UNIVERSITATEA
DIN BUCUREȘTI
VIRTUTE ET SAPIENTIA

Ontologies for Digital Humanities

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Exercise 1

Request 1

Write the name of the Place where you live

Exercise 1

Request 2

Write a (full?) list of geographical entities that you can find in the place where you live (5 minutes)

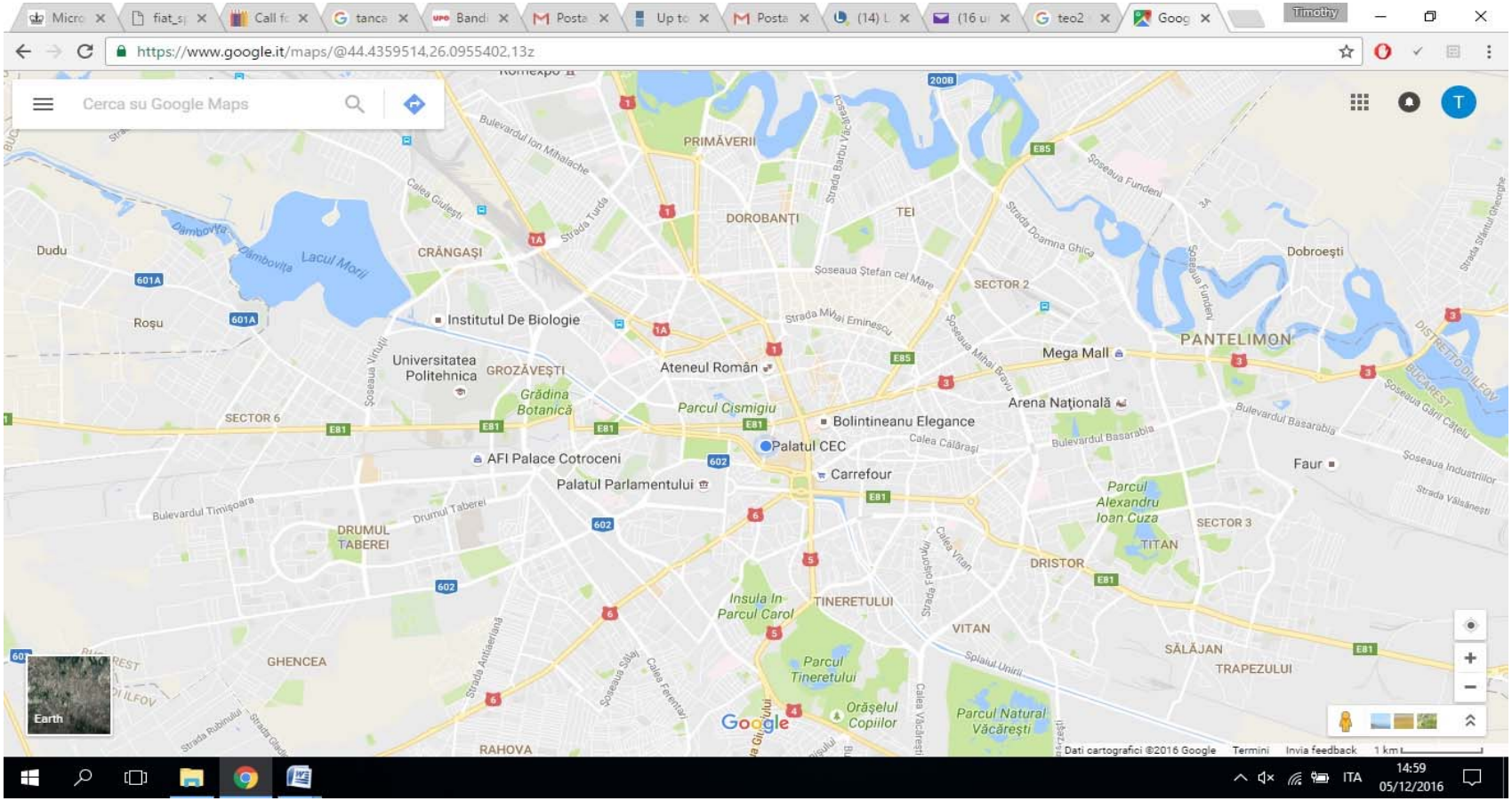
Summary of the lessons

1. What a geo-ontology is
2. Philosophical ontology
3. Ontology of geography
4. Ontology and computer science
5. On the aims of geo-ontologies
6. Common sense (geography)
7. The variety of geo-ontologies
8. GO! Geolat GO!

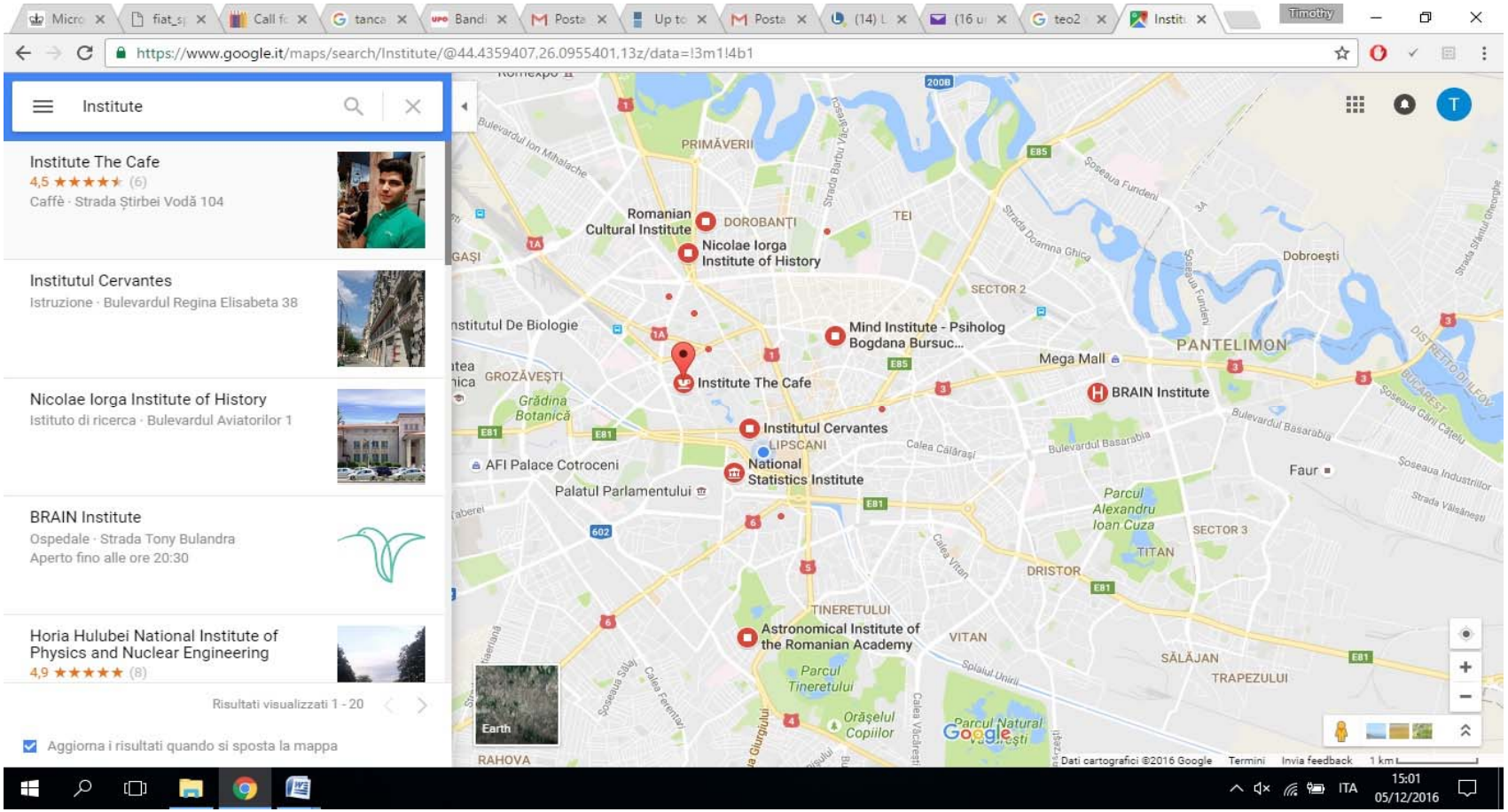
Lesson 1

What a geo-ontology is

What is a geo-ontology? (1/2)



What is a geo-ontology? (2/2)



What a geo-ontology is

a software aimed at describing the geographical domain or, at least, some of its very specific sub-areas from an ontological point of view

Three different disciplinary areas

1. Computer Science
2. Philosophy
3. Geography

Lesson 2.
Philosophical ontology

Philosophical ontology

the discipline concerned with the question of *what entities exist*, a task that is often identified with that of analyzing the categorial (and hierarchical) structure of reality and drafting a complete and detailed inventory of the universe

The three main issues

1. Definition of (ontological) category;
2. Formal problems;
3. Problems concerning contents

Definition of (ontological) category (1/3)

The two main positions:

1. to bypass the problem;
2. to take it at face value

Definition of (ontological) category (2/3)

When asked to provide a definition of ontological category, we can alternatively:

1. declare it an impossible enterprise;
2. give only examples of categories;
3. provide an entire laundry-list of (all of) them without further specifications

Definition of (ontological) category (3/3)

Three kinds of accounts which try to deal with the definition :

1. OC are the most general kinds of things;
2. entities belonging to the same OC can somehow be exchanged for one another in certain contexts;
3. OC provide the identity criteria for classes of entities.

Formal issues

Formal (or structural) issues generally involve:

1. the hierarchical organization of our ontology
2. the relationships among different categories.

Issues concerning contents (1/3)

They regard (1) what sorts of ontological categories should be considered as fundamental as well as (2) what entities should be included among them.

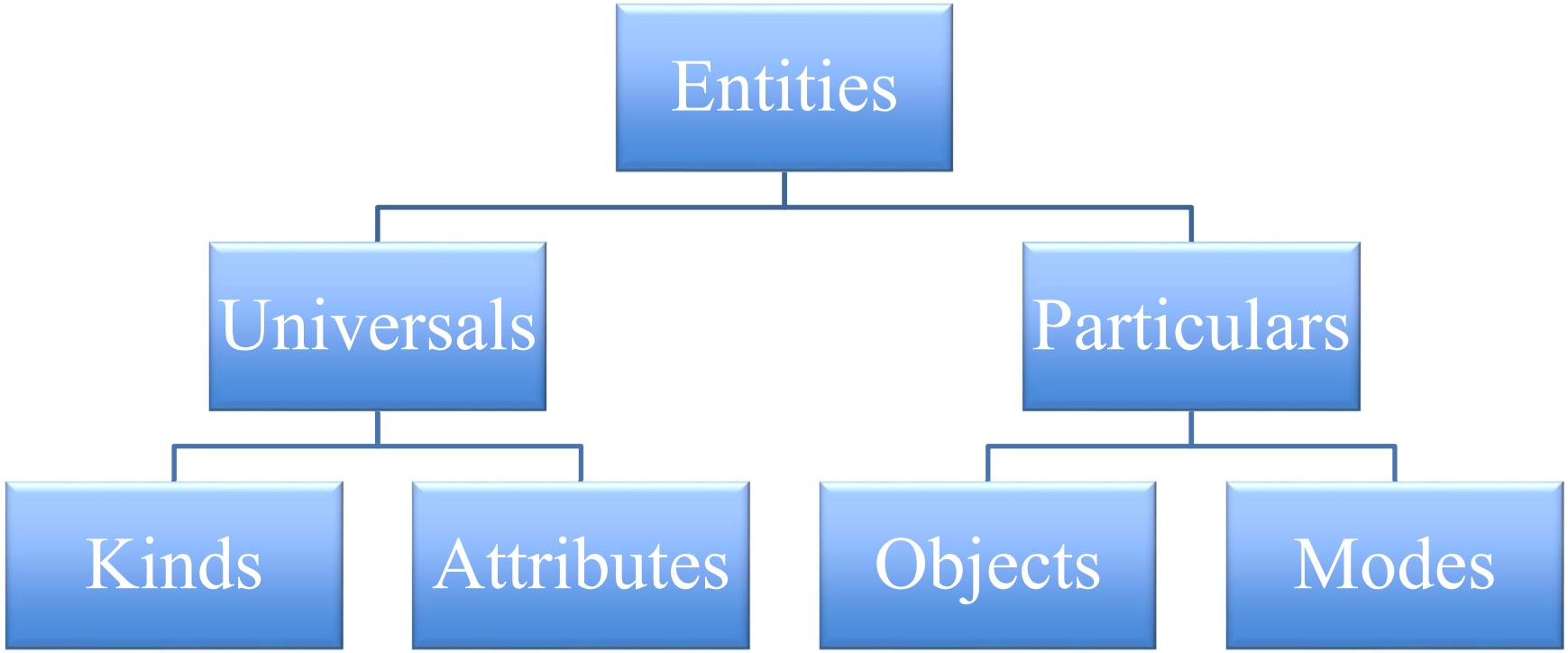
Issues concerning contents (2/3)

The most cited examples of (fundamental) categories embraces entities such as objects, individuals, properties, particulars, attributes, relations, states of affairs, modes, tropes, facts, events, processes, and so forth.

Issues concerning contents (3/3)

The basic categories are identified on empirical and cognitive grounds, and represent a theoretical compromise between two different aims: cognitive economy and explanatory power.

