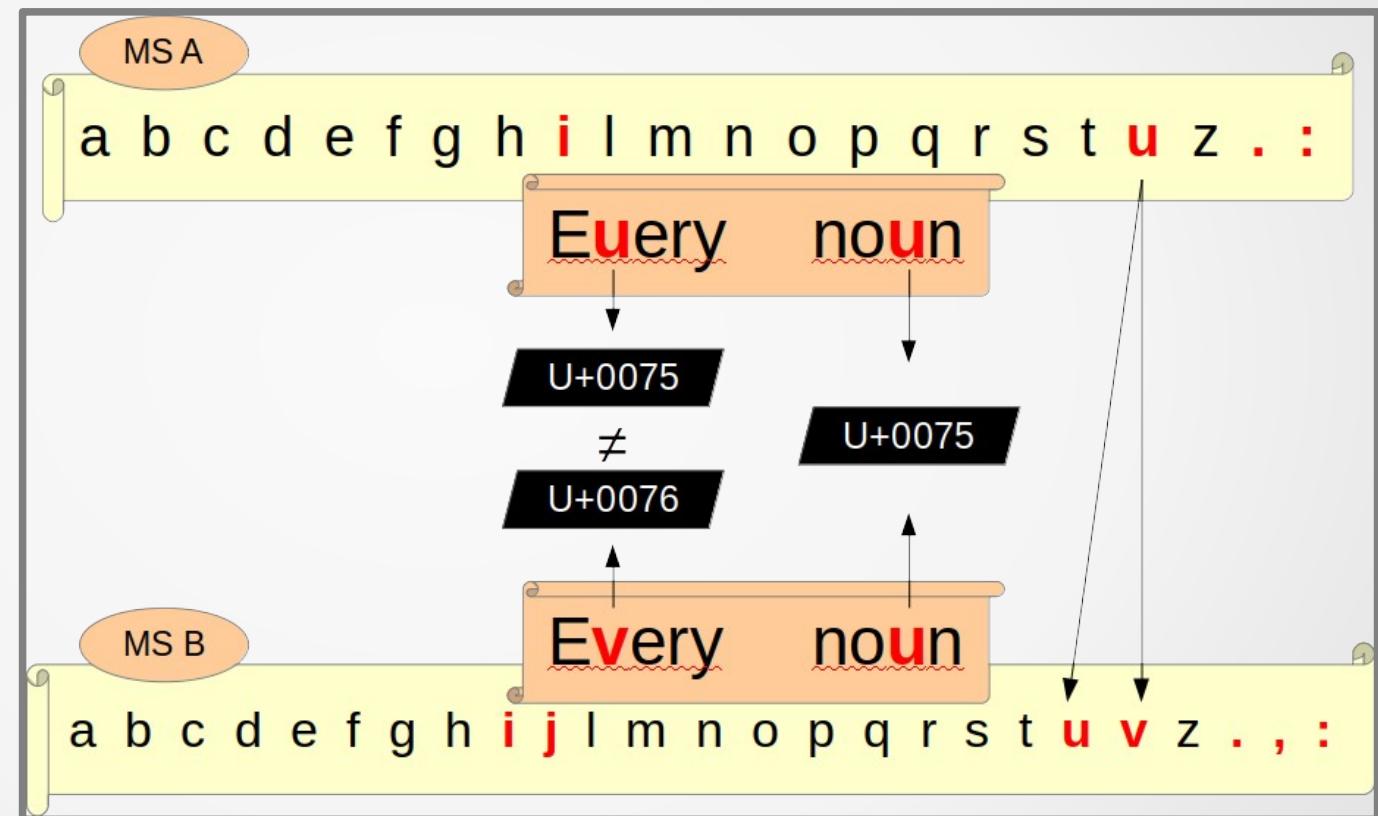
qm̄



Digital encoding of handwritten writing systems

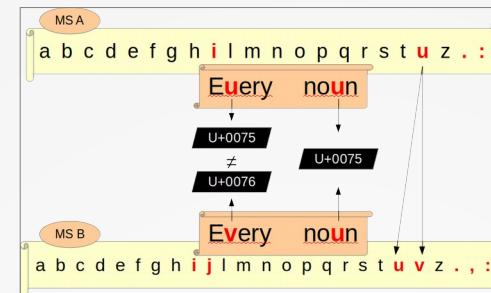
Digital encoding of handwritten writing systems

- Saussure



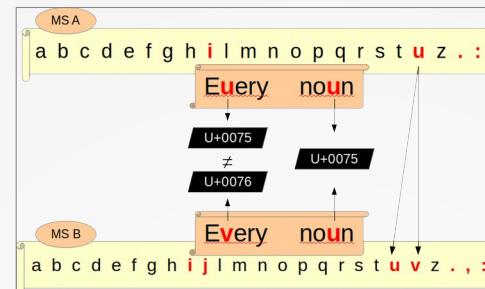
Digital encoding of handwritten writing systems

