Universität Hamburg
DER FORSCHUNG | DER LEHRE | DER BILDUNG

DEPARTMENT INFORMATIK
NATÜRLICHSPRACHLICHE SYSTEME (NATS) AB.
„Computerphilologie“ -Arbeitsstelle

Erfassung und Vernetzung der historischen Orten und Personen in den historischen Texten

- Eine exemplarische Studie zum Werk Dimitrie Cantemirs -

Alptuğ Güney, Cristina Vertan

{alptug.gueney,cristina.Vertan}@uni-hamburg.de

HerCoRe – Hermeneutic and Computer based Analysis of Reliability, Consistency and Vagueness in historical texts

- Illustrated through two main works of Dimitrie Cantemir-

Universität Hamburg
DER FORSCHUNG | DER LEHRE | DER BILDUNG

UNIVERSITATEA DIN BUCUREȘTI
VIRTUTE ET SAPIENTIA

Funded by
VolkswagenStiftung

April 2017 –March 2020

„Mixed Methods in Humanities“

Combine hermeneutic approaches and methods from computer science for investigating reliability and consistency of original text from 18th century as well as their translations

H

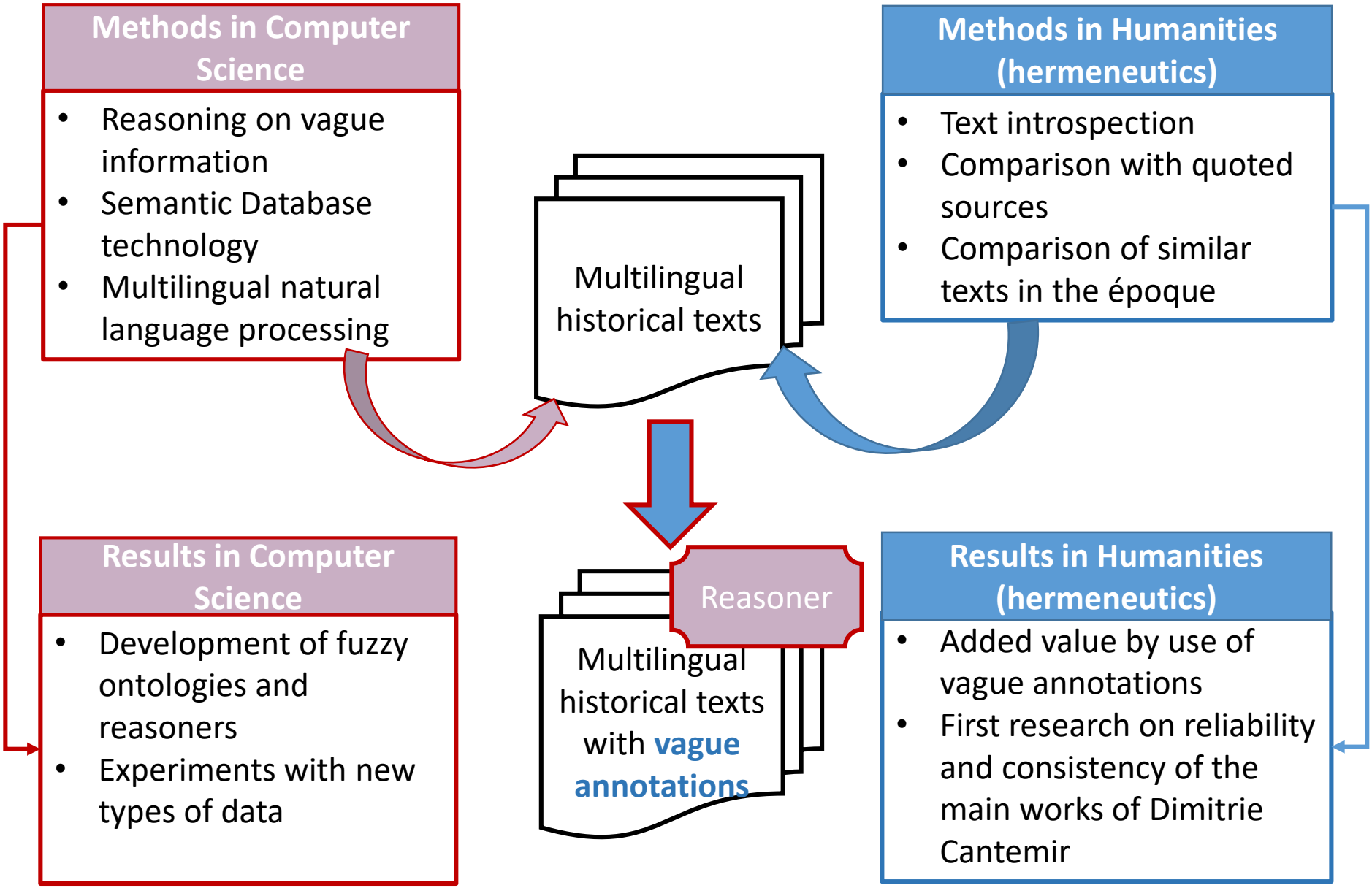
Compare for the first time “original” with translations done in the 18th- 19th century

(In)Validate assumptions about source quotations in original text

CS

Demonstrate how to include vagueness and imprecision in annotations and interpretations engines

Progress work in automatic recognition of vague expressions


Methods in Computer Science
• Reasoning on vague information
• Semantic Database technology
• Multilingual natural language processing
Multilingual historical texts
Methods in Humanities (hermeneutics)
• Text introspection
• Comparison with quoted sources
• Comparison of similar texts in the époque
Reasoner
Multilingual historical texts with vague annotations
Results in Computer Science
• Development of fuzzy ontologies and reasoners
• Experiments with new types of data
Results in Humanities (hermeneutics)
• Added value by use of vague annotations
• First research on reliability and consistency of the main works of Dimitrie Cantemir

CS

Dr. Cristina Vertan, UHH
Project coordination,
DH, CL, CS

H CS

Dr. Anca Dinu, UB
Team Leader UB,
Linguistics,CL

H CS

Prof. Dr. Walther v. Hahn,
UHH
Vagueness, CL, DH
German Linguistics,

H

Prof. Dr. Ioana Costa, UB
Cantemir Translations,
Classical philology

H

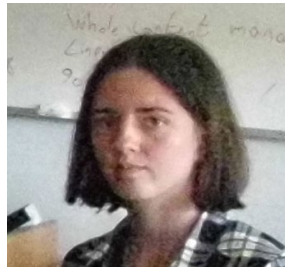
Prof. Dr. Yavuz Köse, UHH
Turcology

CS

Prof. Dr. Liviu Dinu, UB
Fuzzy Logic, CL, CS

H

Alptug Güney, UHH
Turcology



CS

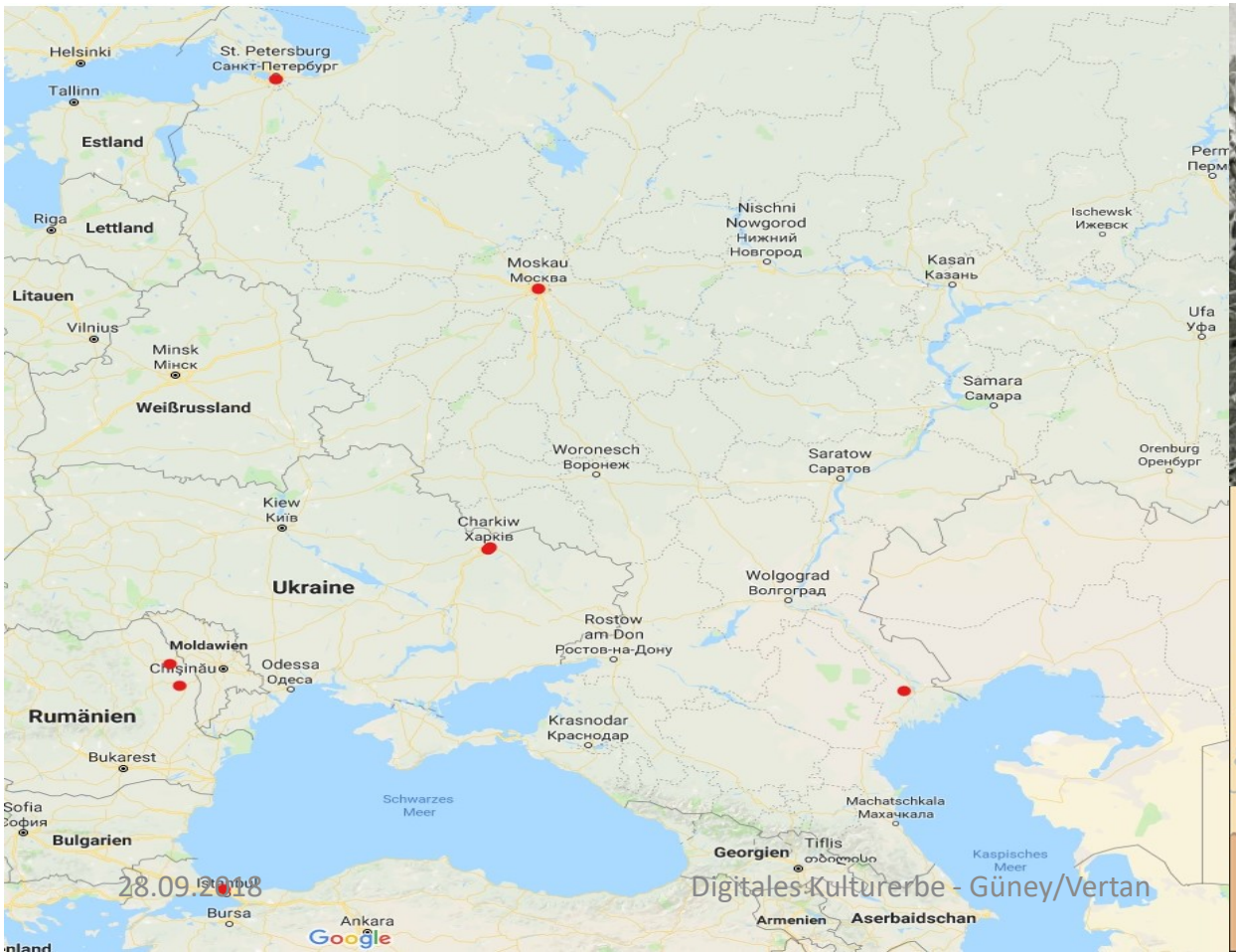
Alina Ciobanu, UB
CL, CS

Outline

- Research questions from the humanities
- Challenges in a digital environment
- Digital Framework
- Technological approach for person names, places etc.

Dimitrie Cantemir 1673-1723

- An universal humanist in Early Enlightenment
- Analysis of his Opus Magnum „History of the Ottoman Empire“ following the ottoman sources.