Lowe's Four-category ontology



Philosophical ontologies

It is the study of what there is

It is not the study of:

- how do we know that we know (on what there is);
- the meaning of the terms (involved)

A heterogeneous debate

The development of this research has been characterized by an increasing number of hypotheses and methods of investigation, from which a heterogeneous debate has followed.

The consequent plurality of guidelines has made it difficult to provide an exhaustive classification of the various and different positions at stake.

One possible classification

Varzi's classification:

1. Formal ontology
2. Material ontology

Such a division draws quite different areas of research characterized by different tools and conceptual background.

Formal ontology

It is concerned with the task of laying bare the formal structure of all there is, whatever it is. More generally, it should pertain to the task of this ontology to work out a general theory of such formal relations as identity, parthood and dependence.

Tools: formal logic & mental experiments

Material ontology

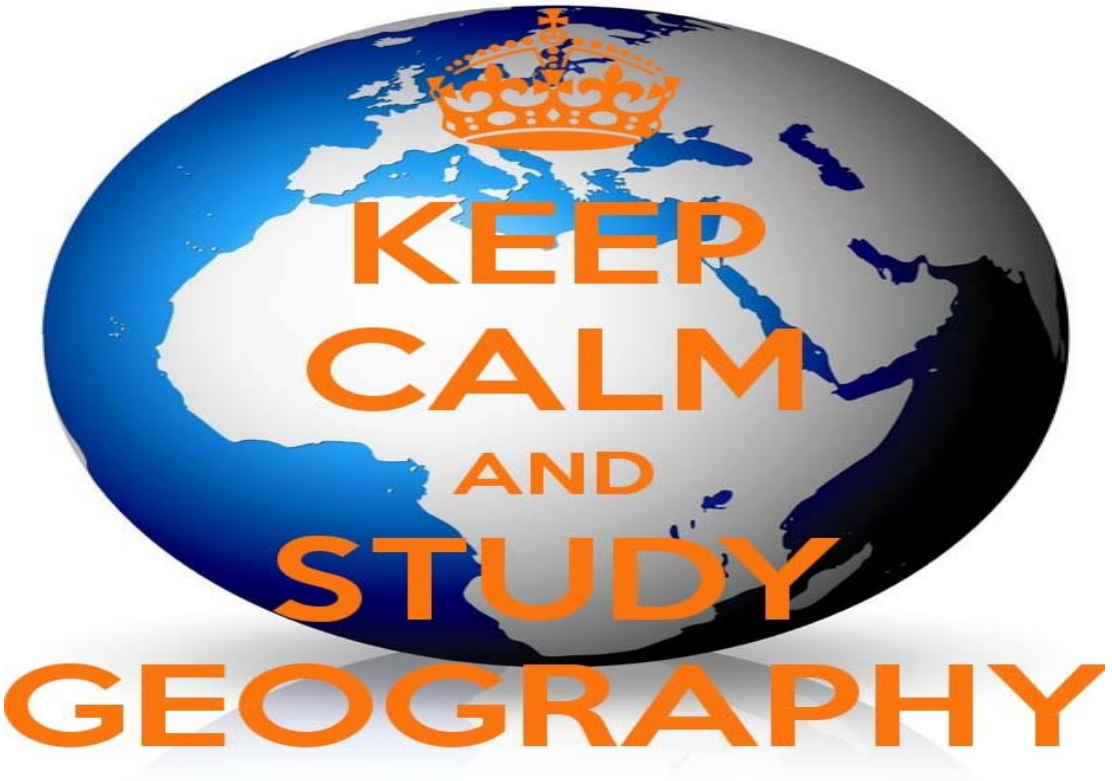
It is aimed at drawing up a detailed and exhaustive inventory of what exists. Moreover, material ontology is taken to be closely related to the (specific) aspects of reality studied by different scientific and social disciplines.

Tools: scientific theories (and their results), linguistic structures, common sense conceptualizations

Regional ontologies

In this context, there was also a proliferation of regional ontologies, aimed at providing an inventory of what there is within the domain of each specific discipline. The non-reductionist hypothesis embraced by these ontologies is that the entities postulated by different disciplines are irreducible to the entities postulated by other disciplines. For this, they deserve a specific and separate study

Lesson 3
Ontology of Geography



What the ontology of geography is (1/2)

the discipline that analyzes the mesoscopic world of geographical partitions in order to :

- establish what kinds of geographical entities exist and how they can be classified in an (hierarchical) system that gathers them together;
- combine quantitative and measurable geographic phenomena described by different scientific disciplines with qualitative geographic descriptions of reality emerging from common sense

What the ontology of geography is (2/2)

About the first aim, ontology of geography should study,

1. geographic entities (entities such as mountains, oceans, countries, etc.);
2. their borders (natural and/or artificial, regardless of the fact that these boundaries might be part of the entities they define);
3. their spatial representation (in maps, software, etc.);
4. their mereological and topological relations;
5. their location.

Geographical entities

What is a geographical entities? The geo-ontological debate has defined (at least) three different positions on the notion of geographical entity:

1. laundry-list;
2. definitions;
3. boundaries.

Issues about geographical entities

1. vagueness;
2. relation between GE and the spatial region they occupy;
3. cultural diversities;
4. geographical names

Vagueness in geography

GE and spatial regions (1/2)

GE and spatial regions (2/2)

Cultural diversities (1/2)

Cultural diversities (2/2)

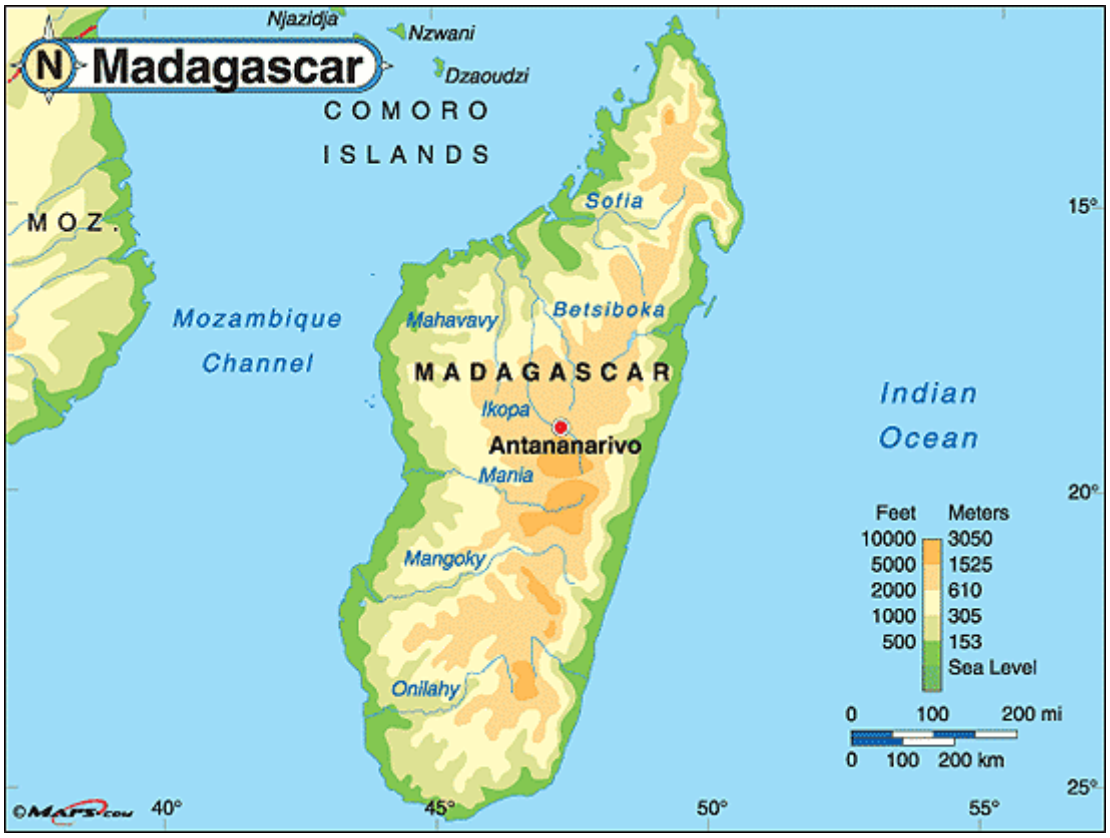
Geographical names

- endonym that is the local name in the official language of the country or in a well-established language occurring in that area where the feature is located (i.e. Venezia in Italian); there may be several toponyms in countries with different official languages (Brussel in Flemish, Bruxelles in French);
- exonym, which is a name in languages other than the official languages (for instance Venice in English or Venice in French);
- archeonym that is a name that existed in the past: for instance, Byzantium and Constantinople for Istanbul;

Smith's Classification of Spatial Boundaries

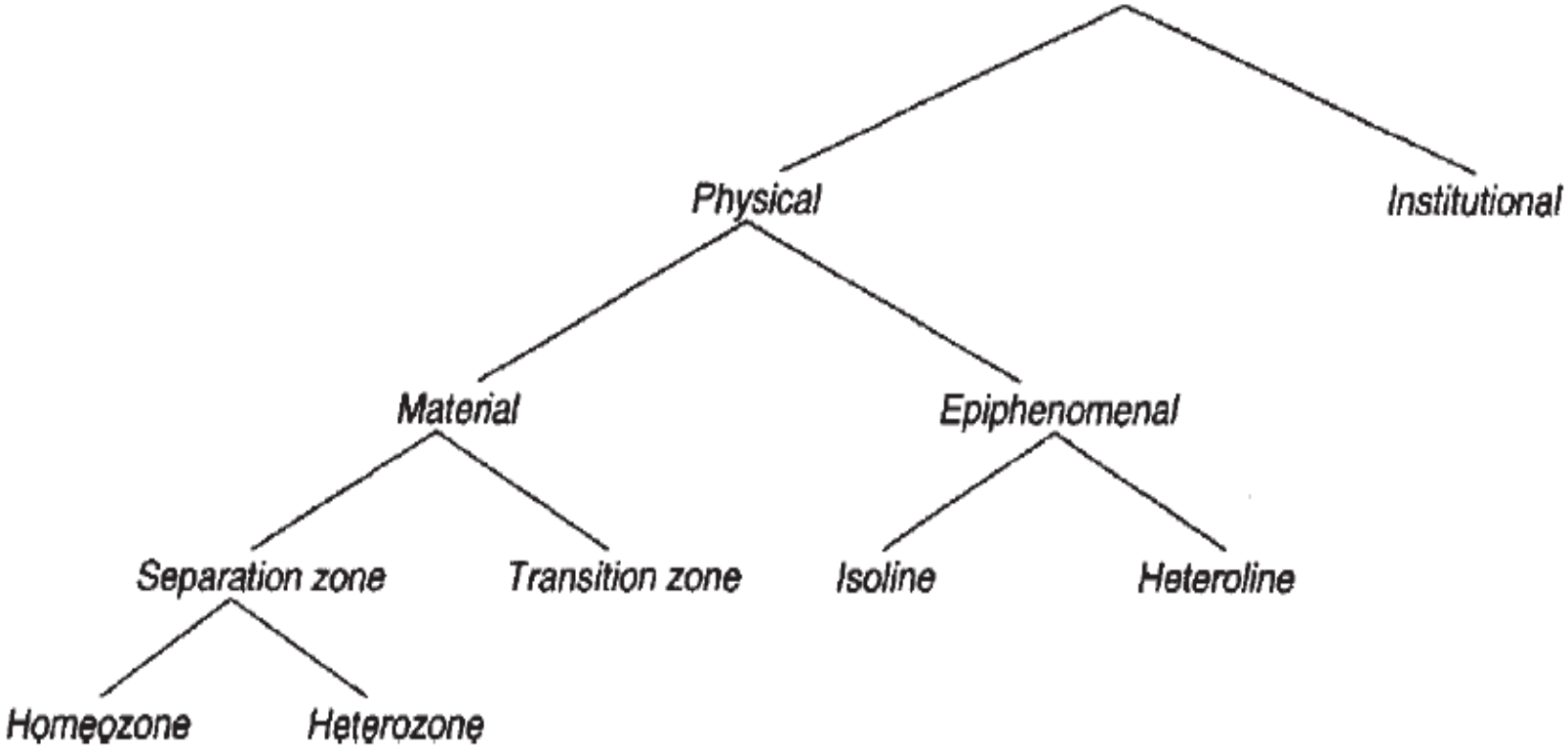
- *bona fide* (or physical) boundaries;
- *fiat* (or human-demarcation-induced) boundaries.