- Saussure



Digital encoding of handwritten writing systems

- Saussure

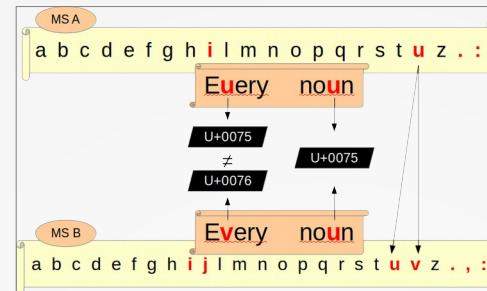


- Table of Signs

Grapheme	Alphabeme(s)	Grapheme visualization	Type	Notes	Image(s)	Found	Where
a	a	a	Alphabetic		a.png	1	
b	b	b	Alphabetic		b.png	1	
c	c	c	Alphabetic		c1.png c2.png	1	
d	d	d	Alphabetic		d.png	1	
e	e	e	Alphabetic	The grapheme has many allographs	e1.png e2.png	1	
æ	ae	e	Alphabetic	This is an "e caudatum": an "e" grapheme with a tail	e caudatum1.png	1	1r.a.9
f	f	f	Alphabetic		f.png	1	
g	g	g	Alphabetic		g.png	1	1r.a.7
h	h	h	Alphabetic		h.png	1	
i	i	i	Alphabetic		i.png	1	
k	k	k	Alphabetic	First found in 5r.a.9 when transliterating	k.png	1	5r.a.9
l	l	l	Alphabetic		l.png	1	
m	m	m	Alphabetic		m.png	1	
n	n	n	Alphabetic		n.png	1	
o	o	o	Alphabetic		o.png	1	
p	p	p	Alphabetic		p.png	1	
q	q	q	Alphabetic		q.png	1	
r	r	r	Alphabetic		r.png	1	

Digital encoding of handwritten writing systems

- Saussure

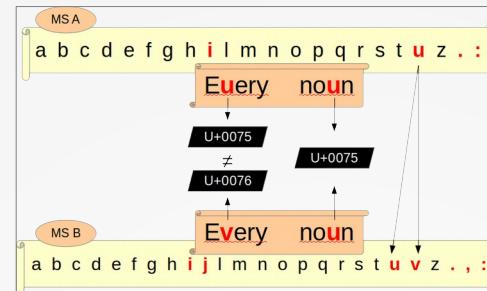


- Table of Signs

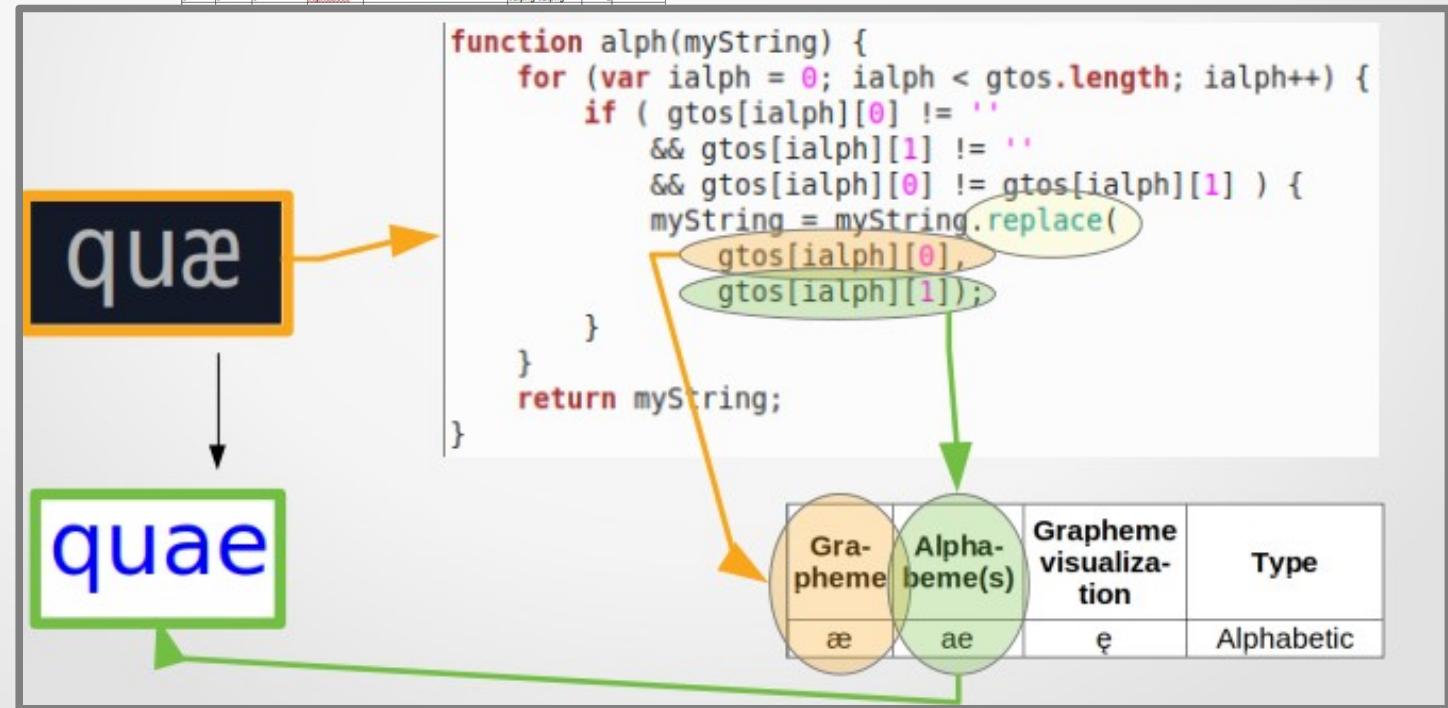
Grapheme	Alphabeme(s)	Grapheme visualization	Type	Notes	Image(s)	Found Where
a	a	a	Alphabetic		a.png	1
b	b	b	Alphabetic		b.png	1
c	c	c	Alphabetic		c1.png c2.png	1
d	d	d	Alphabetic		d1.png	1
e	e	e	Alphabetic			1
ee	ee	e	Alphabetic	This is an 'e caudatum': an "e" grapecaudatum1.png e	1	1ra.9
f	f	f	Alphabetic		f.png	1
g	g	g	Alphabetic		g.png	1ra.7
h	h	h	Alphabetic		h.png	1
i	i	i	Alphabetic		i.png	1
k	k	k	Alphabetic	First found in 5r.a.9 when transliterating	k.png	15r.a.9
l	l	j	Alphabetic		j.png	1
m	m	m	Alphabetic		m.png	1
n	n	n	Alphabetic		n.png	1
o	o	o	Alphabetic		o.png	1
p	p	p	Alphabetic		p.png	1
q	q	q	Alphabetic		q.png	1
r	r	r	Alphabetic		r.png	1