D. Cantemir‘s Biography -1-

- Born in 1673 in Silişteni/ Vaslui, Son of Constantin Cantemir, Prince of Moldavia (1684-1693)
- 1687 sent to Istanbul as political hostage, Education in Enderun und Academy of Patriarchate
- 1693 Prince of Moldavia for 3 Weeks
- 1693-1710 a productive scholar-life in Istanbul (Works on music, history, philosophy, philologie); Representative of Moldavia in Istanbul
- 1710-1711 Prince of Moldavia
- 1711 Depiction to the Russian Tsardom in the War of Pruth

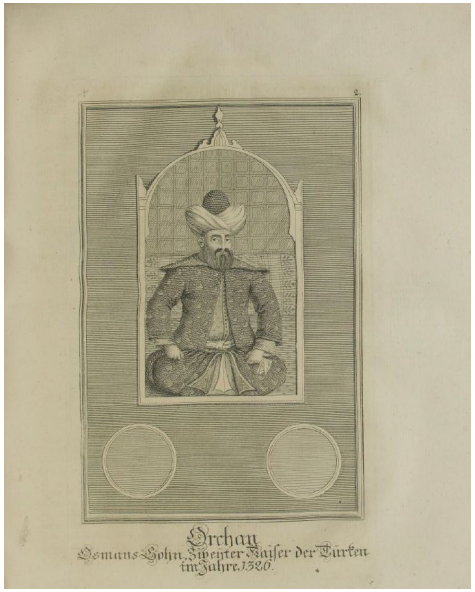
D. Cantemir‘s Biography -2-

- 1711-1723 Privy Council of Tsar Peter I.
- 1714 Member of Preußische Societät (Berliner Akademie der Wissenschaften), - Historia incrementorum atque decrementorum Aulae Othomanicae (Geschichte des osmanischen Reichs nach seinem Anwachse und Abnehmen) - - Descriptio Moldavia (Beschreibung Moldaus)
- 1716 Prince of Holy Roman Empire of German Nation
- 1718-1722 Military operations with Peter I. in Caucasia

Historia incrementorum atque decrementorum Aulae Othomanicae (HO)

- 1714-1716 Chronological history of the Ottoman dynasty, (1250?-1711) bis zum Jahr 1711, detailed informations on the political, cultural and economic life in the Ottoman Empire
- 1734 “The History of the Growth and Decay of the Ottoman Empire”
- 1743 “Histoire de l’Empire Othoman, où se voyent les causes de son Agrandissement et de sa Décadence avec de Notes très instructives”
- 1745 „Geschichte des osmanischen Reichs nach seinem Anwachse und Abnehmen“ (GOR), Hamburg: Christian HeroldVerlag.

Cantemir‘s HO



- Structure of the Ottoman historiography „Tevarih-i Al-i Osman“
- Consists of 2 main parts (I. Part: Osman I.-Ibrahim, II. Part: Mehmed IV.-Ahmed III.) and 4 Books:
- I-II-III. Books: Growth of the Ottoman Empire until 1673
- IV. Book: Decade of the Ottoman Empire 1673-1711
- New approaches: Usage of geograpy and philology in analysing of historical events

Research goals related to Geschichte des osmanischen Reichs nach seinem Anwachse und Abnehmen

- Comparison between the copy of the original (Latin) and the English and German translations
- Identification of translations mistakes or gaps (done by purpose or not).
- Search after the quoted works and identification of related ottoman sources.
- Analysis of Cantemir‘s writing and discourse style
- Importance of the work in the ottoman studies; Comparisons with other works contemporary with Cantemir or follow-up research about the ottomans
- Usage of HO as source in the follow-up works about the ottoman empire

Sources of HO on the history of the Ottoman dynasty

Ottoman Turkish/Persian:

- **Âşıkpaşazâde Derviş Ahmet Âşıkî** (1400-1484); *Tevârîh-i Âl-i Osman,* **Idris-i Bitlisî** (1450?-1520), *Heşt Behişt;* **Neşrî** (?-1520?), *Kitab-ı Cihan-Nüma;* **Hoca Sadettin** (1536/7-1599), *Tâcü't-Tevârih;* **Peçevî** (1574-1649?), *Tarih-i Peçevi (1640?);* **Hezarfen Hüseyin** (?-1691), *Tenkih üt-Tevarih*

Greek:

- **Nikephoros Gregoras** (1295?-1359/61), **Laonikus Chalkondylas** (1423?-1490), **Georgius Phranza** (1400?-1477?)

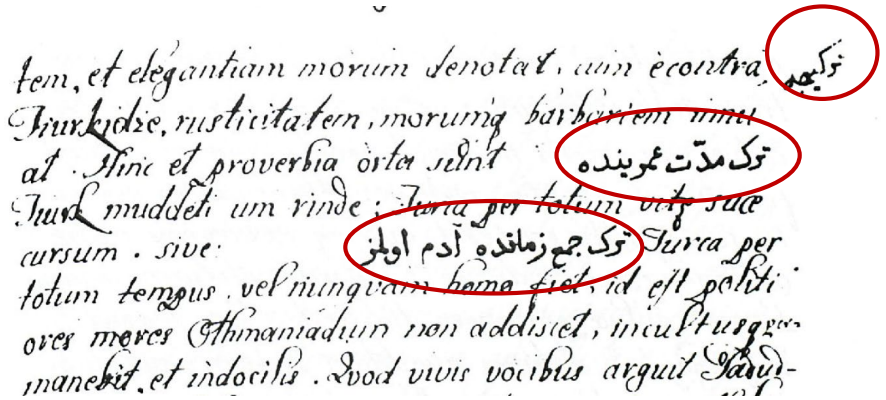
Latin:

- **Philipp Lonicerus** (1532-1599), *Chronikorum Turcicorum* (1584), **Johannes Gaudier** (Hans Caudir von Spiegel) (XVI. Jh.-1579)/Johannes Leunclavius, *Annales Svltanorvm Othmanidarvm, A Tvrcis Sva Lingva Scripti,* **Johannes Leunclavius** (1541?-1594), *Neue Chronika türkischer Nation (1590)*, **Michalo Lithuanus**, De moribus tartarorum, lituanorum et moscorum

Dictionaries:

- Franciscus a Mesgnien **Meninski** (1623-1698), **Nimetullah** b. Ahmed b. Mübārek er-Rumì (?-1571)[?], Seyyid **Nimetullah** Efendi (Nakibzâde) [?], Tuhfe-i Ni'meti (1637)

Not/ Wrong translated ottoman parts



Hence the common saying, *Turk Muddeti um rinde*: *A Turk thro' the whole course of his life*: that is, he will always be a clown, and never learn the politeness of the *Othmans*.

Quotations without references (EHO, pp. 5-6)

Seu mezidi chu nehri ſaili ol,*
Nehri Sailde buldi meſt ana yol.

That is,

Since he the river *Sail* did not love
He in that very river met his death.

(بیت) سومزیدیچونهرسایلیاول/
نهرسایلدهبولدیموتآکهیول

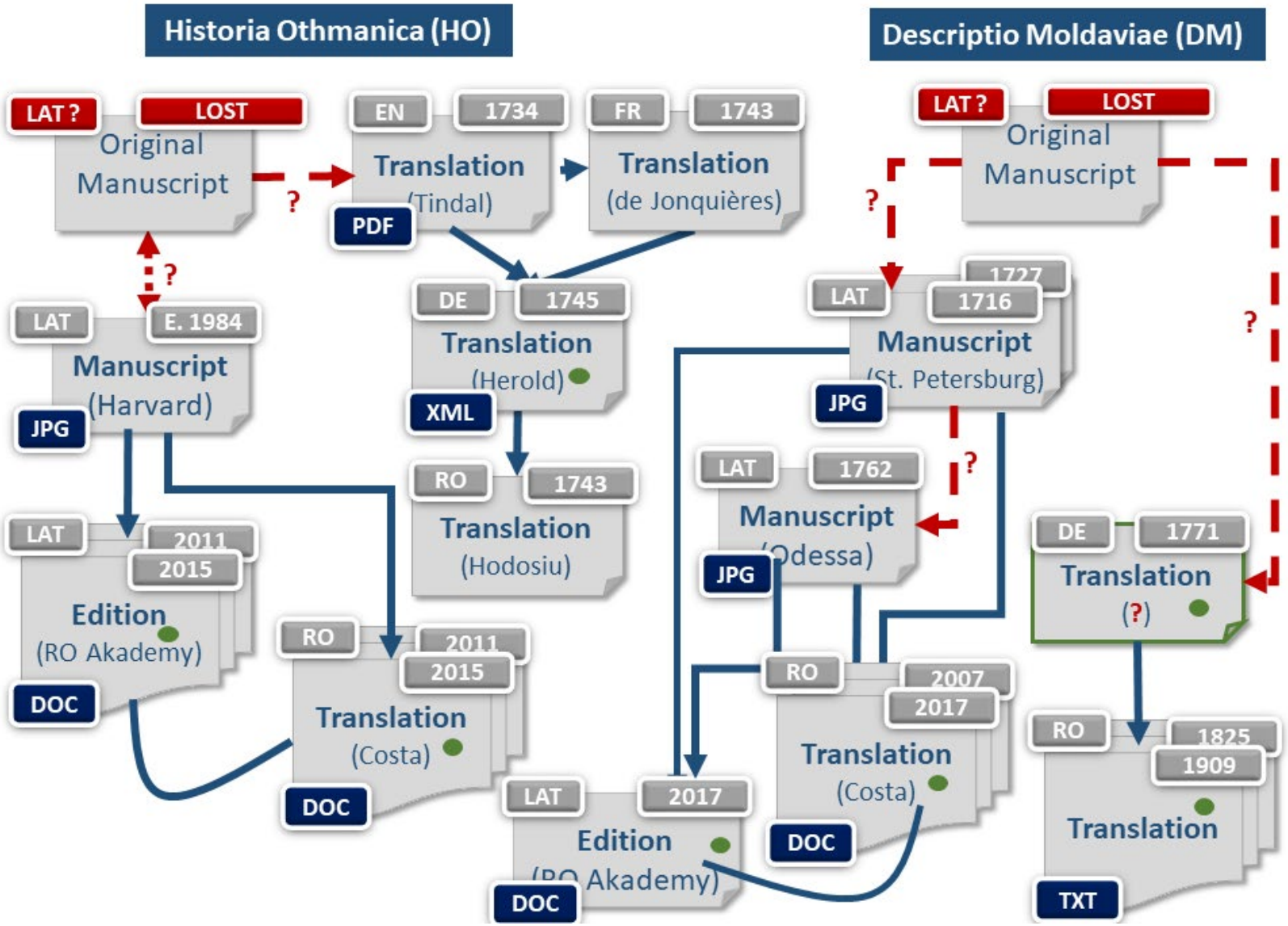
(Beyt) Sevmezidi çü nehr-i saili ol/
Nehr-i sailde buldu mevt ana yol

Hoca Saadettin, Tac-üt Tevarih, pp. 14

into diſorder. *Ertogrul* hearing of the battle, comes opportunely in the heat of the Fight, with five thouſand ſelect Men. His Soldiers ſeeing *Aladin*'s Forces diſpers'd, and flying before their victorious Enemies, perſwade their General to join with the Conquerors. But *Ertogrul* anſwers, " It is not the part of a ſteddy man to violate " his faith, or of a brave warrior to draw his Sword upon the pro- " ſtrate; but rather to aſſiſt and relieve the deſperate and weak."