Bona Fide Boundaries



Fiat Boundaries

Galton's Classification of Geographical Boundaries



Issues concerning representation

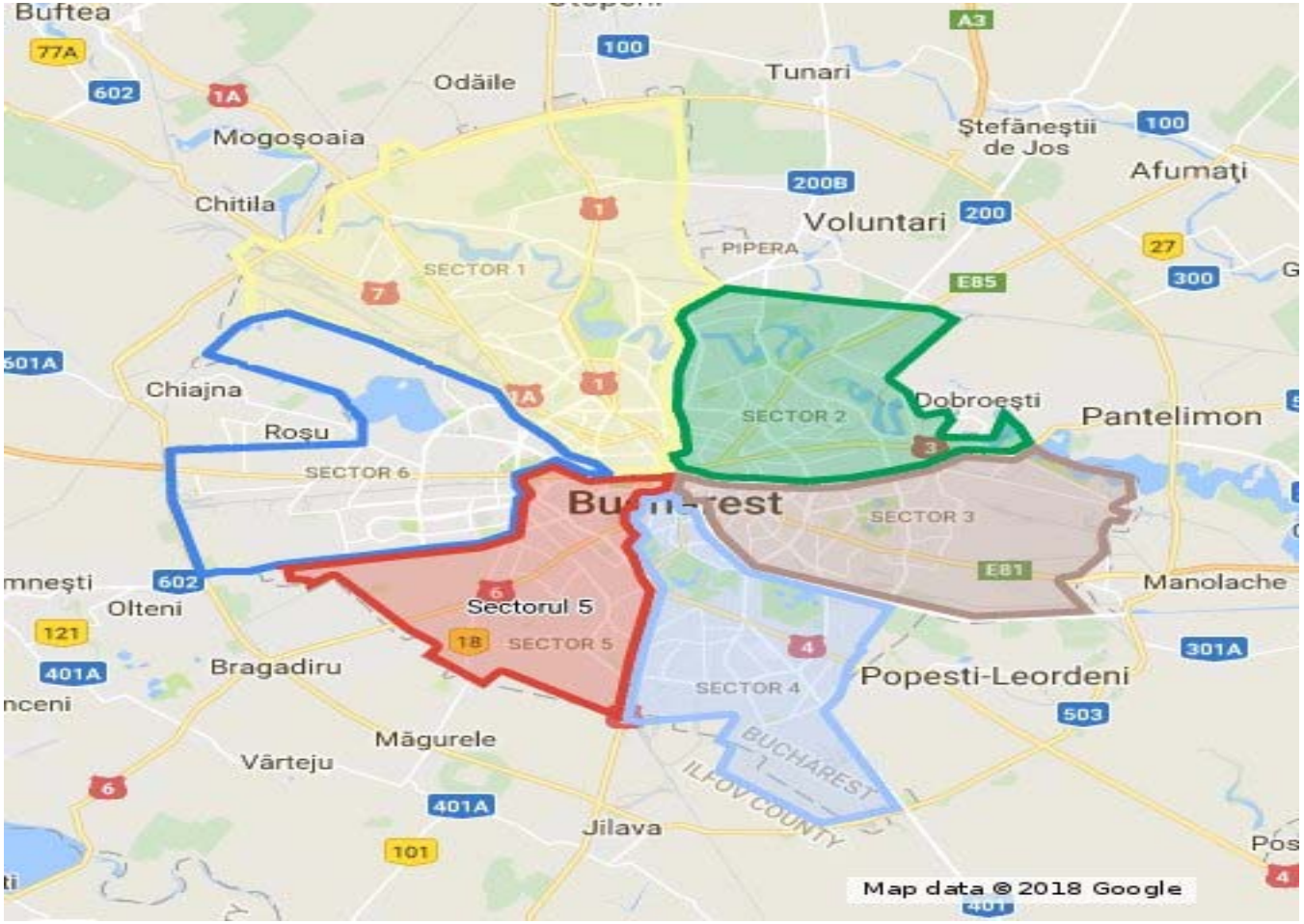
Case study: Bucharest

- does the representation of Bucharest present some specific issues?
- how can we map the boundaries of Bucharest?

Sectors of Bucharest

The Municipality of Bucharest is divided into **six** administrative units, named **sectors** (sectoare in Romanian), each of which has their own mayor and council, and has responsibility over local affairs, such as secondary streets, parks, schools and the cleaning services

Mapping the Sectors



Districts of Bucharest?

Each of the six sectors contains a number of **informal** districts (*cartiere*) which have no administrative function.

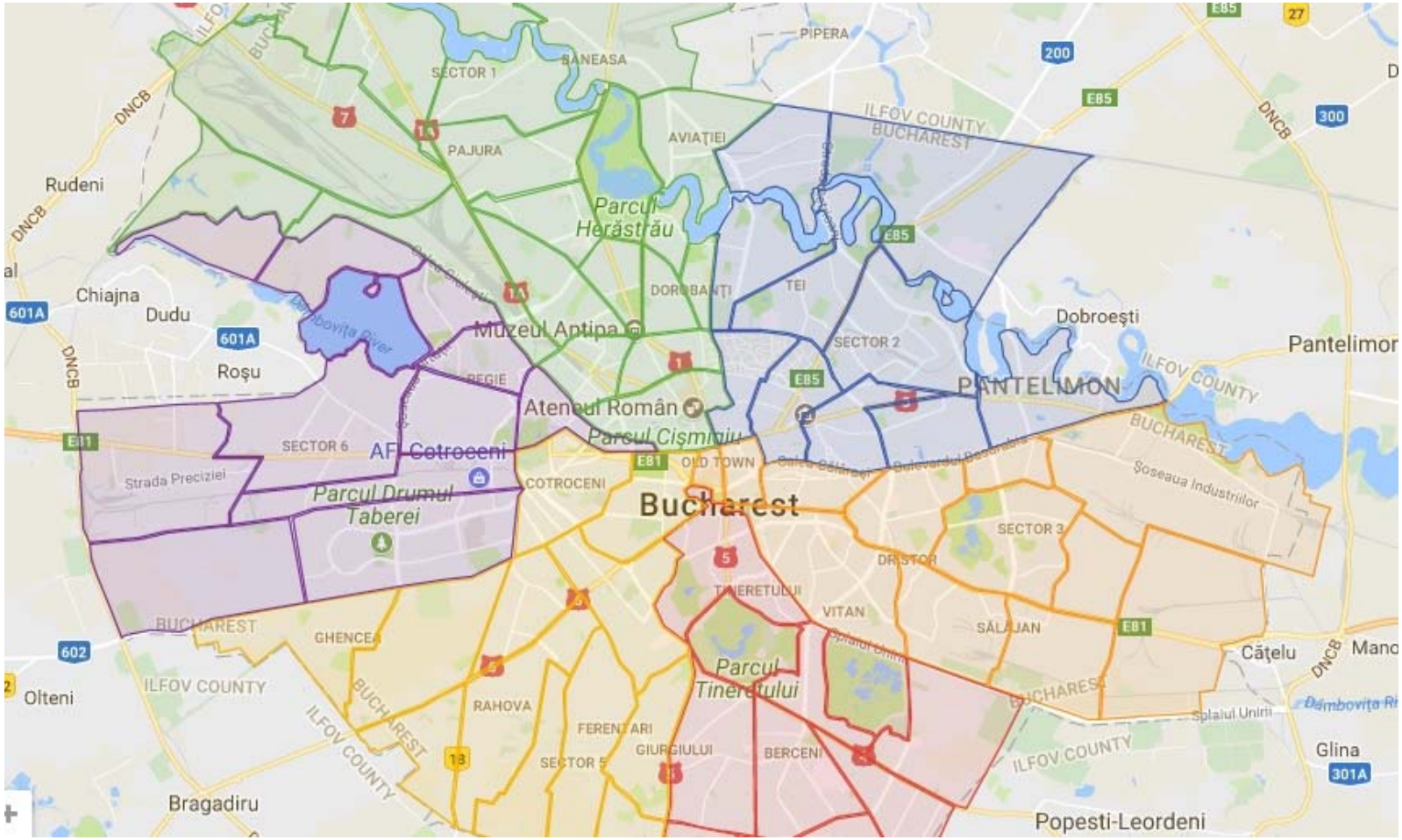
For example, **Sector 3** includes Vitan, Dudești, Titan, Centrul Civic, Balta Albă, Dristor, Lipscani, Muncii, Unirii

A silly question

But…

… where do I live in Bucharest?

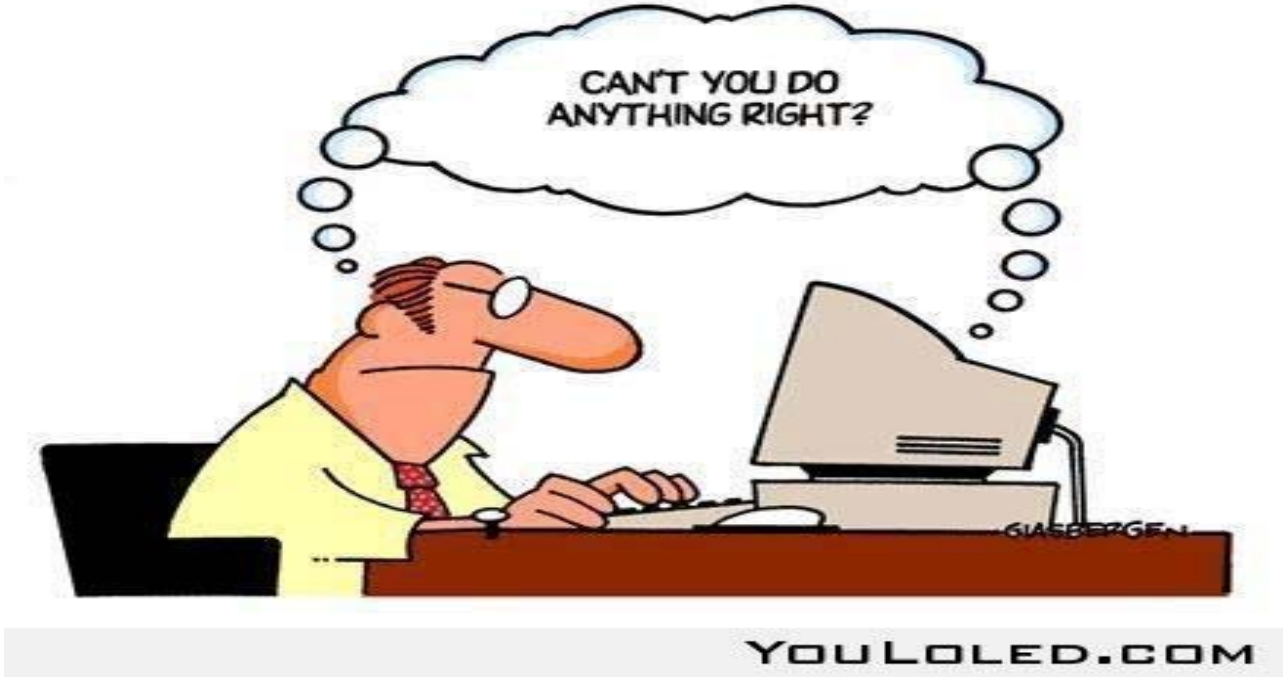
A possible answer



A real problem

Must we include in our geo-ontology also informal geographical entities such as districts?

Lesson 4
Ontology and Computer Science



New attention for ontology (or ontologies?)

In computer science, ontologies have recently received new attention, following the birth and developments of the so-called Semantic Web

Semantic Web

The main idea behind the Semantic Web is that of extending the classical Web to a “Web of Data”, in which the meaning of such data, their semantics, and the information resources designed and built for human fruition are “understandable” (also) for artificial agents (for example, software applications).

Communication among…

The possibility, for software applications, of understanding (at least partially) the meaning of data should support the design and implementation of “smart” applications, and enable data communication, sharing, inference, interoperability, aggregation and integration on the Web.

In particular, ontologies can support communication between human beings, between human beings and software systems, and between software systems themselves.

Formal languages

There are two **formal languages** for ontology specification: **RDF Schema** (RDFS) and **Web Ontology Language** (OWL).

RDFS is a specification enabling the definition of RDF vocabularies (a general-purpose language for representing information on the Web). OWL is an ontology language for the Semantic Web with formally defined meaning, usually exploited to express ontologies.

Interlude

A variety of meanings…

In this context, the term «ontology» does not usually refer to a global and unambiguous characterization of reality (describing its fundamental structures), but instead to the representation of a particular “viewpoint” about a portion of reality. This means that there can be many “ontologies”, often “partial” (i.e., referring to some aspects or parts of the existence and including every possible area of interest). Accordingly, there also can be a variety of different classifications

My/our/your? definition

an ontology is an explicit (and sometimes partial) specification of a shared conceptualization that is formalized in a logical theory

Conceptualizations (1/3)

They refer to an abstract model of a certain phenomenon in the world by having identified and specified the relevant concepts of that phenomenon and exhibiting their logical structure.

Conceptualizations (2/3)

They are sets of elements, considered as existing in some portion of reality, together with a set of concepts (and categories which divide up the corresponding universe of discourse into objects, processes and relations) and relationships which characterize (or enable to understand or to describe) that domain from a particular perspective.

Conceptualizations (3/3)

According to Guarino and Giaretta (1995), a conceptualization is basically the idea of the world that a person or a group of people can have. It is given by a set of rules (formally) constraining the structure of a piece of reality, in order to organize relevant objects and relevant relations.

Formal

It refers to the fact that the ontology should be machine-readable (suitable for automated reasoning) and, if not directly human-readable, they should at least contain plain text notices or explanations of concepts and relations for the human user

Partial

Partial account indicates that we represent our domain of interests with a certain perspective: an ontology entails some sort of world view with respect to the given domain. This domain can be as specific as a single task or application, always remaining «some part of a conceptualization»

Explicit

it means that the type of concepts (and terms) used and the constraints on that use are explicitly defined (in a generic and formal way).

