Mining Paper Catalogues

A Multilingual Solution to Reduce Verbose Fields to Consistent Terminology

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MOTIVATION

Data Source

92

Form 23 Conical cup with smooth vertical rim
Konische Schale mit glattem Steilrand
Coppa troncoconica con orlo verticale
Coupe tronconique à rebord vertical lisse

Conical cup representing the further evolution of Form 22. The floor is now always flat or biconical (meeting the wall at a sharp angle on the inside), usually with a low foot.

23.1: Plain tapering rim, inclined slightly inwards, sometimes bearing applied decoration.
23.2: Rim with flat outer face bearing applied decoration bounded above and below by simple convex mouldings; inner face plain or with a groove at lip.

Production

Subform 23.1 is probably made in many parts of Italy; examples in Padana ware do not show applied decoration. Subform 23.2 is made in Italy but apparently not in the Padana region.

Date

Subform 23.2 belongs to the second and third quarters of the first century A. D.: it is common in the South Stoa deposits at Corinth and at Pompeii. Subform 23.1 is less readily datable as it may occur as a simplified version of Form 22 or Form 23: other features of the vessel (e. g. foot-profile, decoration) may provide a clearer indication of date than the shape of the rim.

Distribution

Subform 23.2 is very common throughout the Mediterranean region, with sporadic examples found in the North and in North-Italy; Subform 23.1 is relatively uncommon.

References

23.1.1 Karthago K 78/172a, unpublished. Stamp L.MA, O.-C. –. Italy.
23.1.2 Berenice B210.2. Anepigraphic stamp. Italy.
23.2.1 Corinth 1973 pl.84,70. Stamp CAMVRI, O.-C. 397. Arezzo.
23.2.2 Berenice B216.2. Italy.

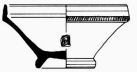
Other findspots

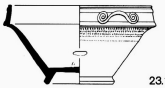
23.1 Asciburgium, Bologna, Bolsena, Conimbriga, Köln, Luni, Magdalensberg, Ordona, Pollentia, Roma.
23.2 Not separately listed.

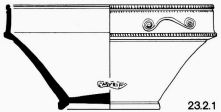
Concordance

23.1: Goudineau 20c; 25a; 37a. – Berenice B210.2.
23.2: Goudineau 40. – Barocelli 11. – Berenice B216. – Hayes 23.
Pieces described as Haltern 9 sometimes belong to this form.

P. M. K.


23.1.1


23.1.2


23.2.1

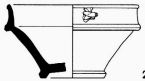

23.2.2

Figure 1: Sample from *Conspectus* catalogue.

Oh dear!

Problem

Running texts contain a lot of *irrelevant information* (for machine processing).

This makes database lookups without keywords extremely inefficient.

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UNSTRUCTURED DATA

What we **want**:

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{
   "form": "23.1",
   "origin": "Italy",
   "decoration": "none",
   "occurs": "uncommon"
},
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   "form": "23.2",
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STRUCTURED DATA

TEXT MINING: THEORY

Classification

Definition: Text Mining

Text Mining is a general term covering several different ideas, e. g.:

- Information retrieval
- Statistical analysis
- Information extraction
- ...

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Why underestimation is bad

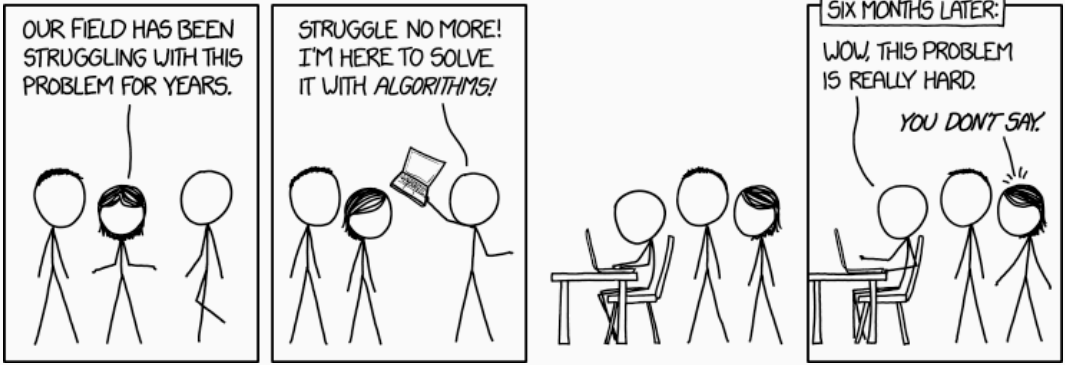

Figure 2: I can relate to this. [Source: xkcd.com/1831]