Ertuğrul eytdi: "Bu söz merdâneler kelâmı değildür. Erlik oldır-kim mağluba yardım idevüz. Hızır gibi buñ deminde bîçârelere medet yitişe. Dest-gîr olavuz" dedi.
(Ertugrul sagte: „Diese sind nicht Wörter der tapferen Männer. Mannhaftigkeit ist es, den Unterliegenden zu helfen. Wie der rettende Engel soll den Hilflosen Hilfe geleistet werden. Wir werden beistehen.)
Neshri, pp. 63

The Corpus
Manuscripts, editions, translations- unclear tradition



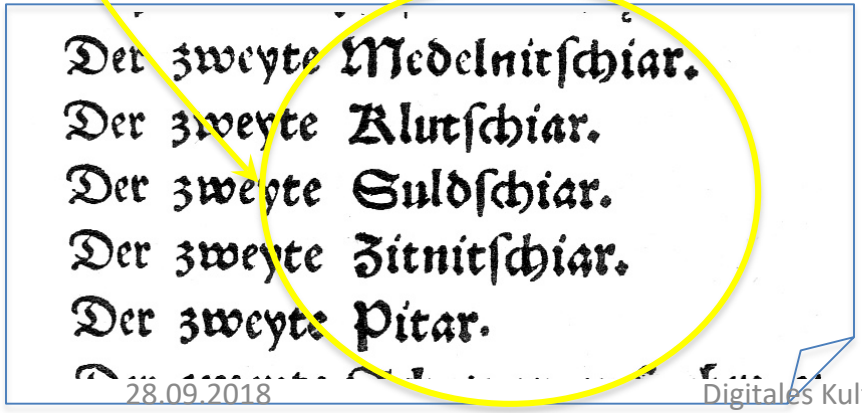
Directions of investigation

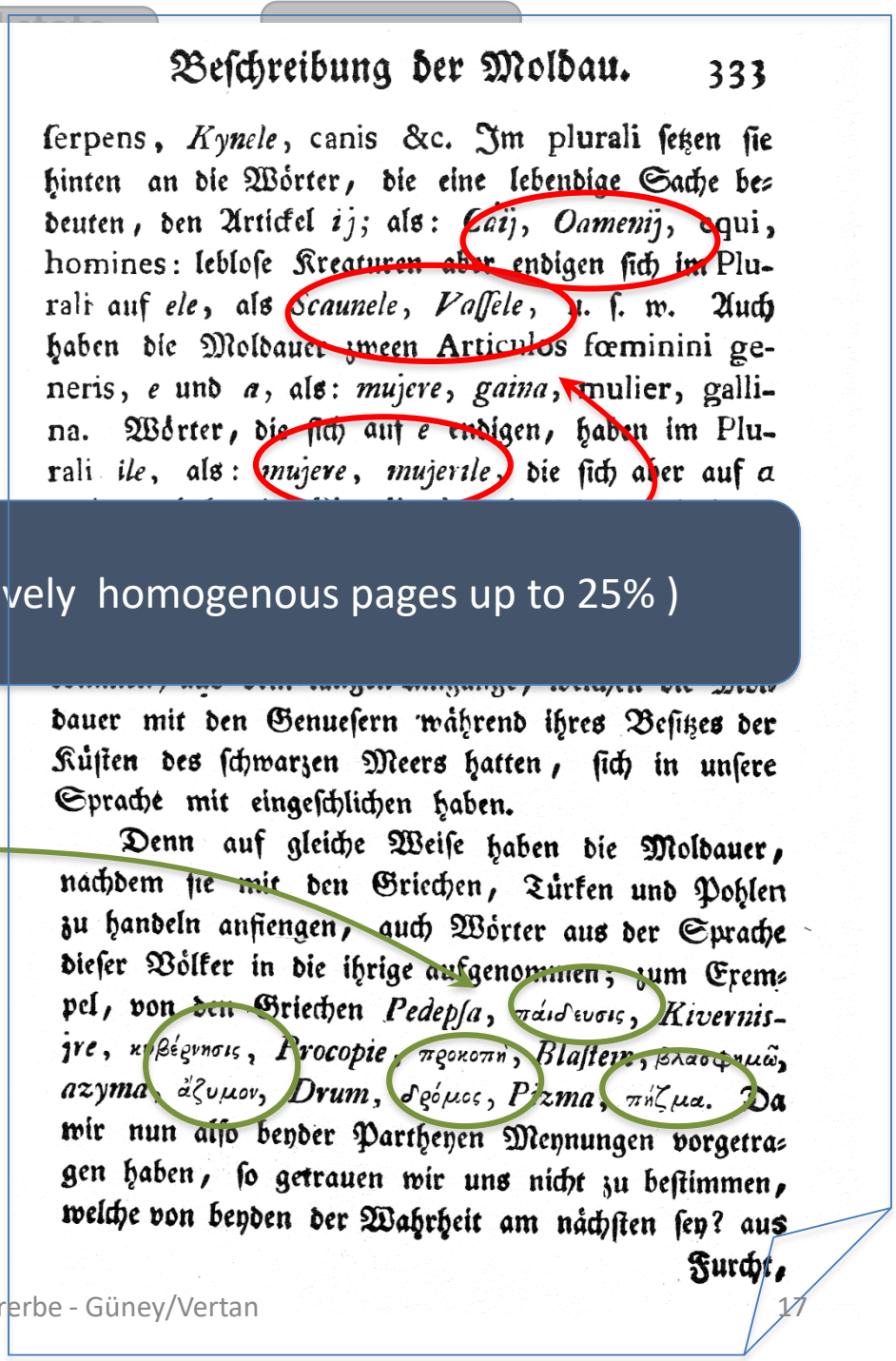
- **Reliability:**
  - Of the original: are the quotations made by Cantemir grounded? Is there a concordance between his degree of trust in these sources and the current knowledge about them (e.g. is there any evidence that a person which Cantemir claims to have spoken to, really lived in that time?)
  - Of the translation against the original; Here an important role have the inserted editorial annotations.
- **Consistency:**
  - Within the original: keeps Cantemir a constant opinion about persons, events, facts across the text? (see his own annex with annotations vs. the text)
  - Across the 2 “originals”: Are common persons and events described similarly?
  - Between original and translation: does the translation preserve the degree of vagueness /certainty stated by Cantemir?
- **Vagueness**
  - Political or tactical reasons for imprecise expressions

Corpus creation – challenges

- Surface form – level
  - German texts are in black-letter typeface
  - Mixed typefaces
  - Mixed scripts

Higher error rate in OCR (even on relatively homogenous pages up to 25%)


Der zweyte Medelnitschiar.
Der zweyte Klutschiar.
Der zweyte Suldschiar.
Der zweyte Zitnitschiar.
Der zweyte Pitar.


Beſchreibung der Moldau. 333

ſerpens, *Kynele*, canis &c. Im plurali ſetzen ſie hinten an die Wörter, die eine lebendige Sache bedeuten, den Artickel *ij*; als: *Cãij*, *Oamenij*, equi, homines: lebloſe Kreaturen aber endigen ſich im Plurali auf *ele*, als *Scaunele*, *Vaſſele*, u. ſ. w. Auch haben die Moldauer zween Articulos fœminini generis, *e* und *a*, als: *mujere*, *gaina*, mulier, gallina. Wörter, die ſich auf *e* endigen, haben im Plurali *ile*, als: *mujere*, *mujerile*, die ſich aber auf *a*

dauer mit den Genueſern während ihres Beſitzes der Küſten des ſchwarzen Meers hatten, ſich in unſere Sprache mit eingeſchlichen haben.

Denn auf gleiche Weiſe haben die Moldauer, nachdem ſie mit den Griechen, Türken und Pohlen zu handeln anfiengen, auch Wörter aus der Sprache dieſer Völker in die ihrige aufgenommen; zum Exempel, von den Griechen *Pedepſa*, παίδευσις, *Kivernisire*, κυβέρνησις, *Procopie*, προκοπή, *Blaſtem*, βλασφημῶ, *azyma*, ἄζυμον, *Drum*, δρόμος, *Pizma*, πίζμα. Da wir nun alſo beyder Partheyen Meynungen vorgetragen haben, ſo getrauen wir uns nicht zu beſtimmen, welche von beyden der Wahrheit am nächſten ſey? aus

Furcht,

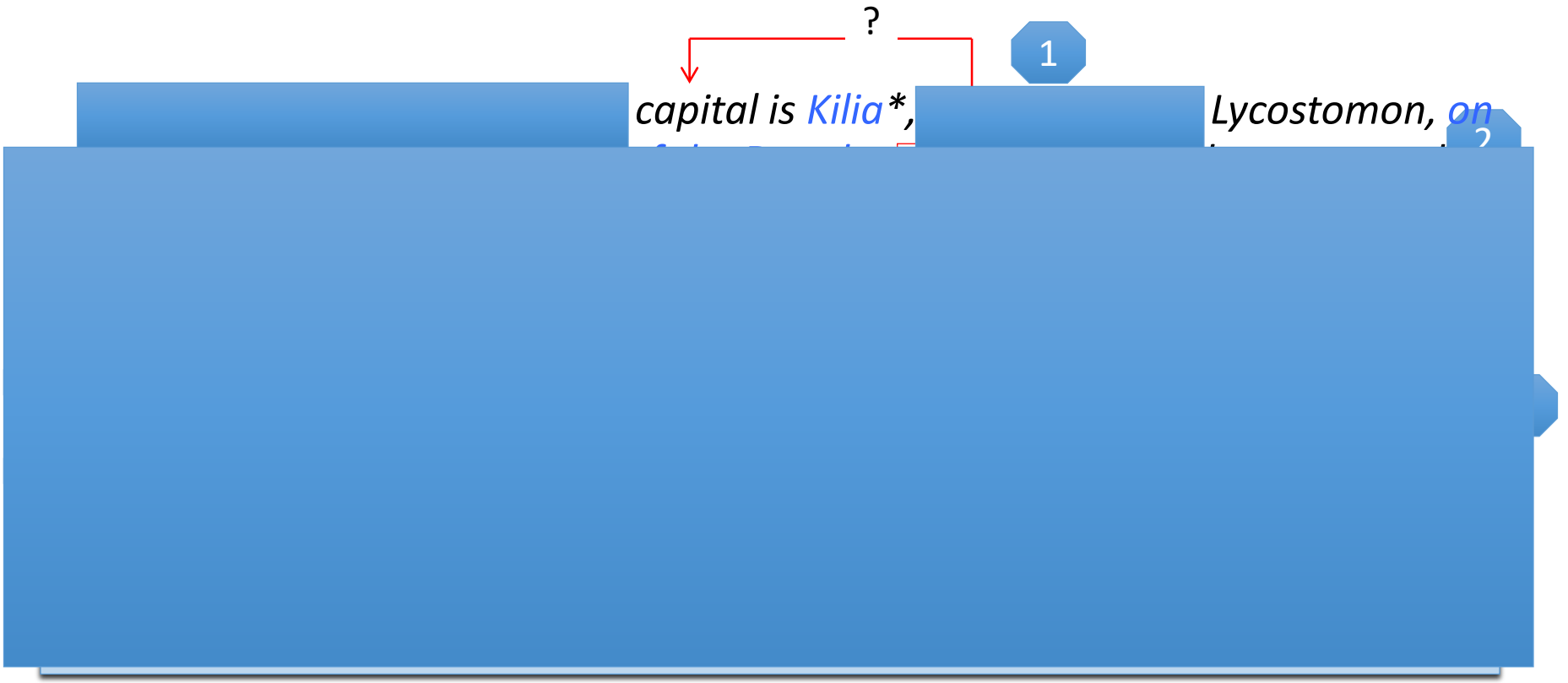
„Nu îndrăznim să spunem ce e adevărat şi ce e fals într-o asemenea întunecime a istoriei. “

(Dimitrie Cantemir, Descrierea stării Moldaviei in vechime si azi, traducere Ioan Costa 2017)

„I do not dare to decide what is the truth about this matter, given the high darkness of this story“

A Complicated Explicit Example: Ambiguity

(Cantemir, Descriptio Moldaviæ, p.73 transl.)