Shered

It reflects the notion that an ontology captures consensual knowledge, that is, it is not private for some individuals, but, at least to some extent, accepted by some community of people, even though not universally

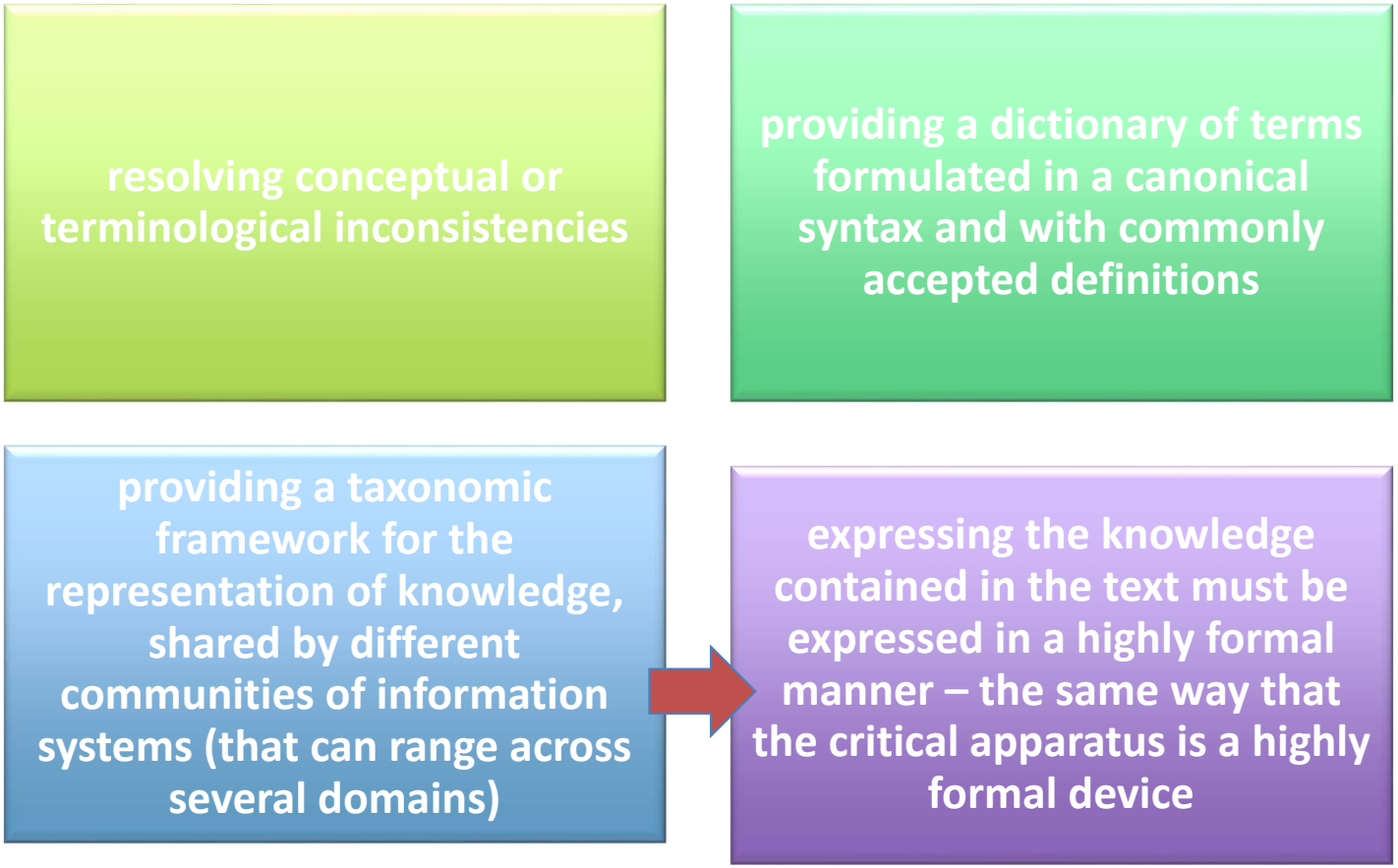
Specification

It points to the fact that an ontology is expressed by an intensional semantic structure (i.e. a logical theory), which entails some sort of world view, or by means of a (logical) language which contributes a reduction of ambiguity in the knowledge representations.

Logical theory

A logical theory is composed of a vocabulary (human-understandable definitions of the objects in natural language) used to describe the reality at hand, and a set of explicit assumptions or axioms. Typically, the vocabulary (the modeling primitives) of an ontology is contained in a taxonomy which already includes classes, simple relations and axioms

Advantages of ontological representation



(Main) Ontology components

According to Lord (2010) and Laurini (2017), the core components shared among different ontologies are essentially three:

- classes
- instances
- relations.

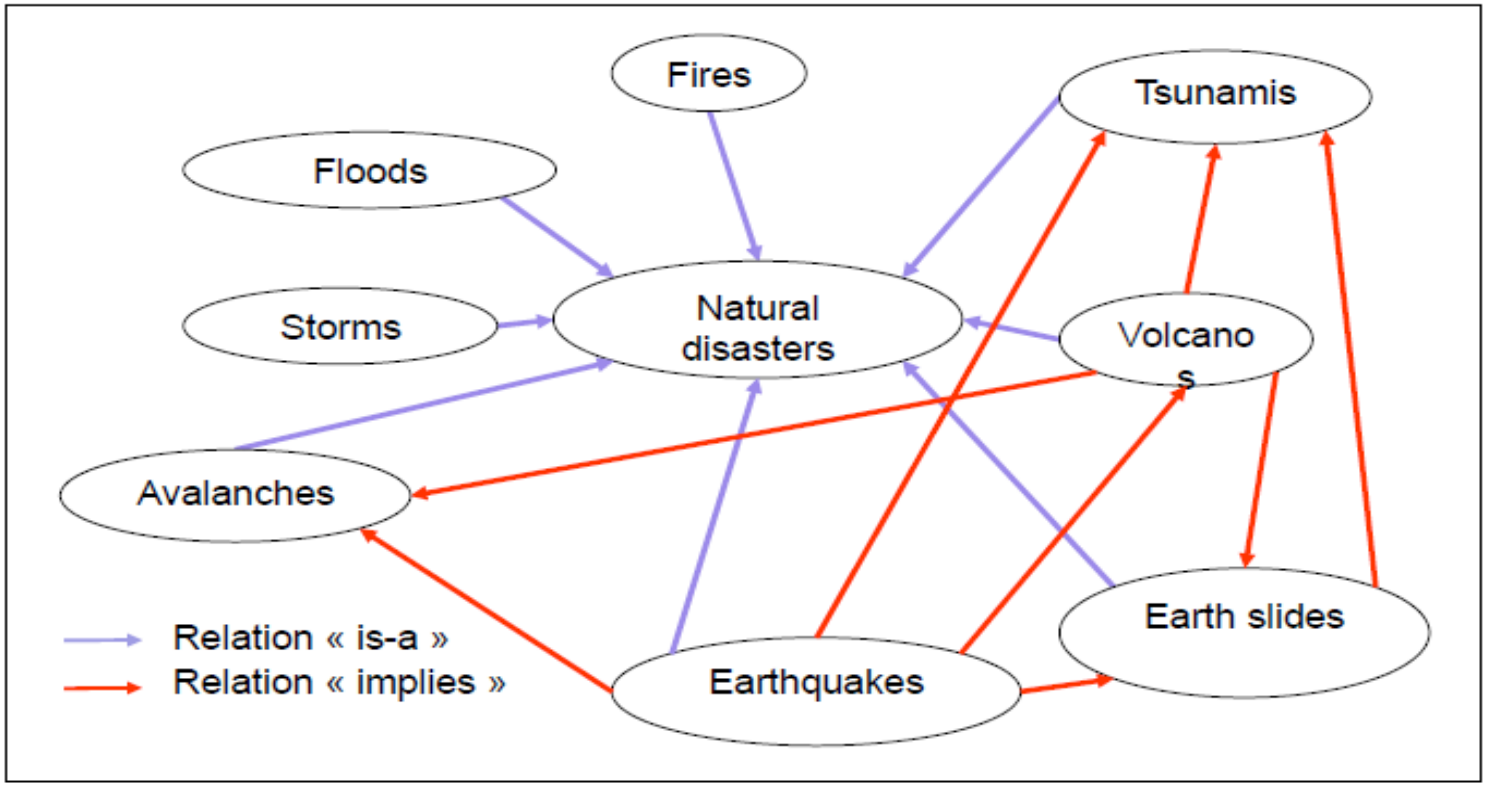
Classes (1/3)

Classes (also known as concepts, kinds, frames or types) represent groups or sets of different instances that share common features. They can be defined by extension (enumerating their instances) or by intension (giving restrictions to their instances).

Classes (2/3)

They might also contain (more specific) sub-classes and/or be sub-classes of other classes (less specific). This means that if the class A is a sub-class of B, then any instance of A will also be an instance of B. Moreover, classes can share relations with each other: such relations generally describe the way in which instances of one class relate to the instances of another.

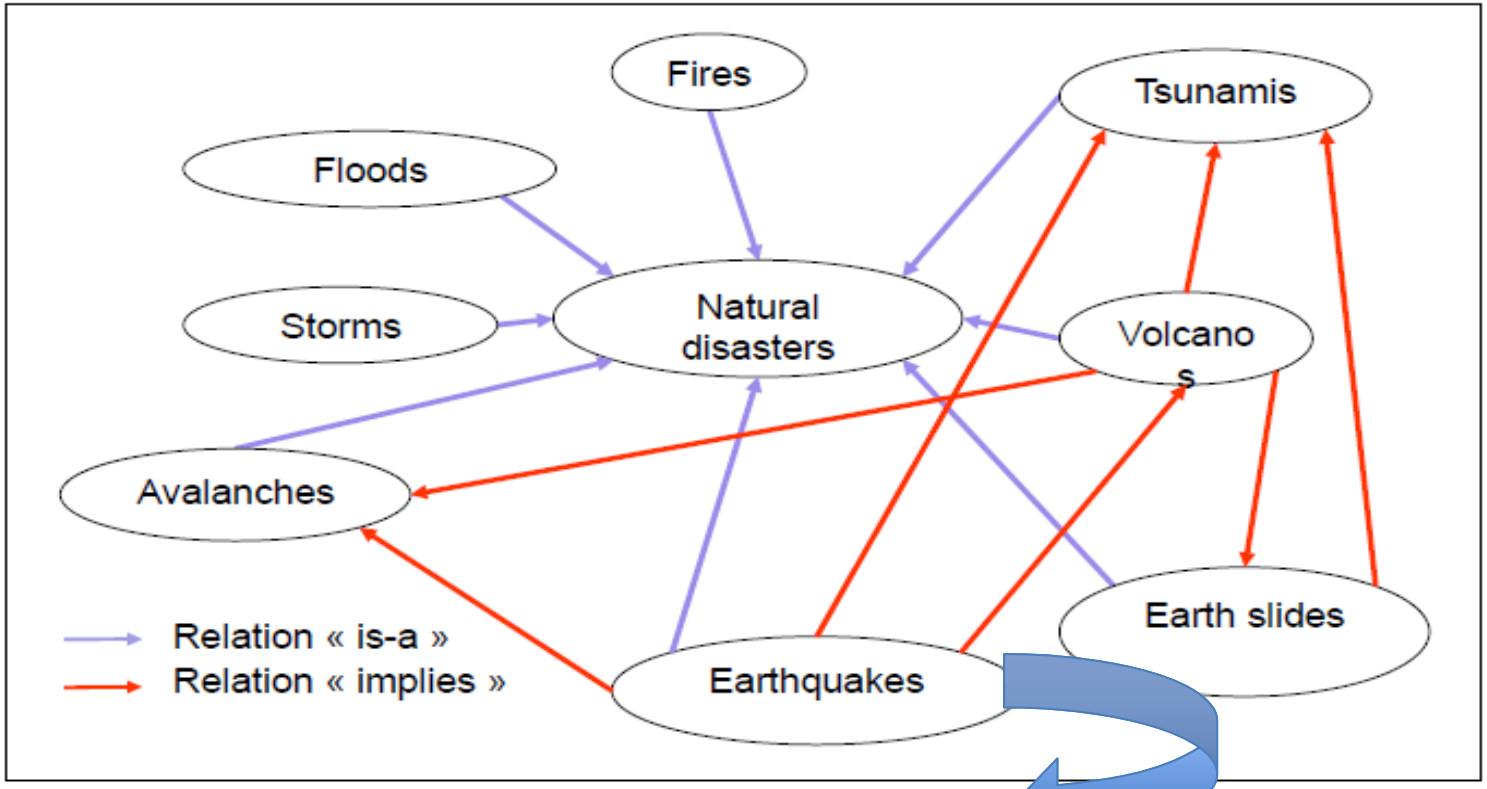
Classes (3/3)


Fires
Tsunamis
Floods
Storms
Natural disasters
Volcanos
Avalanches
Earth slides
Earthquakes
Relation « is-a »
Relation « implies »

Instances (1/2)

Instances (also called individuals or particulars) are the lowest level components (the base units) of an ontology and may model concrete objects such as rivers or deserts, or more abstract objects such as countries, regions or functions

Instances (2/2)