Information Extraction

Definition: Information Extraction (IE)

"[IE] is the task of automatically extracting structured information from unstructured [...] documents."

Some other facts about Information Extraction:

- Computer scientists have a hard time with IE (for over 30 years now!)
- IE is **really super difficult** and **often inaccurate**.

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Sorry!

DISCLAIMER

We neither *can* nor *do* provide a perfect solution or perfect results.

Furthermore, this project is still work in progress.

Five Steps

1. Tokenisation and Sentence splitting
2. Lemmatisation
3. Part-of-speech-tagging (POS)
4. Named entity recognition (NER)
5. Relation Extraction

POS-Tagging

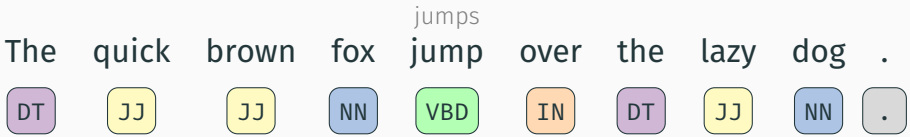
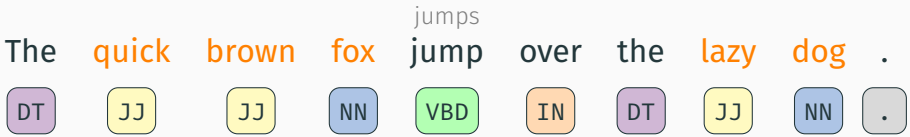


Figure 3: POS-tagging examples after lemmatisation.

POS-Tagging



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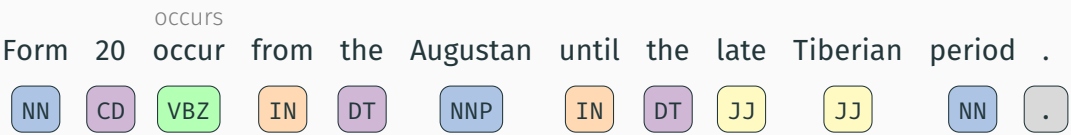
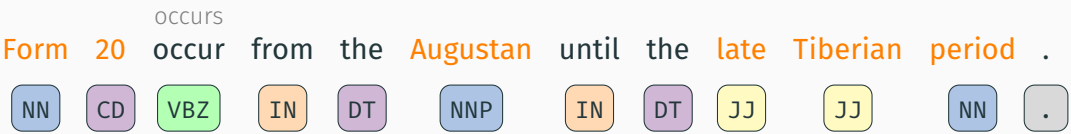


Figure 4: POS-tagging examples after lemmatisation.

POS-Tagging



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Relation Extraction

Subject	Relation	Object
quick brown fox	jump over	lazy dog
Form 20	occur	Augustan
Form 20	occur	late Tiberian period

TEXT MINING: PRACTICAL

Tools

presenting different tools here

Adapting the NER

Stanford CoreNLP only recognises 8 entities types:

PERSON	DATE
ORGANIZATION	TIME
LOCATION	MONEY
PERCENT	MISC

So we have to add the custom type `FORM`. Adjusting `DATE` also necessary.

iepy Active Learning Core

nuthin yet

Temporal Expressions

With **HeidelTime** temporal expressions are mapped to TIMEX3 standard

around 140 B.C.	⟼	APPROX BC0140
second quarter first century B.C.	⟼	XXXX-Q2 BC00
first half third century A.D.	⟼	XXXX-H1 02

HeidelTime supports many other languages, e. g. German, Italian, French, ...

HEIDELPLACE?!

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MULTILINGUALISM

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