Enriched Classical Markup

Although our books do not record his descendants, it is a wellknown legend for us that he is coming from the moldavian kings

1. Dragosch. **Obgleich unsre Jahrbücher sein Geschlechtsregister nicht angeben, so ist es doch eine beständige Sage bey uns, daß er aus** dem alten königlichen moldauischen Stamme **gewesen sey,** und den Bogdan zum Vater gehabt habe, welcher ein Sohn des Johannis war, von welchem alle Fürsten den Namen Johannis in ihrem Titel zu führen pflegen; **dieser Meinung ist desto mehr Glauben beyzume[illegible]en, weil man schwerlich glauben kan, da[illegible]her von gemeiner Herkunft mit einem so[illegible]** Gefolge auf die Jagd (welche die Molda[illegible]cken Gelegenheit gegeben,).

One should trust even more this opinion, as one can hard think that….

schon vermuthet hatten, daß Dragosch erst nach des Tatars Bathy oder Batu Einfall, d.i. **ungefähr** nach 1250. aus Siebenbürgen ausgewandert ist; vielleicht aber lassen sích beede Meynungen vereinigen wenn man zwey Auswanderungen annimmt, die eine in **der letzten Hälfte des Zwölften**, die andere in der **ersten Hälfte des dreyzehenten Jahrhundert** (V.)

Dragosch	≈ belongs	moldavian kings
Dragosch	≈ son_of	Bogdan
Bogdan	≈ son_of	Johannis
Dragosch	≈ has_additional_name	Johannis
Bogdan	≈ has_additional_name	Johannis
Drgaosch	discovered	Moldau
Dragosch	has_acitivity	hunting
Dragosch	has_activity	development
Development	takes_place after	Batia invasion

Dragosch	has_activity	moved
Movement	takes_place	>=1150; <=1200
Movement	takes_place	>=1200; <=1250
Bathy invasion	takes_place	≈ 1250
Bathy	has_alternative_name	Batu
Bathy	is_a	Tatar

Sources /levels of vagueness/uncertainity to be annotated

1. Linguistic markers for vagueness

2. Factual uncertainity

2.1 References to external written materials (publicatiosn)

2.2 References to external persons, places, names

2.3 References to events

2.4. References to other external knowledge (e.g. legends, folk beliefs)

3. Editors

3.1. Editorial marks

() pretty sure extensions

< > correction

[ ] deletion

{ } marginals /between line

3.2 „Footnotes“

4. Metadata

4.1 genre

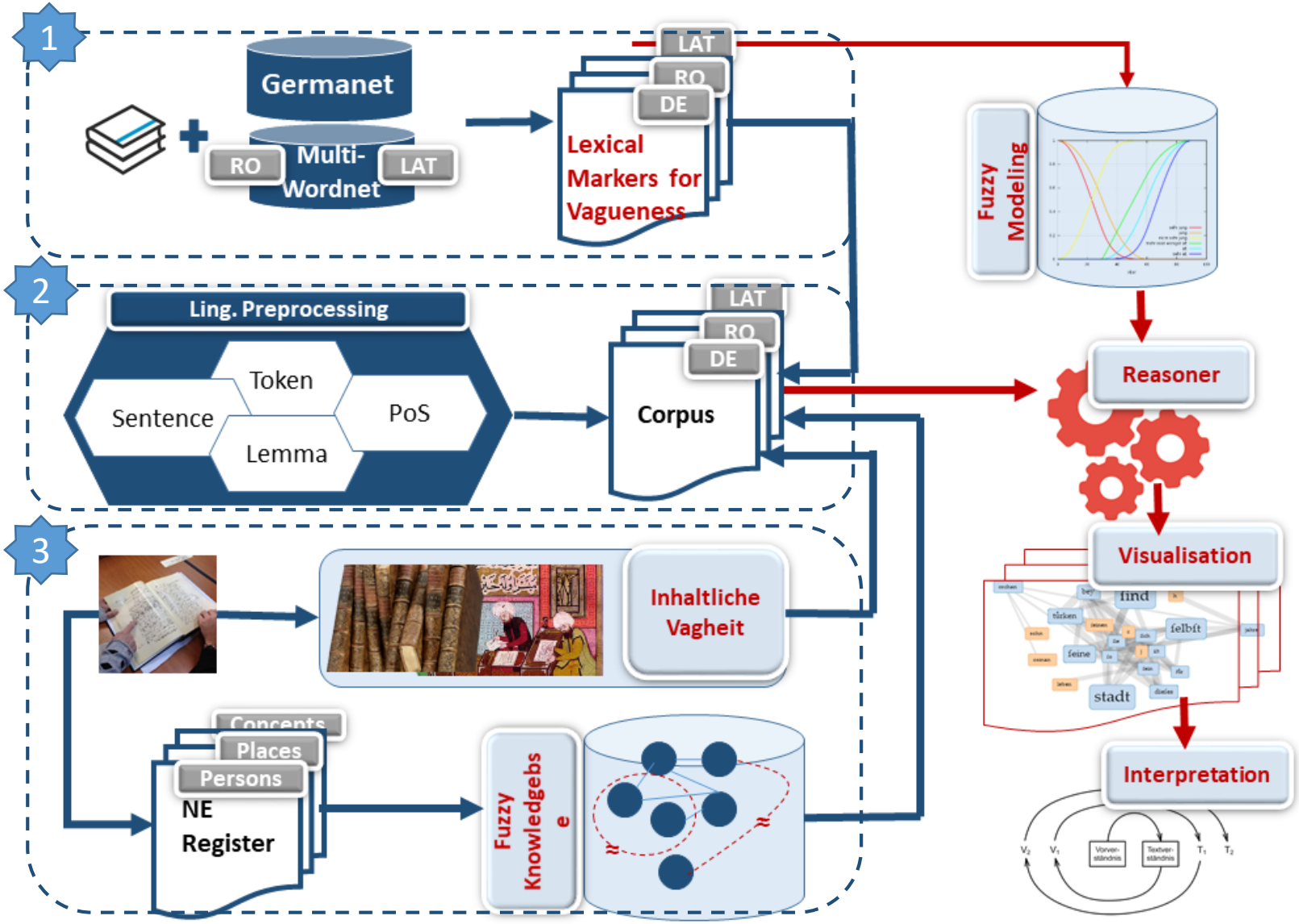
4.2. author

4.3 translation

4.4. tradition path

Vagueness annotation is useful only if it is accompagned by inference rules and adequate ontological knowledge-base

System Architecture



Selected markers for linguistic vagueness

1

1. comparatives, inexact adjectives e.g. *“mehr/more” “größer/bigger”,”älter/older”*
2. non-intersectives e.g. „vermeintlich/supposed“, „so-genannt/so-called“
3. Hedges e.g. „ziemlich/quite“, „einigermaßen/approximately „etwa/about“
4. inexact measures *„4 Tagereisen/4 days trip”, 10 Fuß /10 feet”*
5. modals (attitudes) e.g. „vielleicht/maybe“, „hoffentlich/hopefully“; subjonctives verbs
6. lexical quotation markers :“es wurde gesagt /it is said“
7. vague quantifiers e.g. „viele“, „meistens /mostly“
8. complex quantifiers e.g. *“etwa die Hälfte von den 20-30 tausend Soldaten / about a half from the 20-30 thounsand soldiers”*
9. numbers
10. range expressions e.g. *“Anfang des 18. Jhds./begin of 18th century”*
11. unclear place *„Syrfia“, „Moramor“*
12. unclear person e.g. *„der ehemaligen Herzog / the former duke“*
13. unclear time e.g. *„in alten Zeiten /in old times“*
14. Domain specific *e.g. „Wesir/vizier“ vs. „Wesire/viziers“*

Processing the lists of historical persons, terms and geographical indications

3

DHO	LHO	Turkish Sources	
Eskjischehri Altstadt	Eskiszehr	اسکی شهر Eskişehir	Stadt in Zentralanatolien
Gjermijan Phrygien	Giermian	کرمیان Germiyan	Landschaft in West-Anatolien/ Kütahya und ihre Umgebung

Places Database (initial ≈500)

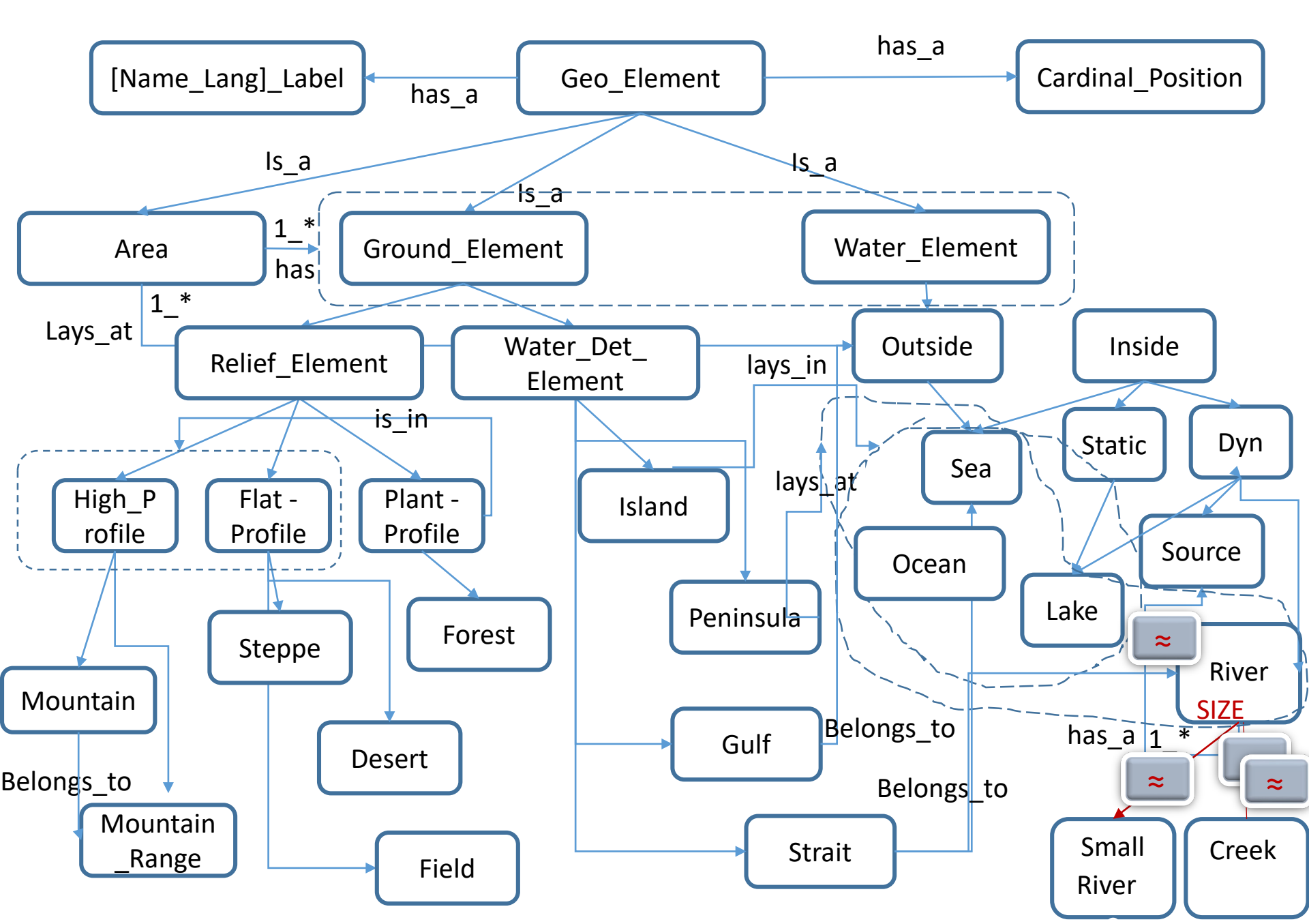
Begjlerbegj (Bsp. Begjlerbegj von Rumilien)	Beglérbèg/ Beglèrbègi Beglerbeg بکلربکی/ بکلربك (Rumeli Beglerbeg)	بکلربکی Beylerbeyi بکلربك Beğlerbeğ روم ایلی بکلربکی (Rumeli Beylerbeyi)	Politik/ Staatsmann/ Oberster Staathalter in Rumelien und Anatolien/ Rang des Staathalters in wichtigen Ländern im Reich (Bsp. Beglerbeg von Budin), Nur die beiden höchsten Beglerbegs (von Anatolien und Rumelien) waren Mitglieder des kaiserlichen Diwans (Rat)