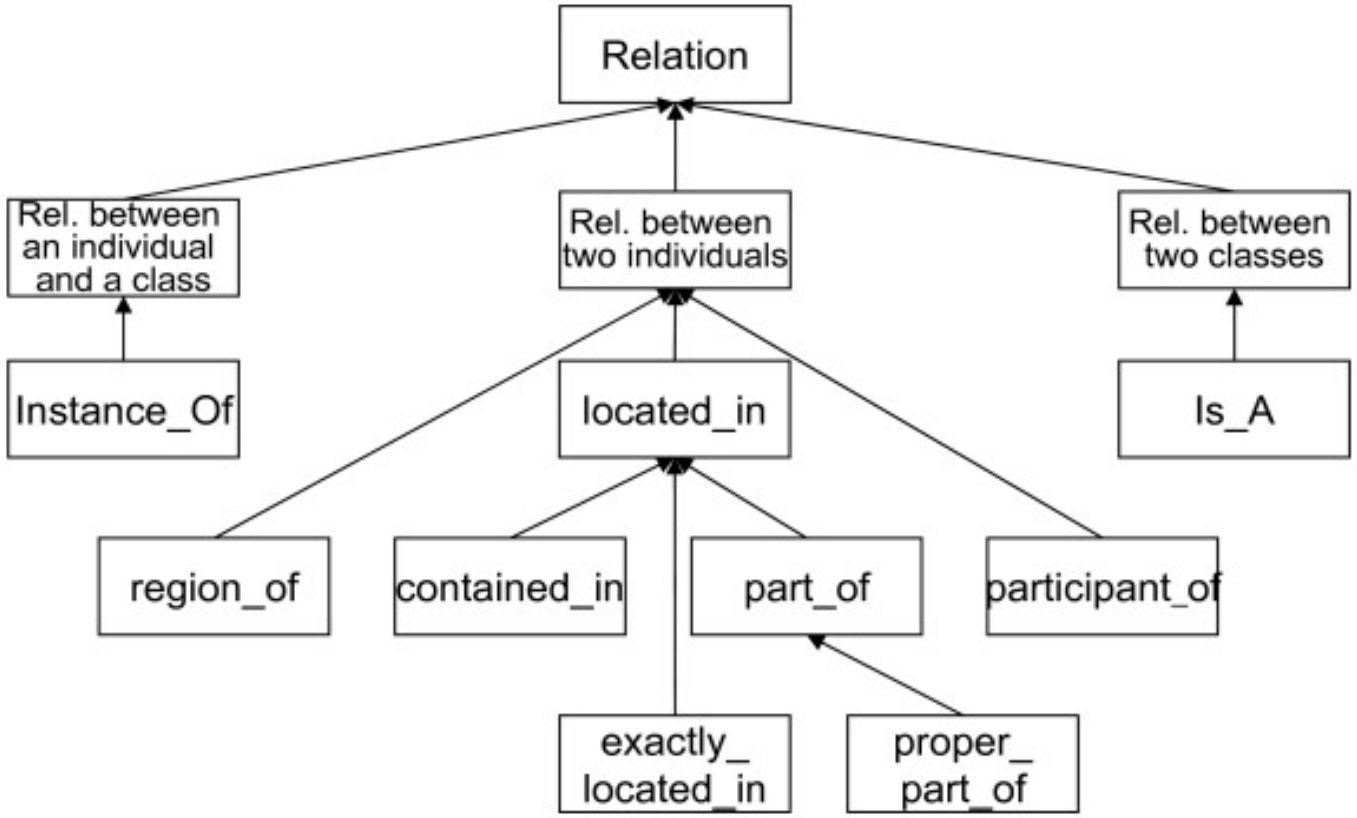


Examples of Earthquakes

Relations (1/2)

Relations describe the way in which classes and instances relate and interact to each other. To be more precise, relations can normally be expressed directly between instances or between classes of the domain and might be distinguished according to the number of classes related: reflexive relations (link only one class), binary relations (link two classes) and n-ary relations (link more than two classes).

Relations (2/2)



Slots?! (1/2)

They describe the various features of a class and its instances. Accordingly, slots (also known as properties, attributes or roles) contribute to identify and characterize classes and can be used in their intensional definitions, to relate instances or to give attribute values. Finally, slots allow to express relationships among classes into a domain, such as hierarchy and consequently constitute the basis for the hierarchical structure of the ontology.

Exercise 2

Say me five possible examples of slots for the class “City”

Ontologies in Computer Science

It is the study of what there is, what there can be, our way to know what there is, the relation between semantics and what there is, our beliefs…

How to build an Ontology (1/2)

- Why are we building an ontology?
- What are its main aims?
- What are the issues that have to be answered?
- What is the specific point of view the we assume?

How to build an ontology (2/2)

Noy and McGuinness (2003) maintain that developing a formal ontology requires (at least) four different steps:

1. Defining classes in the ontology and individual instances of these classes;
2. Arranging the classes in a taxonomic hierarchy;
3. Defining slots and describing allowed values for these slots;
4. Filling in the values for slots for instances.

Ontology approaches

Robert Laurini distinguishes five approaches to ontology design:

1. inspirational,
2. deductive,
3. synthetic,
4. collaborative,
5. inductive

Inspirational approach

In the inspirational approach, a designer takes decisions alone to gather the terms of the domain analysis, design and verification of ontology. The developer must be both a domain expert and an expert in ontology design to ensure the success of the design, and above all, to ensure the adoption of the ontology by the user community.

Deductive approach

With a deductive approach, the general principles are first adopted and then processed and applied to the target domain. The resulting ontology can be seen as an instance object of these general concepts

Synthetic approach

In the synthetic approach, a set of related ontologies is identified. The developer then synthesizes the elements of these ontologies with the concepts of the new target area, producing a new unified ontology

Collaborative approach

The mark of a “modern” ontology is its large size and high complexity. This kind of ontology encompasses a rich set of knowledge that its understanding exceeds that of any single developer or designer or even a small team of designers. The development of a large-scale ontology must be the fruit of a joint effort of several domain experts and software designers.

Inductive approach

With the inductive approach, ontology is developed by observing, examining, and analyzing a specific case or cases in the domain of interest. The characterization of the resulting ontology for a specific case is applied to other cases in the same field. The design is based largely on the widespread cases selected during development

Digital Humanities and Wikipedia

Digital humanities (**DH**) is an area of scholarly activity at the intersection of computing or digital technologies and the disciplines of the humanities. It includes the systematic use of digital resources in the humanities, as well as the reflection on their application. DH can be defined as new ways of doing scholarship that involve collaborative, transdisciplinary, and computationally engaged research, teaching, and publishing.

Digital Humanities and your points of view

What are DH?

Digital Humanities and different points of view

Digital humanities incorporates both digitized (remediated) and born-digital materials and combines the methodologies from traditional humanities disciplines (such as history, philosophy, linguistics, literature, art, archaeology, music, and cultural studies) and social sciences, with tools provided by computing (such as hypertext, hypermedia, data visualisation, information retrieval, data mining, statistics, text mining, digital mapping), and digital publishing.

Digital Humanities… again!

DH includes

1. different areas of research;
2. different tools and methodology of research;
3. (thus) different projects that (3.1) have been developed in different areas of research (3.2.) with different tools and methodology of research

DH and Ontologies!

Accordingly, ontologies represent a further tool in that heterogeneous area of research!

Moreover, ontologies helps to clarify (and sometimes to combine) the different (tacit) assumptions, conceptualizations, etc. that make up different disciplines

Exercise 3

Request 1

Immagine a project in DH that can involve a geo-ontology

Exercise 3

Request 2

Write the different disciplines that might be involved in such a project

Exercise 3

Request 3

Write some possible issues and advanteges arising from your(!?) geo-ontology

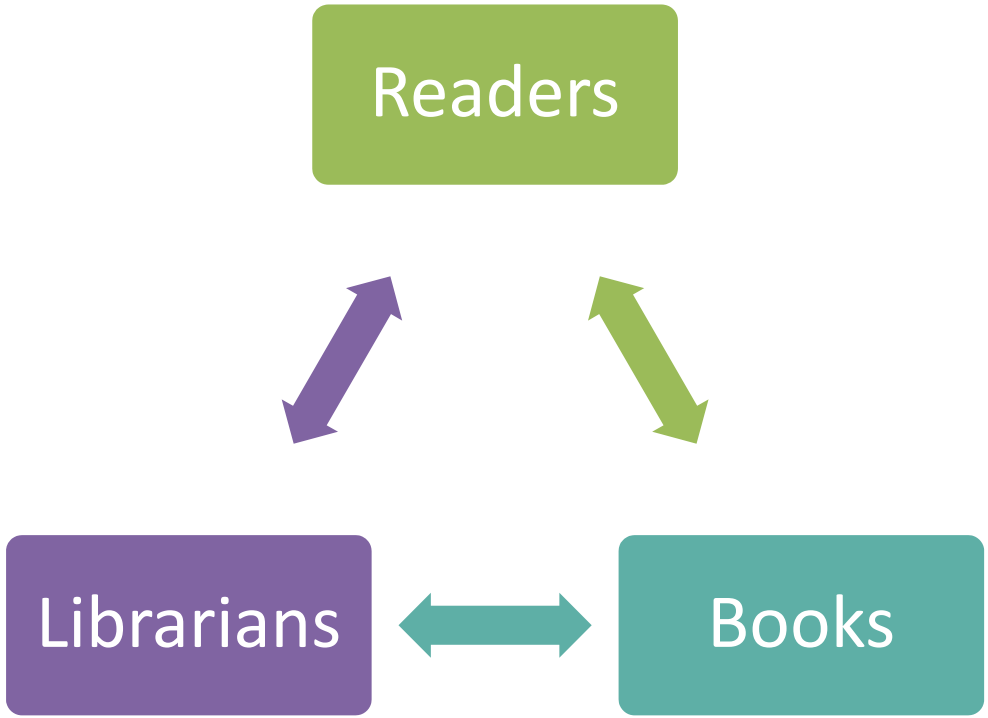
Lesson 5.
On the Aims of Ontologies

S.R. Ranganathan

He was a mathematician and librarian from India.

He is widely known in the world for his fundamental thinking in the field of library science, documentation, and information science.

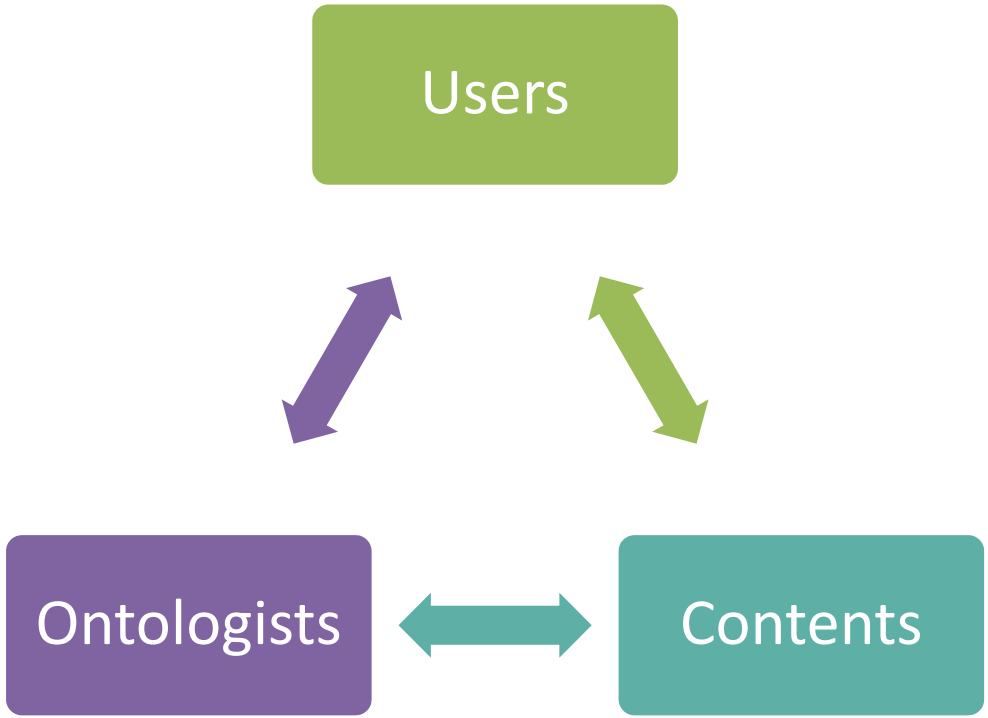
Ranganathan's diagram (according to Carlo Bianchini)



Ranganathan's intuition (of course, it is a semplification…)

We have a library if and only if the three factors (readers, librarians and books) are perfectly integrated

Application to the ontological domain (part 1)



Application to the ontological domain (part 2)

We have a (sound) ontology if and only if the three factors (users, ontologists and contents) are perfectly integrated

Two different kinds of aims

1. general
2. specific

General aims

1. accessibility
2. informativeness
3. completeness
4. reusability

Accessibility

It indicates that the information expressed should be understandable and usable for a variety of users – including scientific community and general public.

Informativeness

It indicates the need to disclose and organize knowledge in a meaningful way for the final recipients of the ontology. This contributes to an enhancement of the quality of the ontological content and to an mutual understanding between different communities (of human beings) – but also to the communication between human beings and software systems, and between software systems themselves

Completeness

It refers to the quantity of information belonging to the ontologies, and points to such an information should be detailed and exhaustive for the domain that we want to represent – all this despite the fact that the domain in question can be (restricted or) partial and might be represented with a specific perspective or a particular viewpoint

Reusability

It refers to the process in which existing ontological knowledge is used as input to generate new ontologies in the Semantic Web. Such a process increases the quality of the applications using ontologies, as these applications become interoperable and are provided with a deeper, machine-processable and commonly agreed understanding of the underlying domain of interest.