Digital encoding of handwritten writing systems

- Saussure
- Table of Signs
- Processing

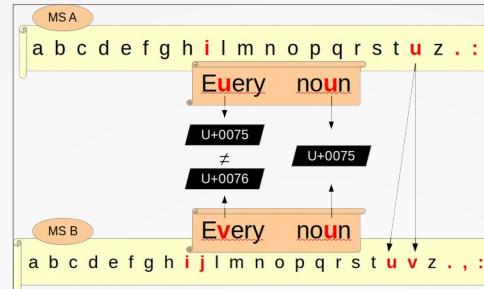


Grapheme	Alpha-beme(s)	Grapheme visualization	Type	Notes	Image(s)	Found Where
a	a	a	Alphabetic		a.png	1
b	b	b	Alphabetic		b.png	1
c	c	c	Alphabetic		c1.png c2.png	1



Digital encoding of handwritten writing systems

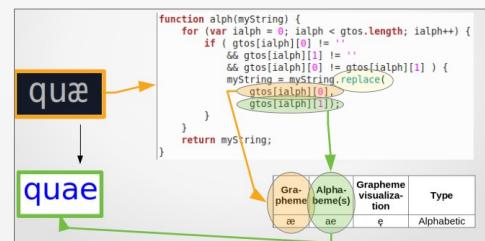
- Saussure



- Table of Signs

Grapheme	Alpha-beme(s)	Grapheme visualization	Type	Notes	Image(s)	Found Where
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b	b	b	Alphabetic		b.png	1
c	c	c	Alphabetic		c1.png c2.png	1
d	d	d	Alphabetic		d1.png	1
e	e	e	Alphabetic		e1.png e2.png	1
æ	æ	æ	Alphabetic	This is an 'e caudatum': an "e" grapecaudatum1.png & 15ra.9	f.png	15ra.9
r	r	r	Alphabetic		g.png	15ra.7
g	g	g	Alphabetic		h.png	1
h	h	h	Alphabetic		i.png	1
l	l	l	Alphabetic		j.png	1
k	k	k	Alphabetic	First found in 5r.a.9 when transliterark.png	k1.png	15ra.9
l	l	l	Alphabetic		l.png	1
m	m	m	Alphabetic		m.png	1
n	n	n	Alphabetic		n.png	1
o	o	o	Alphabetic		o.png	1
p	p	p	Alphabetic		p.png	1
q	q	q	Alphabetic		q.png	1
r	r	r	Alphabetic		r.png	1

- Processing



Paolo Monella

La tabella dei segni
nell'edizione scientifica digitale:
un approccio saussuriano

The table of signs
in the scholarly digital edition:
a Saussurian approach



Ceci n'est pas un linguiste.

paolo.monella@unipa.it
<http://www1.unipa.it/paolo.monella/calabriatabella2019/index.html>

Philosophy of Language and Digital Humanities
University of Calabria (Rende, CS, Italy)
Saussurian tradition session
May 8, 2019