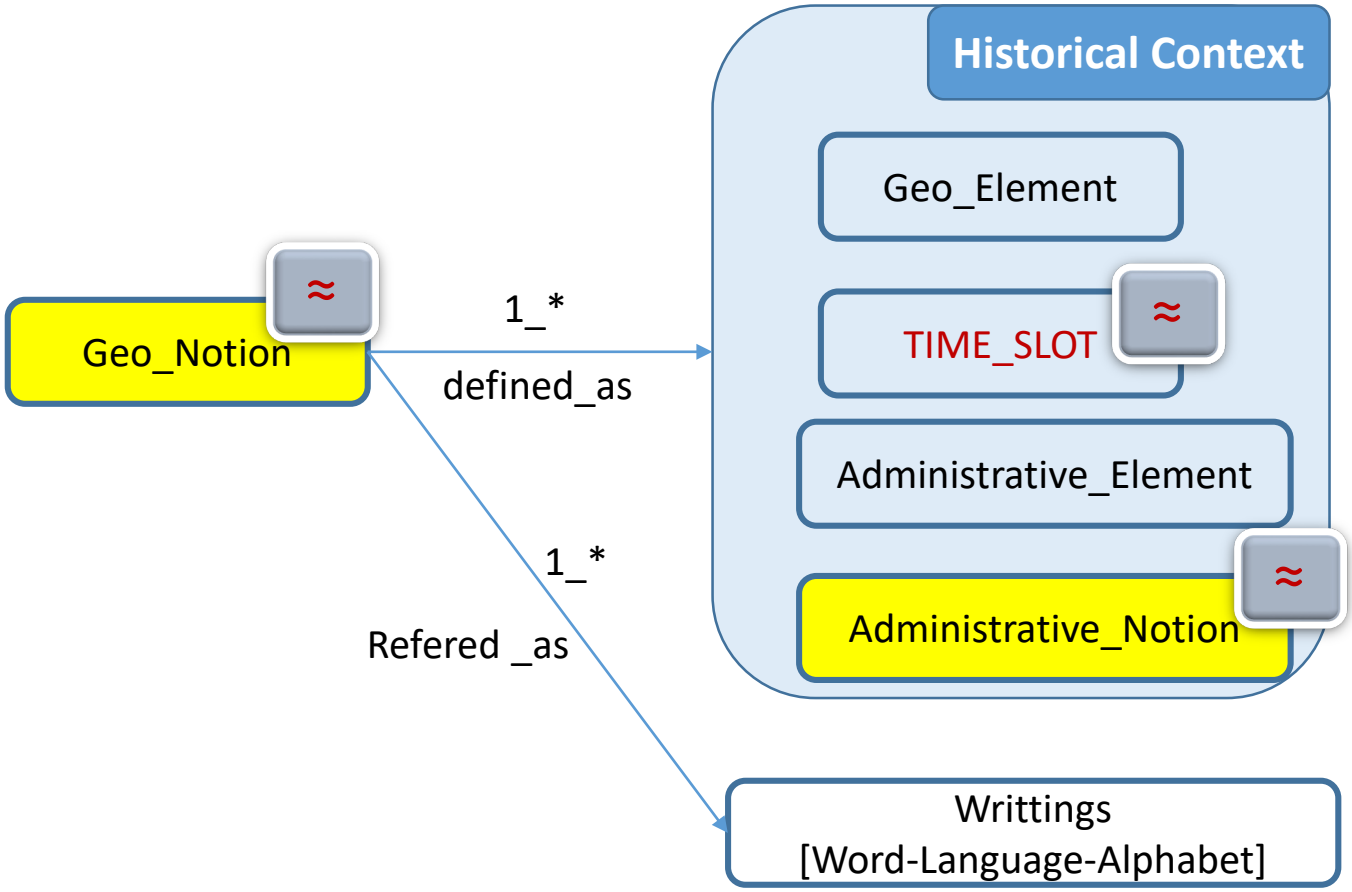
Processing the lists of historical persons, terms and geographical indications

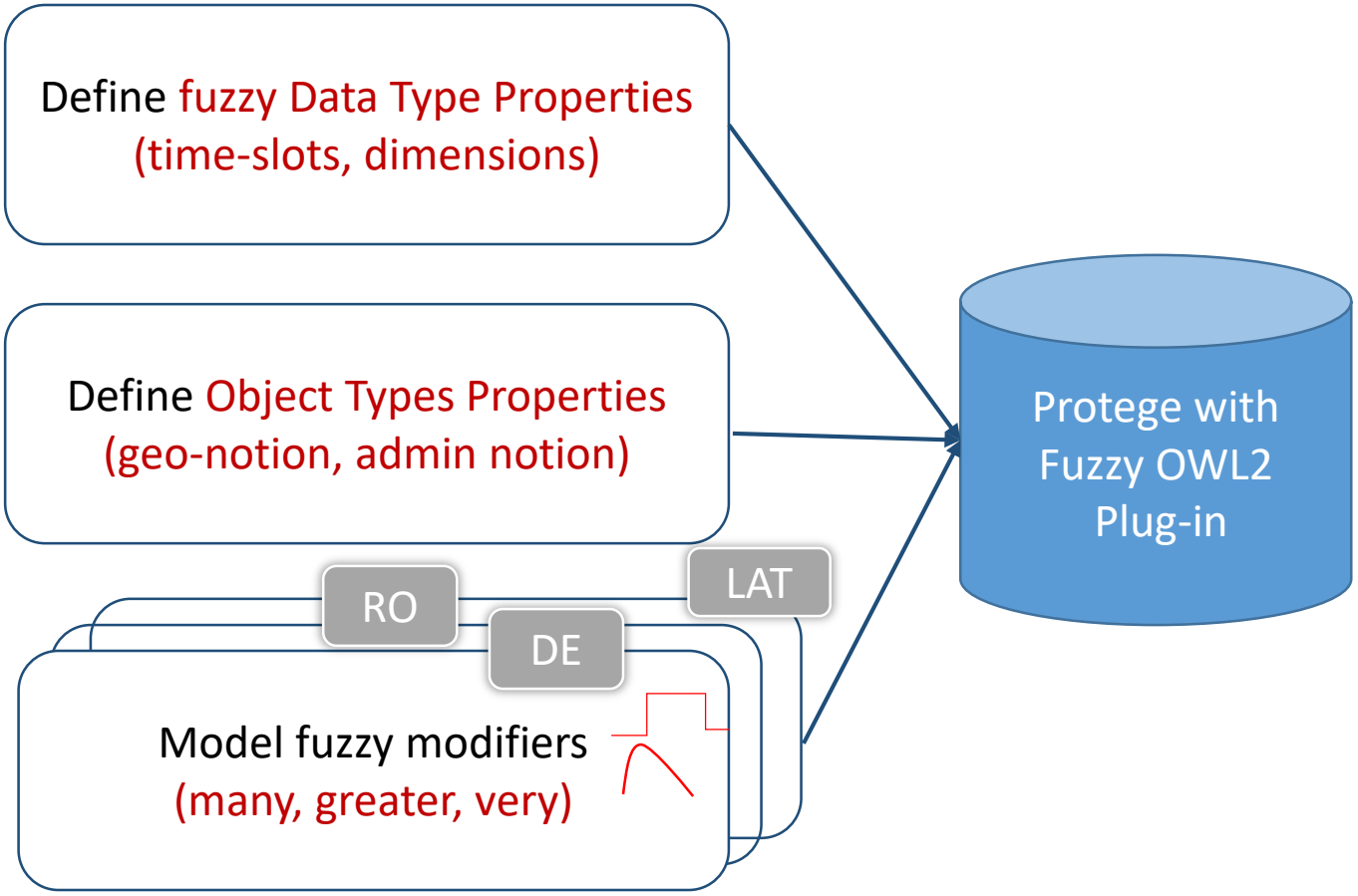
3

DHO	LHO	Turkish Sources	
Aeladdin, Sultan von Ikonien Sultan Saʿladdin	الالدين Alaiddin/ Alaiddìn Alaiddinum Iconiae Sultanum Alaiddin Sultano	الالدين سلطان Sultan Alaaddin Konya Sultanı Alaaddin	Herrscher/ Seldschukischer Sultan, Alaeddin Keykubad II. (?-1254), reg. 1249-1254, Sohn von Gıyaseddin Keyhusrev II. Alaeddin Keykubad I. (?-1237), reg. 1220-1237, Sohn von Gıyâseddin Keyhusrev I. Keykubad I. oder II.? Borrowed vagueness?