Specific aims

1. (they) differ from one another;
2. (they) reflect the particular purpose for which a geo-ontology has been created (as well as the point of view of the community sharing the ontology in question)

Lesson 6
Common Sense (Geography)

Geo-ontologies and accessibility

As we said, accessibility indicates that the information expressed should be understandable and usable for a variety of users – including scientific community and general public.

A useful tool in this respect is the common sense geography (CSG)

What is CSG? (1/3)

It might be generally defined as the body of knowledge, theories and beliefs that people have about the surrounding geographical world

What is CSG? (2/3)

It denotes a ‘lower’ geography (to be distinguished from 'higher' or ‘professional’ geography): that is the phenomenon of the spread and application of geographic knowledge outside of expert circles and disciplinary contexts

What is CSG? (3/3)

The idea behind CSG is to establish a link between how people think about geographic space and how to develop formal models of such reasoning that can be incorporated and integrated into software systems

Smith and Mark on CSG (1/2)

According to Smith and Mark, the development of that connection allows the transformation of quantitative geospatial data into the sorts of qualitative representations of geospatial phenomena that are tractable to non-expert users.

Smith and Mark on CSG (2/2)

Moreover, it might help us also in our efforts to maximize the usability of corresponding information systems, rendering the results of work in geospatial ontology compatible with the results of ontological investigations of neighboring domains

But…

CSG can change according to the context of application

Interlude


Common
sense is a
flower that
doesn't grow
in everyone's
garden.

14 elements of CSG (Egenhofer and Mark) (1/2)

1. Naive Geographic Space is Two-Dimensional
2. The Earth is Flat
3. Maps are More Real Than Experience
4. Geographic Entities are Ontologically Different from Enlarged Table-Top Objects
5. Geographic Space and Time are Tightly Coupled
6. Geographic Information is Frequently Incomplete
7. People use Multiple Conceptualizations of Geographic Space

14 elements of CSG (Egenhofer and Mark) (2/2)

8. Geographic Space has Multiple Levels of Detail
9. Boundaries are Sometimes Entities, Sometimes Not
10. Topology Matters, Metric Refines
11. People have Biases Toward North-South and East-West Directions
12. Distances are Asymmetric
13. Distance Inferences are Local, Not Global
14. Distances Don't Add Up Easily

Geus and Thiering (1/2)

- denotes the ways non-experts conceptualize geography in terms of beliefs, theories and knowledge;
- concerns the belief about general regularities in the mesoscopic domain and the consensus of an epistemic collective or community - so, it is to be understood as 'shared' knowledge and beliefs;
- refers to a 'naive' perception and description of space and the use of 'intuitive' arguments in geographical contexts

Geus and Thiering (2/2)

- consists of naïve physics, folk psychology and it is strictly related to (physical-geographic) mesoscopic phenomena that is quite independent from our knowledge and culture, and immediately accessible to human beings in everyday perception and actions;
- denotes a ‘lower’ geography, to be distinguished from ‘professional’ or 'higher' geography, that is, the phenomenon of the spread and application of geographical knowledge outside of expert circles and disciplinary contexts

A system of…

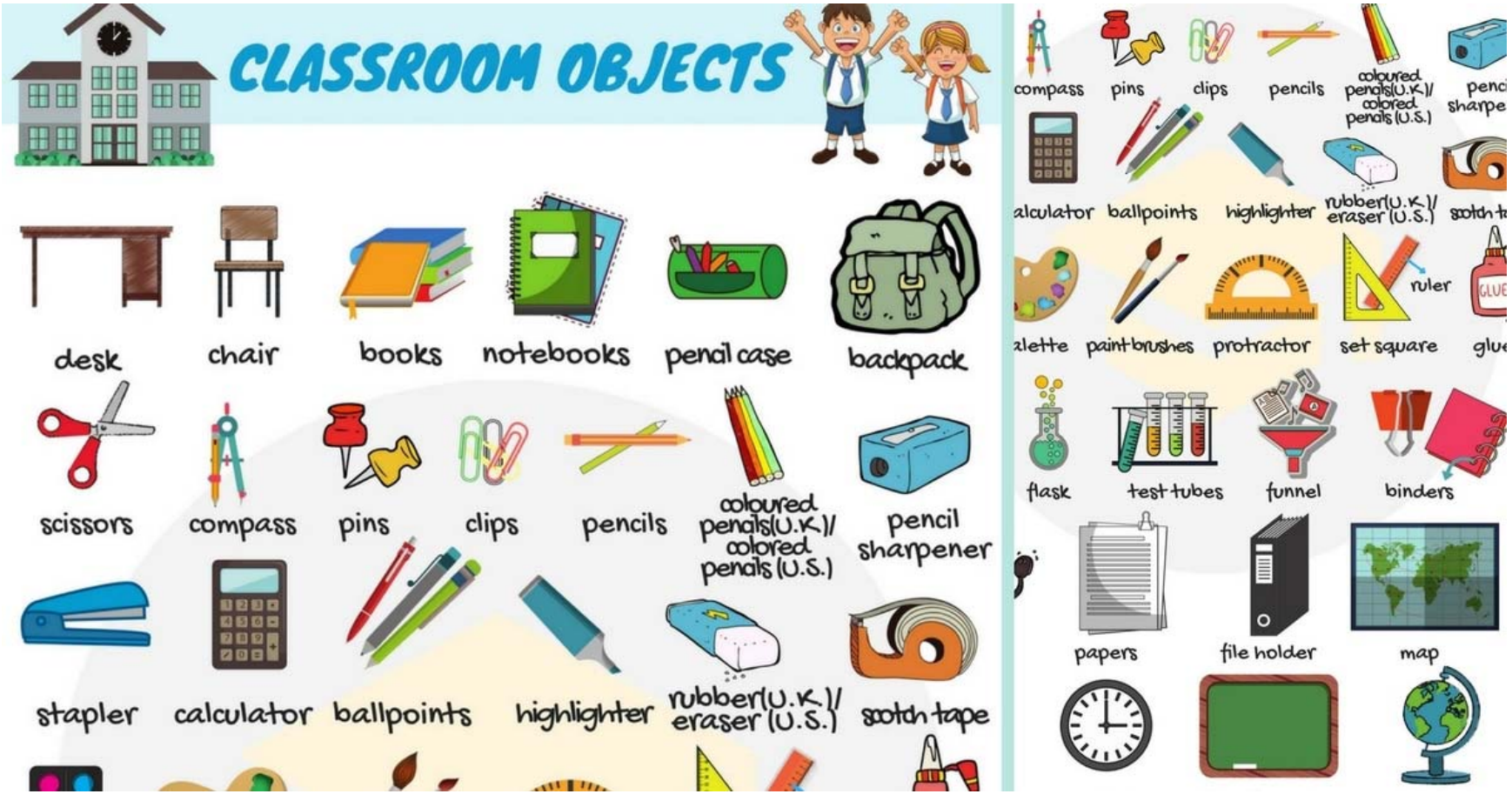
CSG is generally organized in systems of objects falling under categories, typically determined by prototypical instances.

Hierarchically, these systems take the form of a tree: they have one all-embracing category at the top level, with more general categories at the subsequent levels and more specific categories as we move down each of the various branches. category of objects

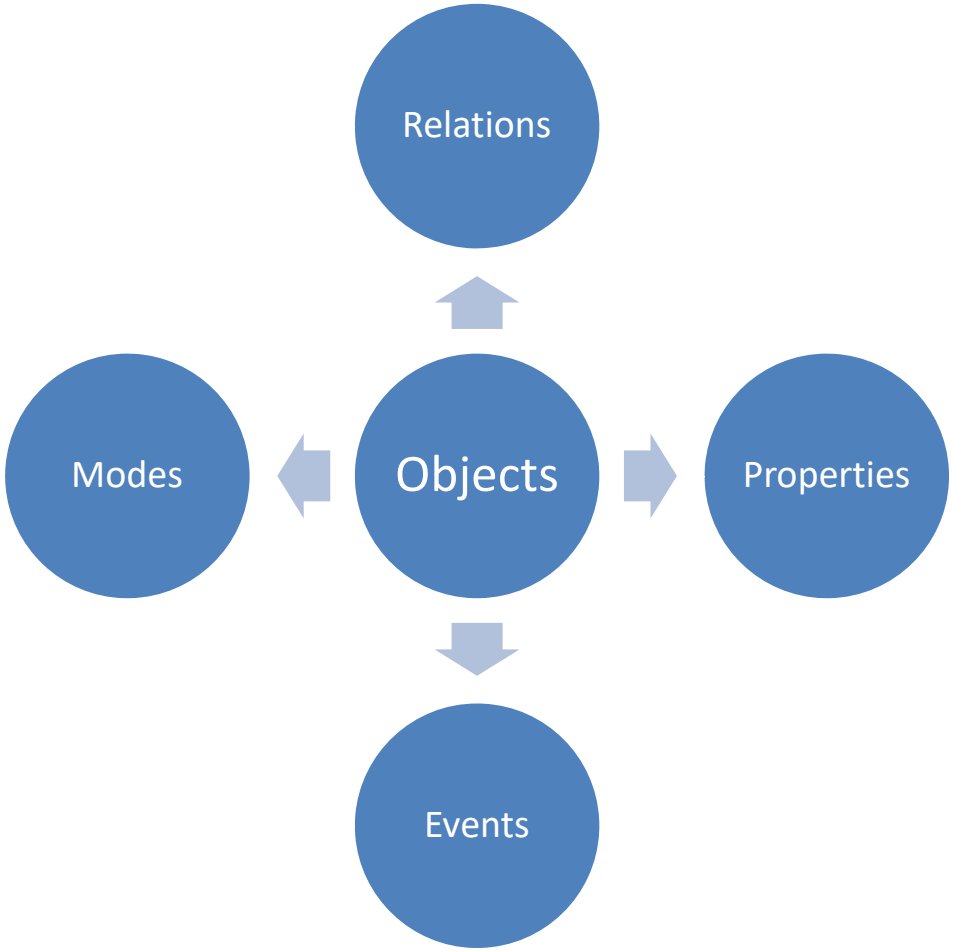
Objects!

About the contents, GSG's primary axis is a system of objects, while attributes (properties, aspects, features), relations and events (etc.) form a secondary axis of the ontology. This primacy depends on the fact that, in this context, attributes, relations and events are respectively attributes of, relations between and events involving objects, in ways that imply a dependence of entities in these latter categories upon their hosts in the primary

More objects



To be more specific



Lesson 7

The variety of geo-ontologies

A growing diffusion

Geo-ontologies are receiving a considerable attention in information technology area, due to three different factors:

1. the growing diffusion of GIS;
2. their use in different applications;
3. the impulse of Semantic Web in this research area.

From a geo-ontological point of view

Geo-ontologies rarely propose conceptualizations aimed at describing the overall geographical domain, but only some specific geographical aspects. Accordingly, they might contain elements belonging to different geographical branches, incomplete inventories, vague distinctions and common sense conceptualizations created by non-professional geographers

A classification

In order to describe their main contents, my purpose is to distinguish three different kinds of geo-ontologies:

- spatial geo-ontologies (SGO);
- physical (or natural) geo-ontologies (PGO);
- human geo-ontologies (HGO).

A clarification

Such a tri-partition aspires to be exhaustive for the whole geographical domain (and for its fundamental sub-areas).

However, such a comprehensiveness does not coincide with a mutual exclusivity.

Consequently, we should be prepared to expect some overlaps among the various geo-ontological domains.

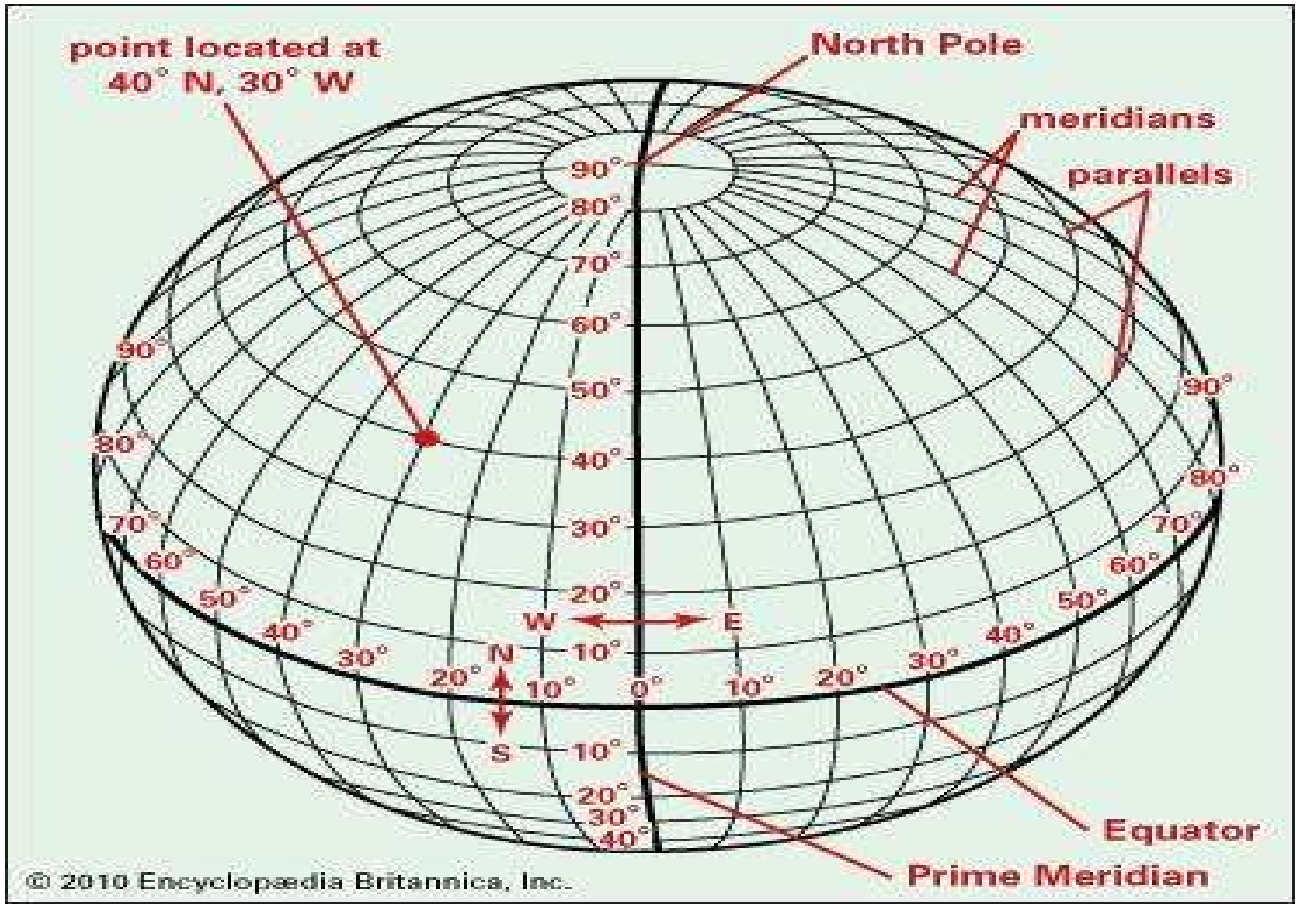
Spatial geo-ontologies

SGO are related to the computational processing of geographical data in GIS, GPS and maps, and are generally aimed at analyzing (spatially) Earth's surface, locating (coordinates) and representing different geographic entities on maps, specifying the topological relations between these entities and the geometric aspects of geographical investigation.

WGS84 Geo Positioning

Kind of Geo-Ontology	Main Objectives	(Selected) Distinctive Entities	(Selected) Distinctive Properties
Spatial	Representing latitude, longitude and altitude information in the WGS84 geodetic reference datum	Points	Latitude, Longitude, Altitude

The world according to WGS84 Geo Positioning



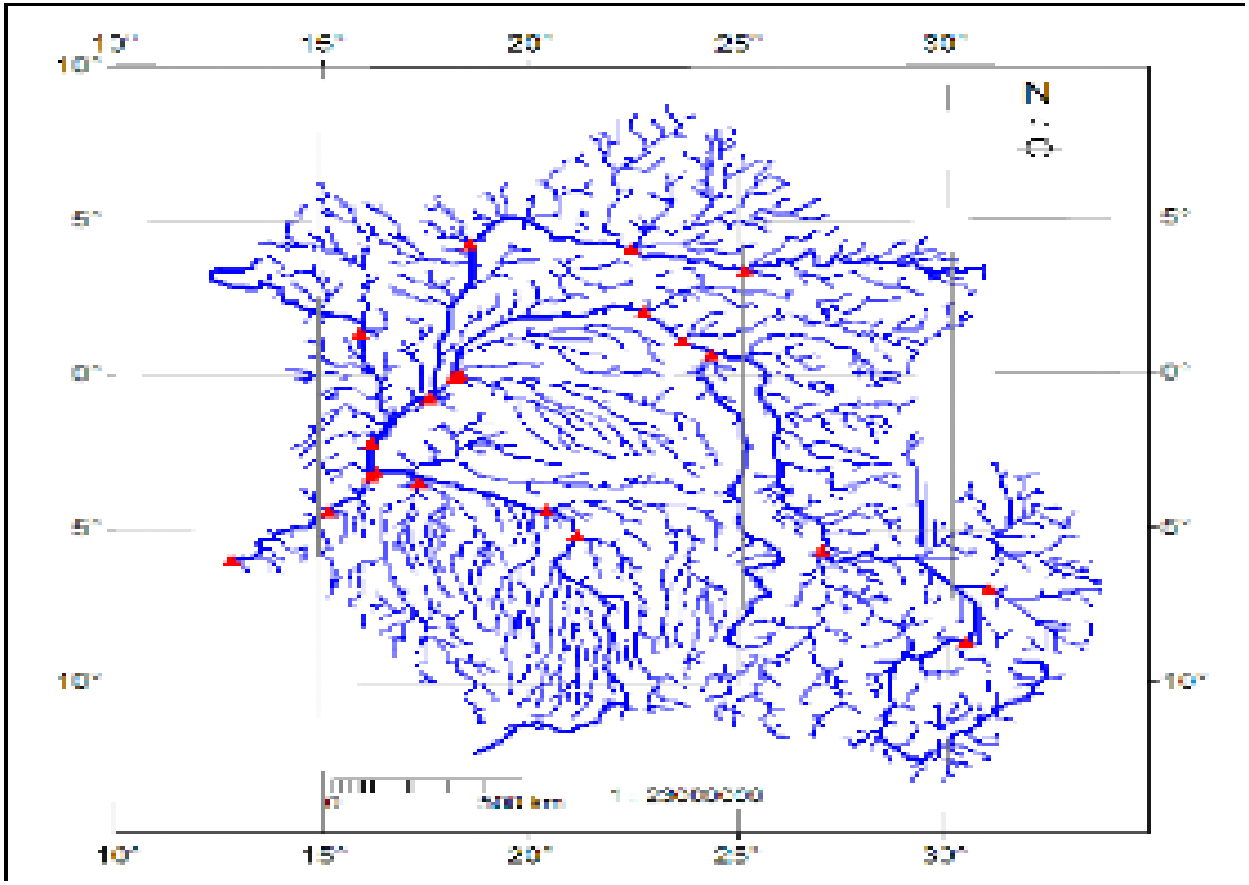
Physical geo-ontologies

PGO are focused on those Earth aspects that are related to physical and natural phenomena (i.e. lithosphere, hydrosphere, atmosphere, pedosphere, biosphere, geomorphology, climatology and so forth), they are numerically inferior to the SGO and strictly connected with the HGO.

Hydro Ontology

Kind of Geo-Ontology	Main Objectives	(Selected) Distinctive Entities	(Selected) Distinctive Properties
Physical	Describing hydrographical phenomena domain	Body of Water (subclass: Seawater, Fresh Water, Continental Water), Morphology (subclasses: Alluvional Soil, Fluvial Island)	Concentration of Salinity, Coordinate, Is Tributary Of, Has Source From, Has Tributary, Flow Into

The world according to Hydro Ontology



Human geo-ontologies

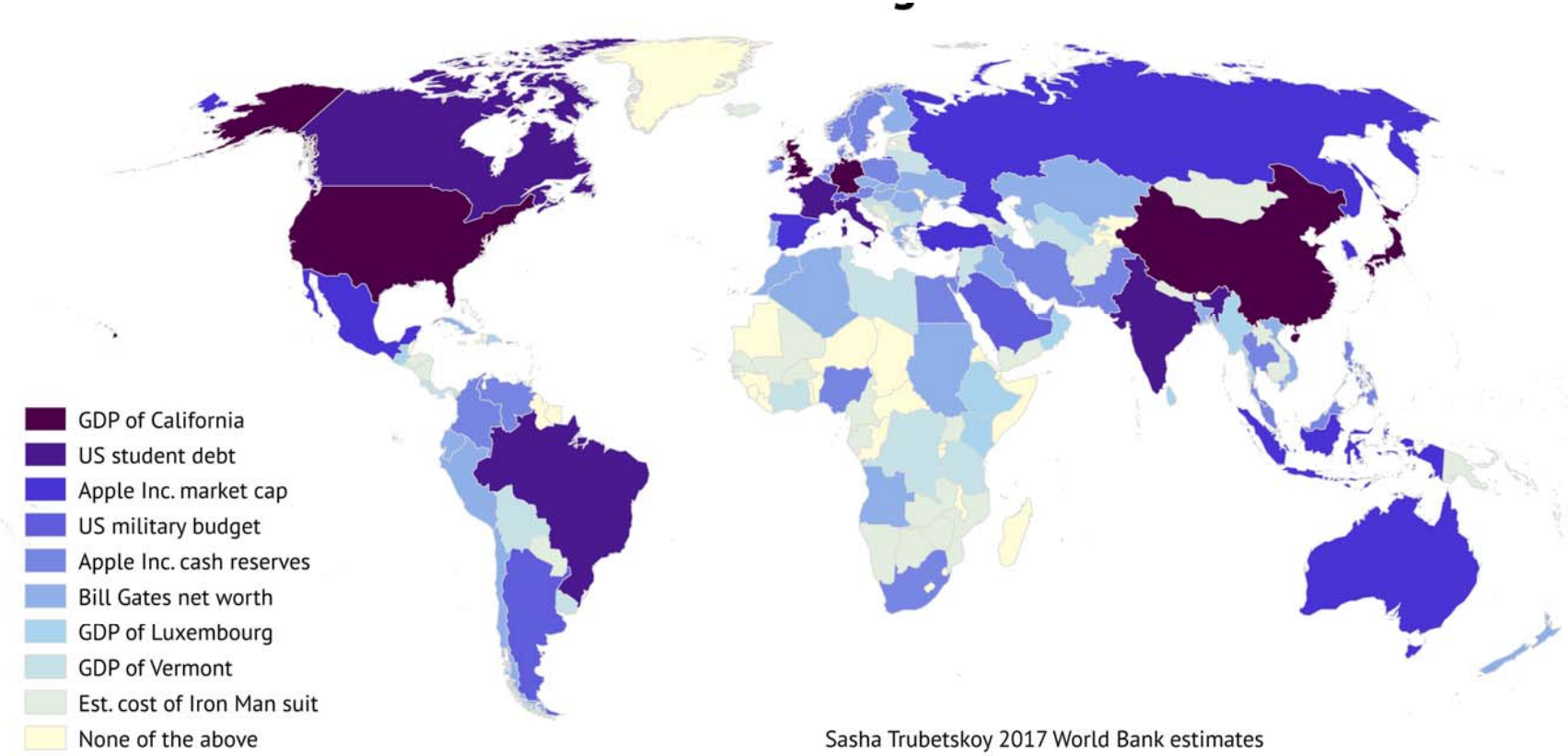
HGO deal with dynamics (for example, historical and temporal modifications) and artifacts produced by political, administrative, social, urban, economical, population, cultural, archaeological, historical, tourism, transportation geography, and so forth.

Their specificity does not coincide with their reuse, that is lower than that of other ontologies.

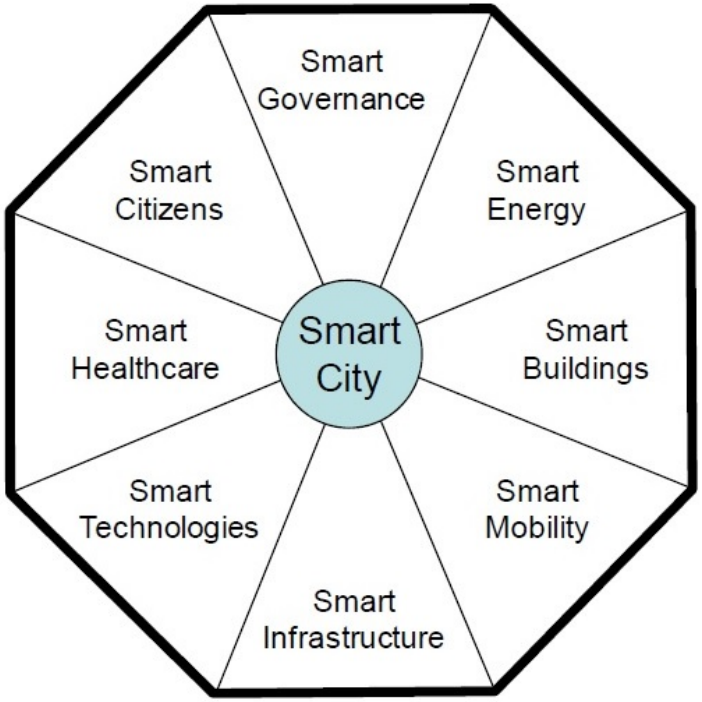
FAO Geopolitical Ontology

Kind of Geo-Ontology	Main Objectives	(Selected) Distinctive Entities	(Selected) Distinctive Properties
Human	Facilitating data exchange and sharing in a standardized manner among systems managing geopolitical information about countries and/or regions	Group (subclasses: Economic Region, Geographical Region, Organization), Territories (subclasses: Disputed, Self Governing)	Has Border With, Is Administered By, Is Predecessor Of, Is Successor Of, Has Coordinate, Has Nationality, Has Statistics