Persons Database (initial≈300)

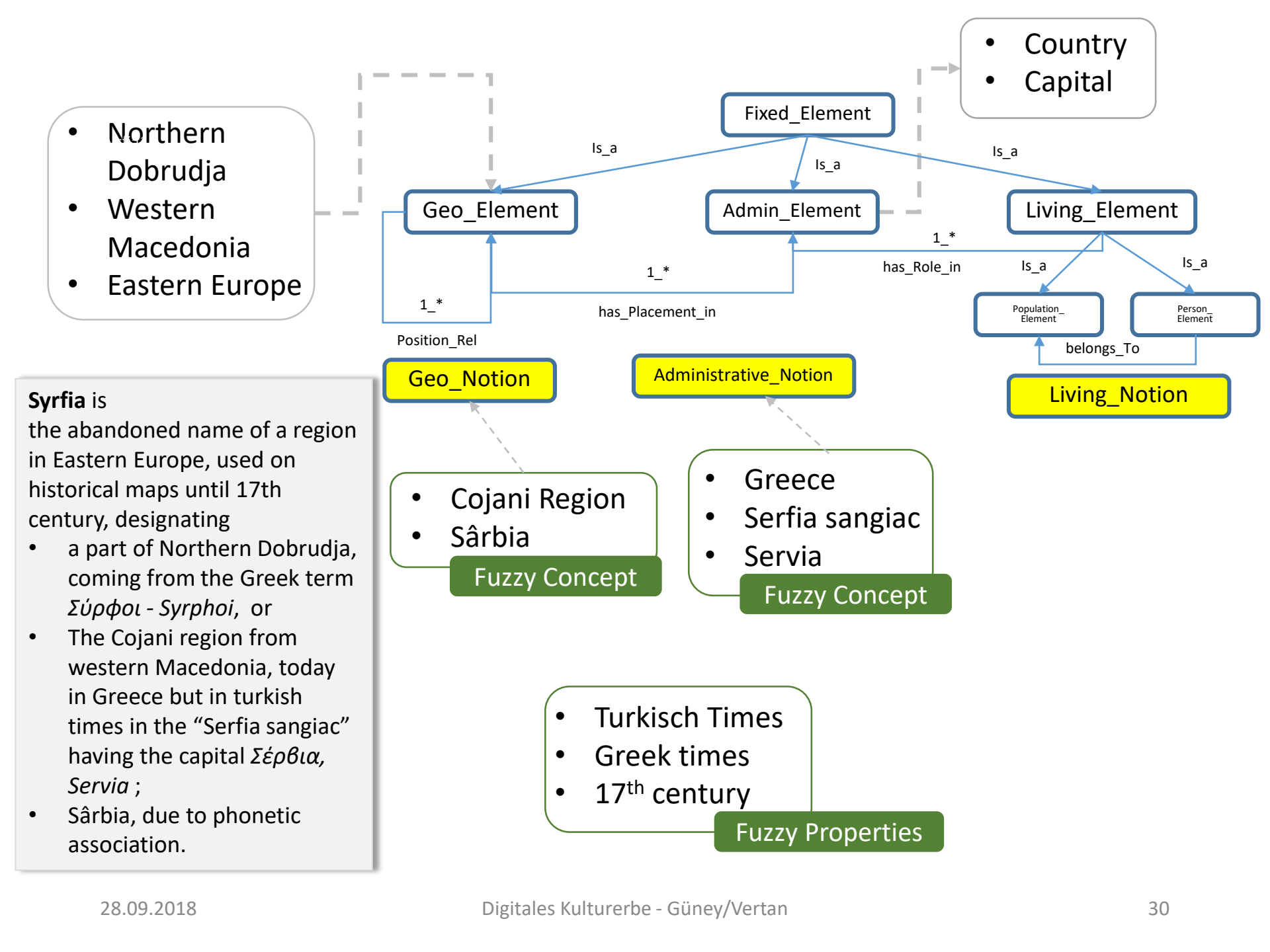

[Name_Lang]_Label
has_a
Geo_Element
has_a
Cardinal_Position
Is_a
Is_a
Is_a
Area
1_*
has
Ground_Element
Water_Element
1_*
Lays_at
Relief_Element
Water_Det_
Element
lays_in
Outside
Inside
is_in
Static
Dyn
Sea
High_P
rofile
Flat -
Profile
Plant -
Profile
Island
lays_at
Ocean
Source
Peninsula
Lake
Forest
Steppe
River
SIZE
Mountain
Gulf
Belongs_to
has_a
1_*
Desert
Belongs_to
Belongs_to
Mountain
_Range
Strait
Small
River
Creek
Field


Historical Context
Geo_Element
TIME_SLOT
Administrative_Element
Administrative_Notion
Geo_Notion
1_*
defined_as
1_*
Refered _as
Writtings
[Word-Language-Alphabet]


Define fuzzy Data Type Properties
(time-slots, dimensions)
Define Object Types Properties
(geo-notion, admin notion)
RO
LAT
DE
Model fuzzy modifiers
(many, greater, very)
Protege with
Fuzzy OWL2
Plug-in

Example: Annotation of ambiguous places

Ortelius
Map 1570



- Country
- Capital

- Northern Dobrudja
- Western Macedonia
- Eastern Europe

Syrfia is
the abandoned name of a region in Eastern Europe, used on historical maps until 17th century, designating

- a part of Northern Dobrudja, coming from the Greek term *Σύρφοι - Syrphoi*, or
- The Cojani region from western Macedonia, today in Greece but in turkish times in the "Serfia sangiac" having the capital *Σέρβια, Servia* ;
- Sârbia, due to phonetic association.

- Cojani Region
- Sârbia

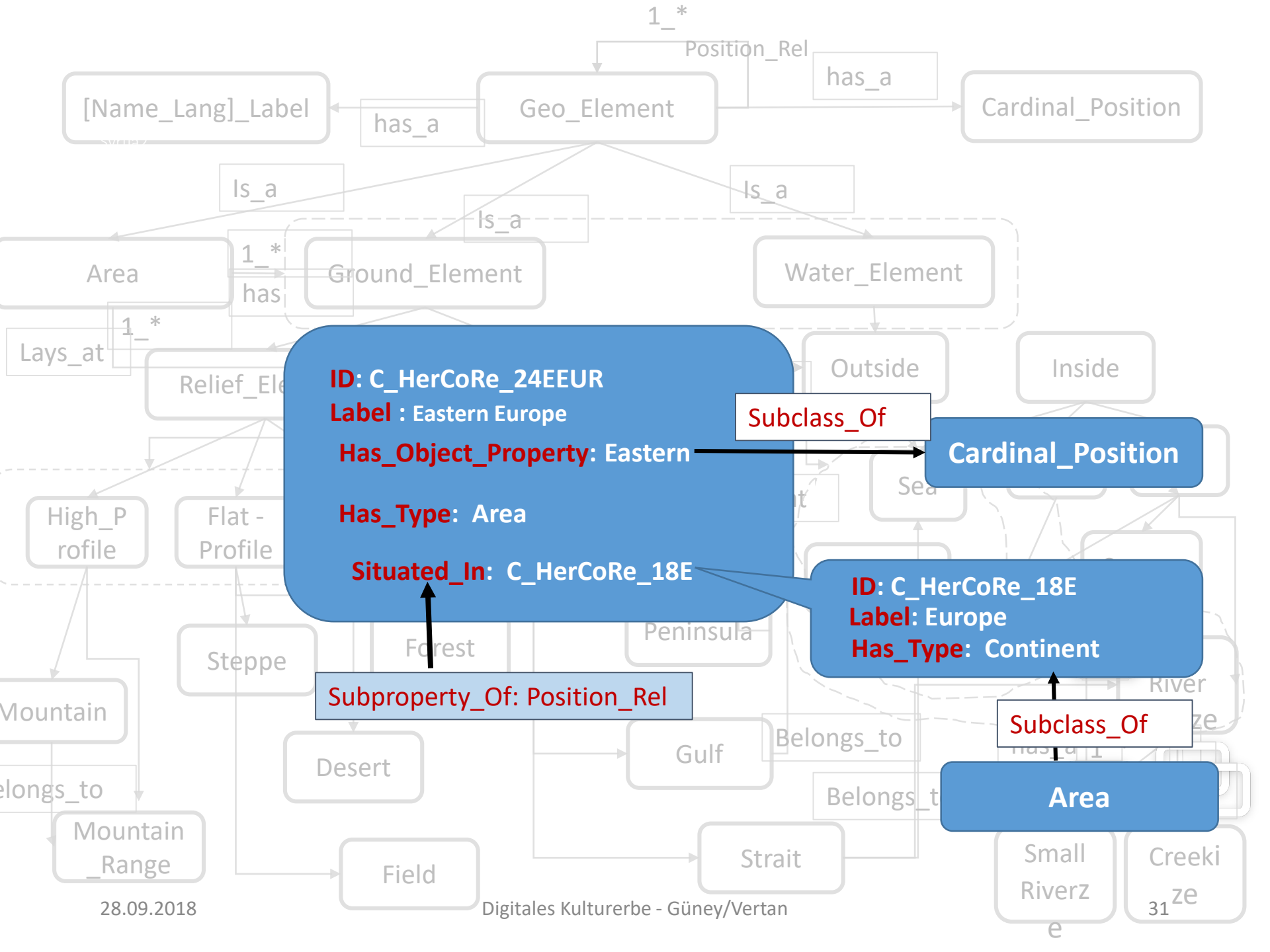
Fuzzy Concept

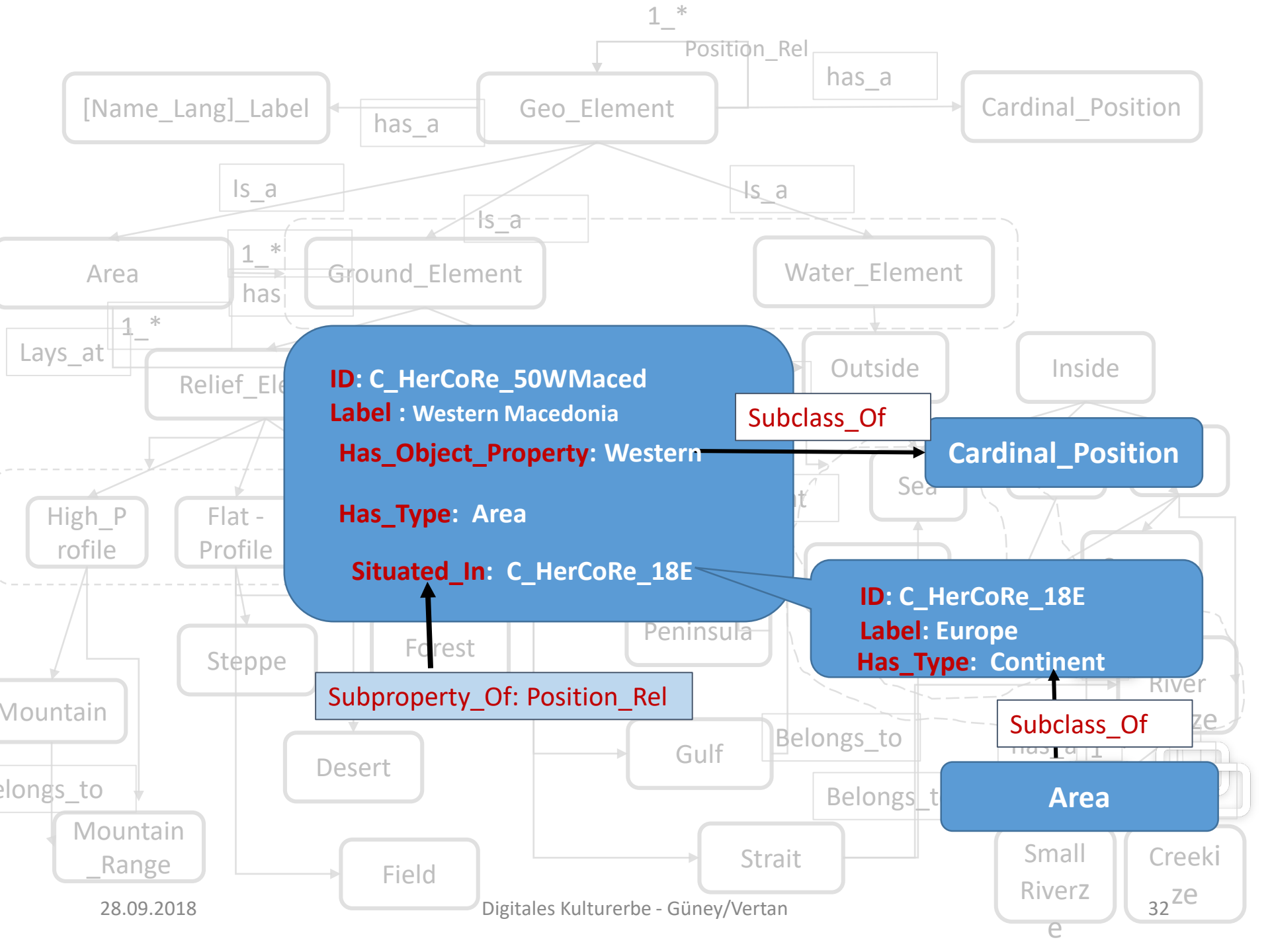
- Greece
- Serfia sangiac
- Servia

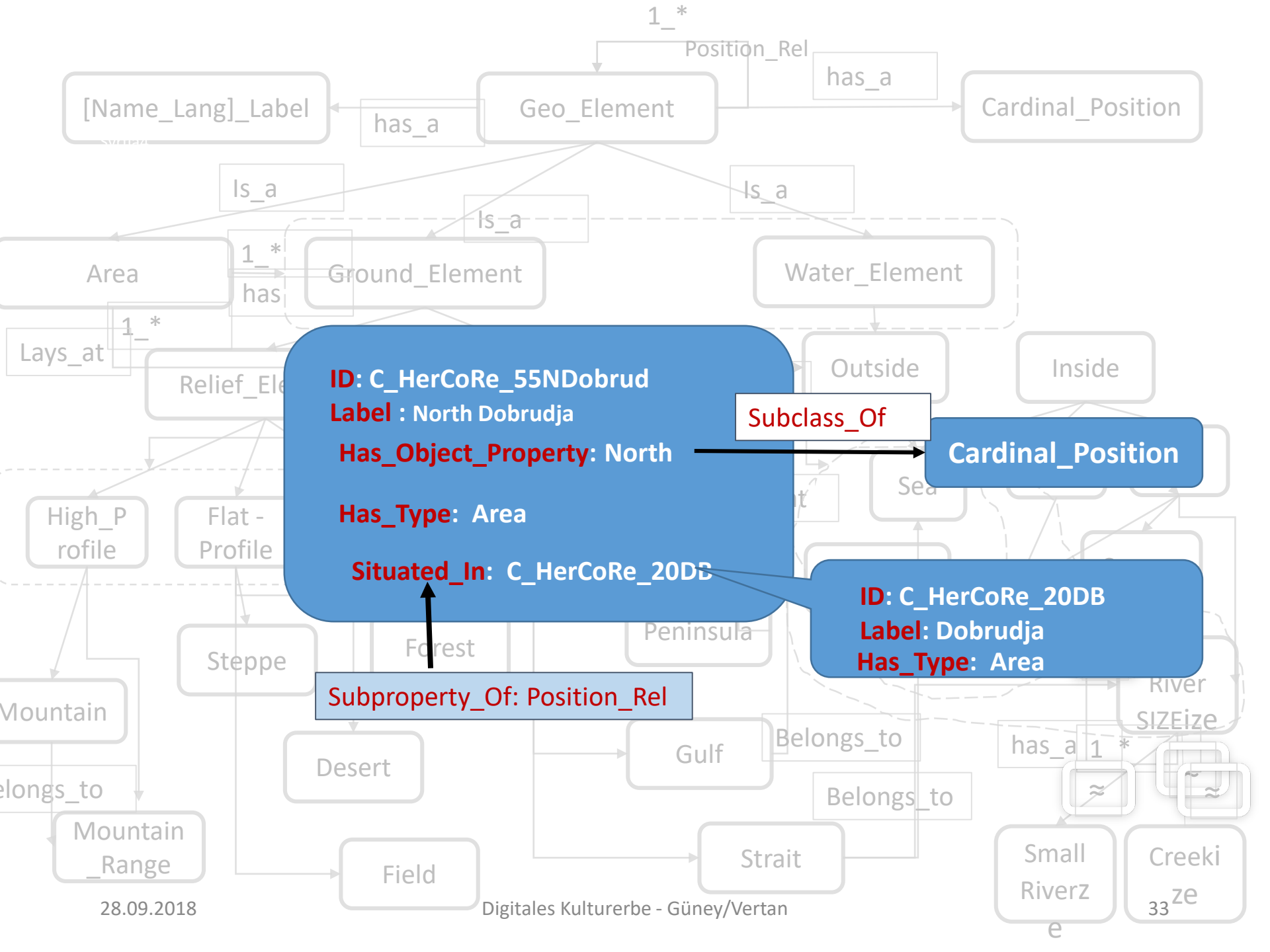
Fuzzy Concept

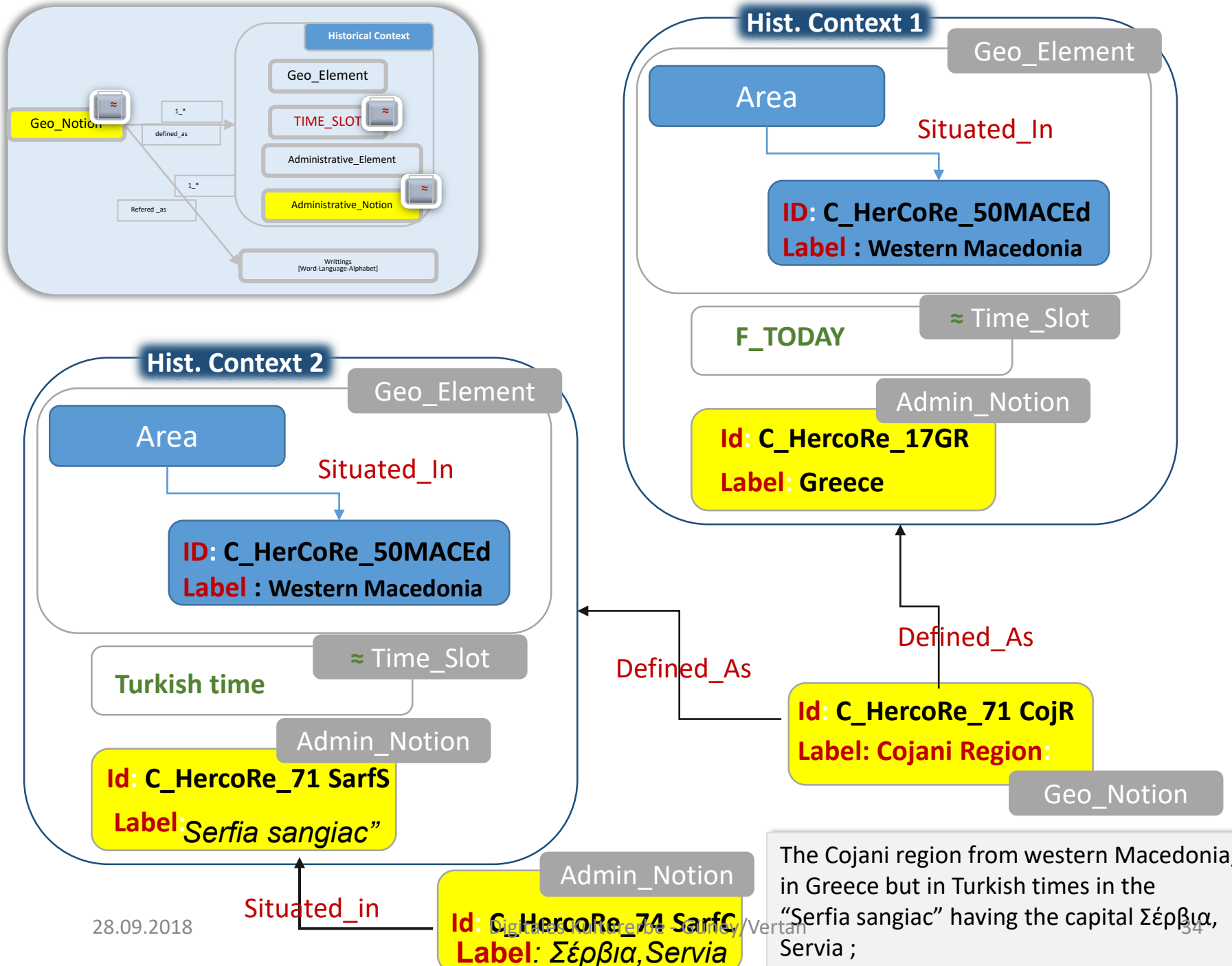
- Turkisch Times
- Greek times
- 17th century

Fuzzy Properties

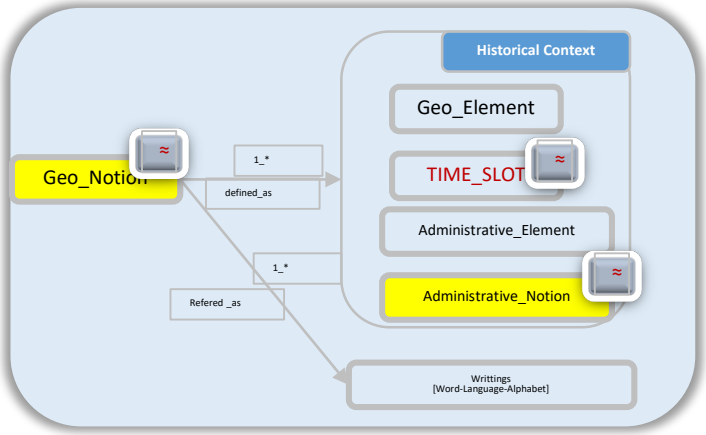

ID: C_HerCoRe_24EEUR
Label : Eastern Europe
Has_Object_Property: Eastern
Has_Type: Area
Situated_In: C_HerCoRe_18E
Subclass_Of
Cardinal_Position
ID: C_HerCoRe_18E
Label: Europe
Has_Type: Continent
Subproperty_Of: Position_Rel
Subclass_Of
Area
Geo_Element
Cardinal_Position
[Name_Lang]_Label
Ground_Element
Water_Element
Outside
Inside
Area
Lays_at
High_Profile
Flat - Profile
Steppe
Forest
Peninsula
Mountain
Desert
Gulf
Belongs_to
Mountain_Range
Field
Strait
Small Riverze
Creekize


1_*
Position_Rel
has_a
[Name_Lang]_Label
has_a
Geo_Element
has_a
Cardinal_Position
Is_a
Is_a
Is_a
Area
1_*
has
Ground_Element
Water_Element
1_*
Lays_at
Relief_El
Outside
Inside
ID: C_HerCoRe_50WMaced
Label : Western Macedonia
Has_Object_Property: Western
Subclass_Of
Cardinal_Position
Has_Type: Area
Situated_In: C_HerCoRe_18E
ID: C_HerCoRe_18E
Label: Europe
Has_Type: Continent
Subproperty_Of: Position_Rel
Subclass_Of
Area
High_P rofile
Flat - Profile
Steppe
Forest
Peninsula
Mountain
Desert
Gulf
Belongs_to
elongs_to
Mountain _Range
Field
Strait
Small Riverz e
Creeki ze


1_*
Position_Rel
has_a
[Name_Lang]_Label
has_a
Geo_Element
has_a
Cardinal_Position
Is_a
Is_a
Is_a
Area
1_*
has
Ground_Element
Water_Element
1_*
Lays_at
Relief_El
Outside
Inside
ID: C_HerCoRe_55NDobrud
Label : North Dobrudja
Has_Object_Property: North
Subclass_Of
Cardinal_Position
Has_Type: Area
Situated_In: C_HerCoRe_20DB
ID: C_HerCoRe_20DB
Label: Dobrudja
Has_Type: Area
High_P rofile
Flat - Profile
Sea
Steppe
Forest
Peninsula
Subproperty_Of: Position_Rel
Mountain
River SIZEize
Belongs_to
has_a
1 *
Desert
Gulf
Belongs_to
elongs_to
Mountain _Range
Field
Strait
Small Riverz e
Creeki ze

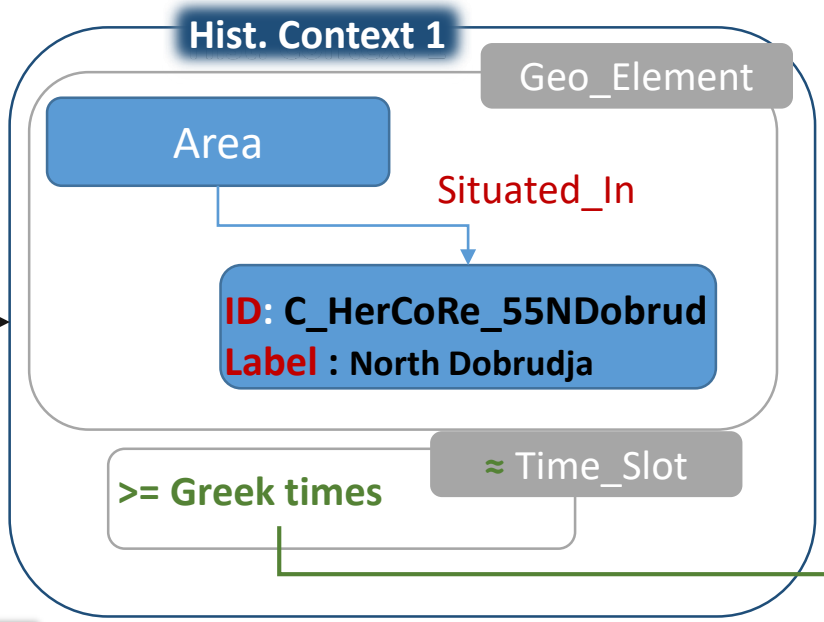


The Cojani region from western Macedonia, today in Greece but in Turkish times in the "Serfia sangiac" having the capital Σέρβια, Servia ;




```
<DatatypeDefinition>
    <Datatype IRI='#GreekTimes'/> <DataIntersectionOf>
    <DatatypeRestriction>

          <Datatype abbreviatedIRI='xsd:integer'/>
          <FacetRestriction facet='&xsd;minInclusive'>
                    <Literal datatypeIRI='&xsd;integer'>-750</Literal>
           </FacetRestriction>
       </DatatypeRestriction>
       <DatatypeRestrictionOf>
</DatatypeDefinition>
```



Geo_Notion — Defined_As

Id: C_HercoRe_10 DSyrf

Label: *Σύρφοι, Syrphoi*

Part of Northern Dobrudja, coming from the Greek term Σύρφοι --Syrphoi;

```
Class ( Syrfia Annotation
 (fuzzyLabel
    < fuzzyOwl2 fuzzyType =" concept " >
    < Concept type =" weightedSum " >
    < Concept type =" weighted " value ="0.33" base ="C_HercoRe_71CojR " / >
     < Concept type =" weighted " value ="0.33" base =" C_HercoRe_10DSyrf " />
     < Concept type =" weighted " value ="0.33" base =" C_HercoRe_11Srb " />
))
```

Syrfia is
the abandoned name of a region in Eastern Europe, used on historical maps until 17th century, designating

- a part of Northern Dobrudja, coming from the Greek term *Σύρφοι - Syrphoi*, or
- The Cojani region from western Macedonia, today in Greece but in turkish times in the "Serfia sangiac" having the capital *Σέρβια, Servia* ;
- Sârbia, due to phonetic association.

Source: Wikipedia

Geo_Notion

Id: C_HercoRe_70Syrfia
Label: Syrfia
Used_for: Map
<= 17 Century
≈ Time_Slot

Defined_As
Confidence 0.33

Hist. Context 1
Id: C_HercoRe_71 CojR
Label: Cojani Region:

Defined_As
Confidence 0.33

Hist. Context 2
Id: C_HercoRe_10 DSyrf
Label: *Σύρφοι, Syrphoi*

Defined_As
Confidence 0.33

Hist. Context 3
Id: C_HercoRe_11Sarb
Label:*Sarbia*

Orteliusmap 1570

Id: I_C_HerCoRe_Sy
Label: Syrfia_Ortelius
Used_for: Map_Ortelius
Time_slot: 1570

Instance_Of

Syrfia is
the abandoned name of a region in Eastern Europe, used on historical maps until 17th century, designating

- a part of Northern Dobrudja, coming from the Greek term *Σύρφοι - Syrphoi*, or
- The Cojani region from western Macedonia, today in Greece but in turkish times in the "Serfia sangiac" having the capital *Σέρβια, Servia* ;
- Sârbia, due to phonetic association.

Source: Wikipedia

Geo_Notion

Id: C_HercoRe_70Syrfia
Label: Syrfia
Used_for: Map

<= 17 Century
≈ Time_Slot

Defined_As
Confidence 0.2

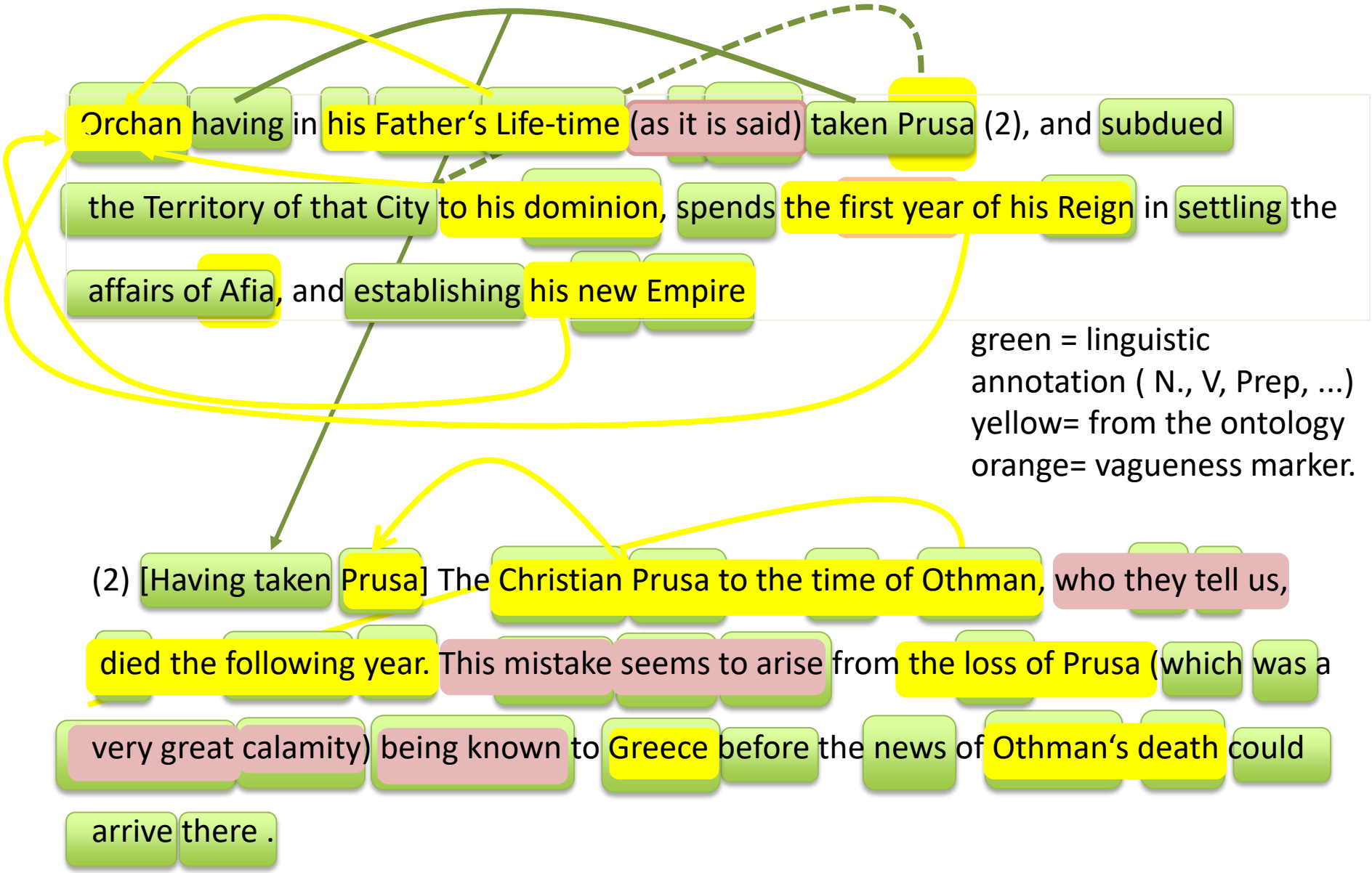
Hist. Context 1
Id: C_HercoRe_71 CojR
Label: Cojani Region:

Defined_As
Confidence 0.7

Hist. Context 2
Id: C_HercoRe_10 DSyrf
Label: *Σύρφοι, Syrphoi*

Defined_As
Confidence 0.1

Hist. Context 3
Id: C_HercoRe_11Sarb
Label: *Sarbia*



History of Growth and Decay Ottoman Empire, English Translation, pag. 24

Annotation-Environment Functionality

- Several Layers of Annotation (e.g. linguistic, editorial, text structure, domain specific).
- Annotation layers are interconnected
- Synchronisation between different text variants (original, translation editorial remarks)
- Discontinuous annotation segments
- Controlled automatisation of manual annotation
- Need of user-friendly annotation interfaces
- Modular Architecture flexible at changes (new layers, new annotation categories)
- Import of automatic annotation (basic linguistic, basic vagueness)

Work ahead

- Semantic Linking between the map and „Geo_notions“
- Formal representation of vagueness markers
- Adaptation of existent fuzzy reasoners
- Specification of user scenarios
- Visualisation of results
- Reuse and enhance the ontology
- Model the Cantemir‘s Network in Istanbul and link it with the documents