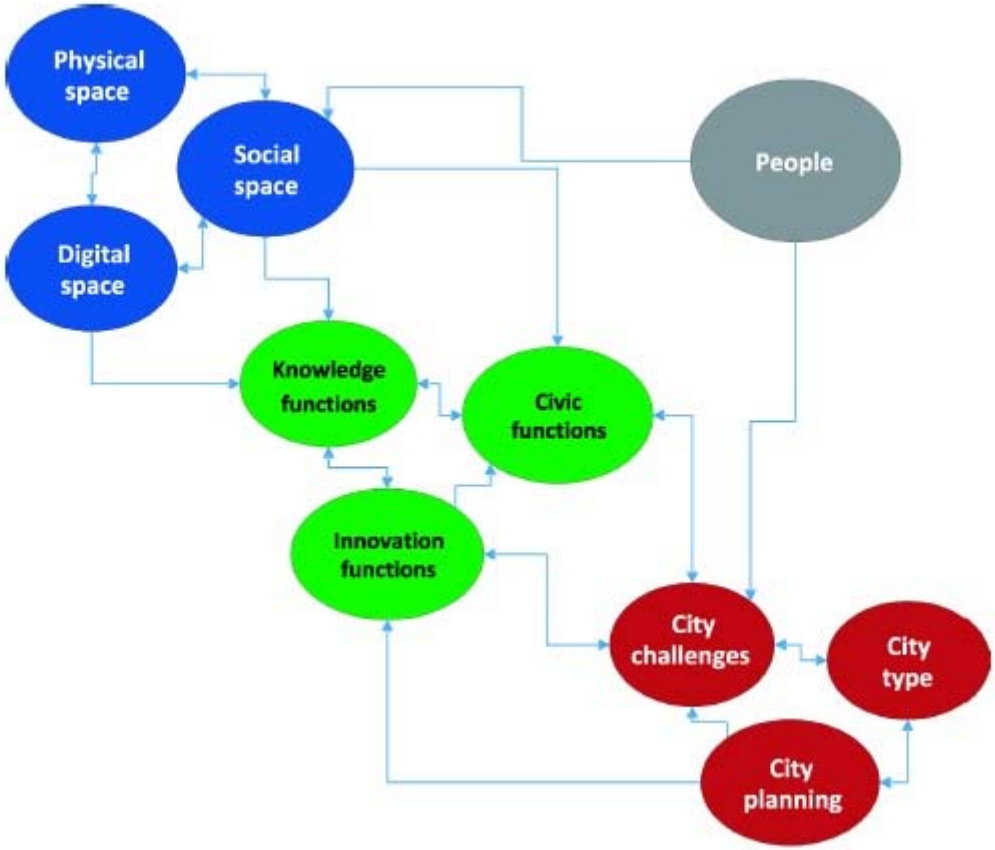
The world according to FAO Geopolitical Ontology



From the point of view of smart city ontologies



An example of smart city ontology (*SCO*)



Exercise 4

Request 1

Write the main classes, entities, properties of your geo-ontology

Exercise 4

Request 2

Put the main classes in a hierarchical classification

Exercise 4

Request 3

Express the main usefulness of your ontology

Lesson 8

GO! Geolat GO!

Geolat
Geography for Latin literature

Geolat is a research project aimed at offering access to a digital library of the Latin literature (from its origins to the end of the Roman Empire) through a query interface of geographic/cartographic type representing the geographic knowledge expressed in the texts themselves

the project has been funded by Fondazione Compagnia di San Paolo

Geolat

https://geolat.uniupo.it/home

DigilibLT

http://digiliblt.lett.unipmn.it/index.php

DigilibLT

The Digital library of late-antique Latin texts publishes prose texts written in Latin in the late antiquity (from the 2nd to the 7th century AD). The library intends to make available all the works of pagan content. The texts are annotated according to the XML-TEI standards, and are offered free of charge to the public for reading and research.

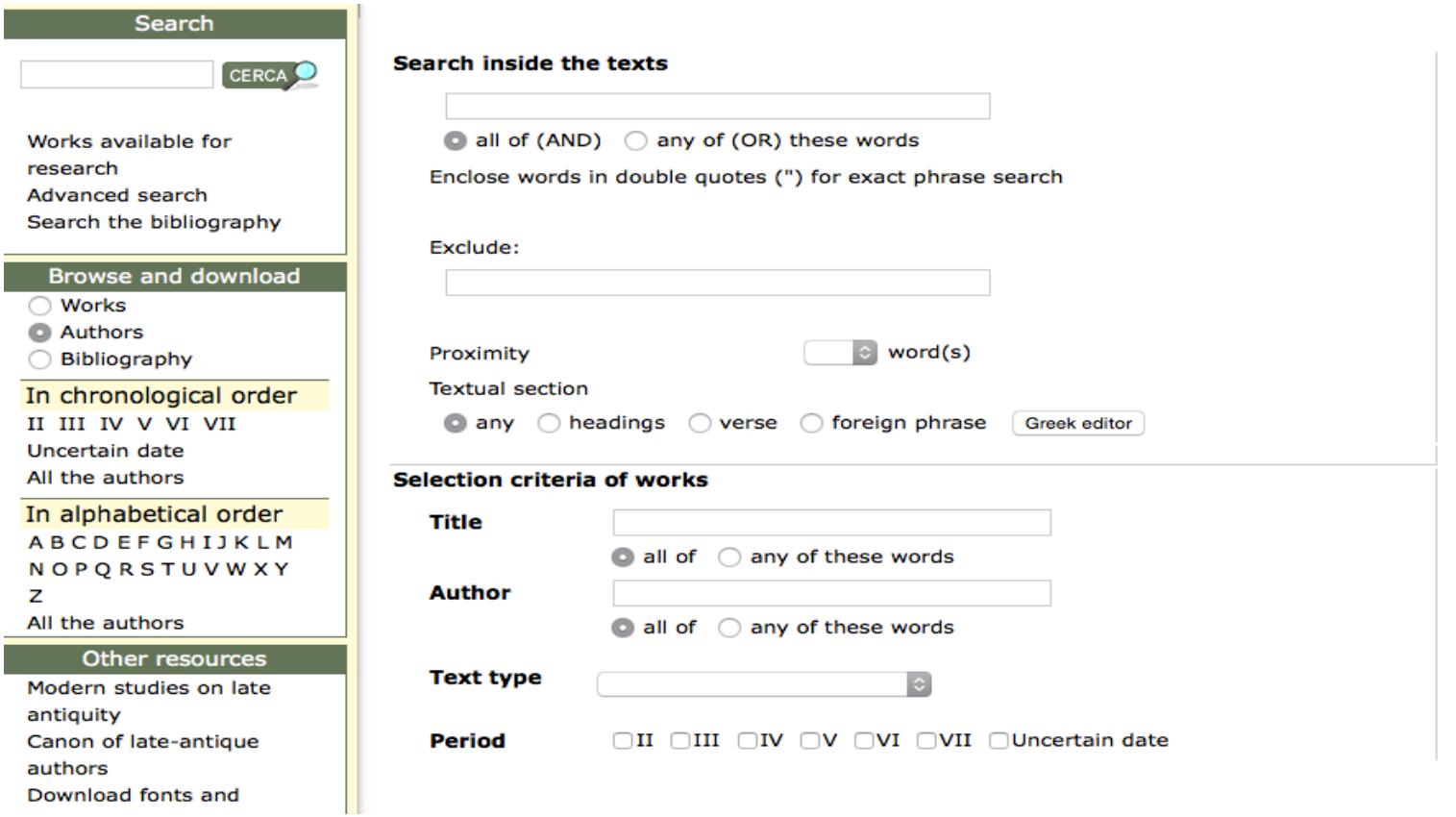
DigilibLT

The library offers a complete canon of authors and works, including detailed information on the critical editions on which the digital texts are based, and listing, if the case, editorial changes which deviate from the critical editions chosen as reference. Search windows are designed to allow users to search either the entire collection of texts or a selection of them (by author, period, or type of text) or single authors and works. Texts can be downloaded freely (in PDF).

Example 1


Home | The project | News | Late antiquity on the web | Help | Contacts and feedback | Reserved area |
Search
FIND
Searchable works
Advanced search
Search the bibliography
Browse and download
Works
Authors
Bibliography
By date
II III IV V VI VII
Uncertain date
All the authors
By name
A B C D E F G H I L M N O
P Q R S T V
All the authors
Other resources
Modern studies on late antiquity
Canon of late-antique authors
Fonts and software to download
Download texts
Rerum gestarum libri qui supersunt
Ammianus Marcellinus
Author Details
n. post 333 m. post 395
READ THE TEXT
Available downloads
TXT TEI PDF E-PUB
CATALOGUE ENTRY
Reference edition:
Ammiani Marcellini Rerum gestarum libri qui supersunt, edidit W. Seyfarth, Leipzig 1978 (Bibliotheca Scriptorum Graecorum et Romanorum Teubneriana).
The work of Ammianus Marcellinus, entitled Res gestae according to the codex Vaticanus Latinus 1873, was perhaps originally composed in thirty-one books, of which only the final eighteen (14-31) have actually survived. These treat the quarter century between 353 (appointment of Gallus and Julian as Caesares, as well as the beginning of Ammianus' military career) and 378 (the year of the Battle of Adrianople, in which the emperor Valens and two thirds of his army were annihilated by Goths). But since at the end of his work
Preliminary steps: Alice Borgna
Text fitting: Melanie Lucciano
TEI code: Alice Borgna
Digital edition by the digilibLT group - Università degli Studi del Piemonte Orientale

Example 2


Search
CERCA
Works available for research
Advanced search
Search the bibliography
Browse and download
Works
Authors
Bibliography
In chronological order
II III IV V VI VII
Uncertain date
All the authors
In alphabetical order
A B C D E F G H I J K L M
N O P Q R S T U V W X Y
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Other resources
Modern studies on late antiquity
Canon of late-antique authors
Download fonts and
Search inside the texts
all of (AND) any of (OR) these words
Enclose words in double quotes (") for exact phrase search
Exclude:
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any headings verse foreign phrase
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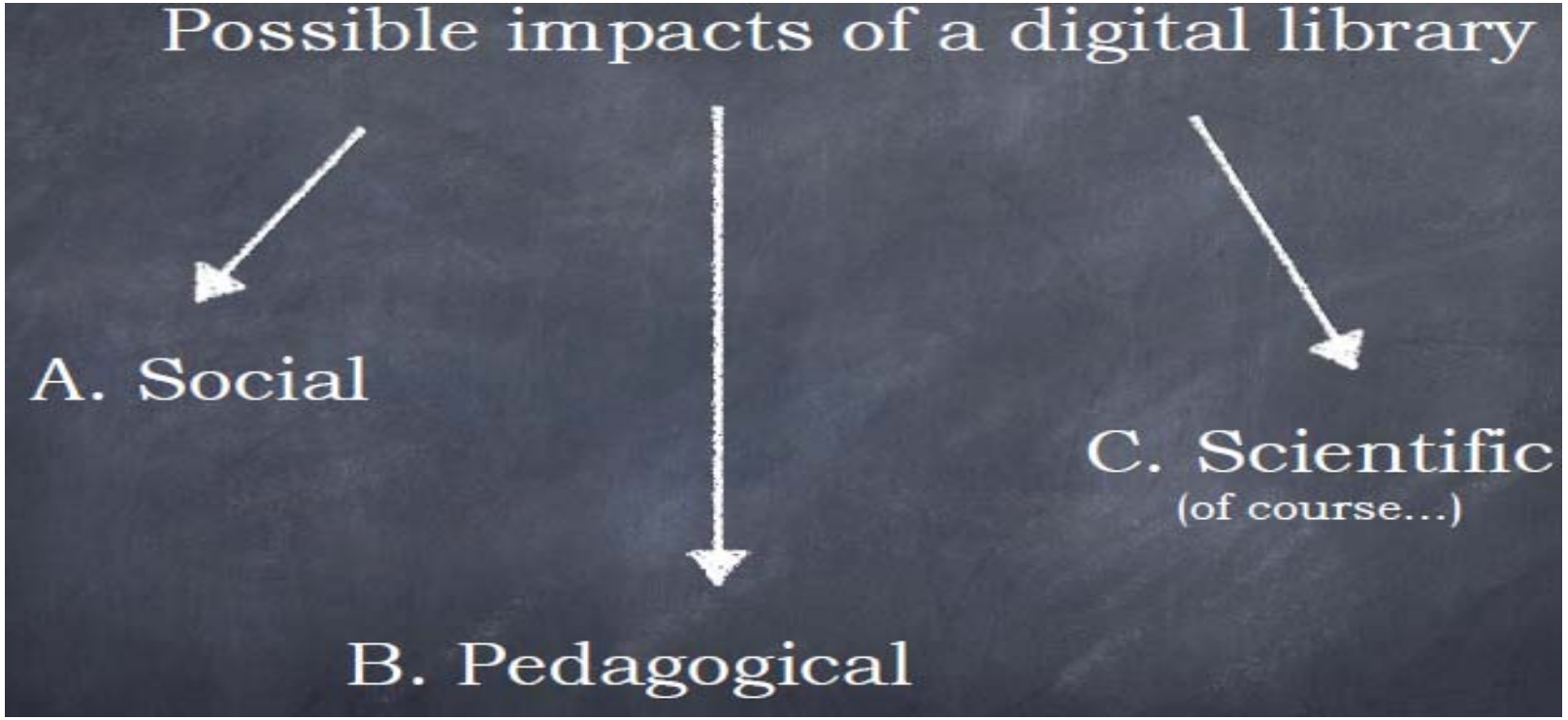
Possible impacts



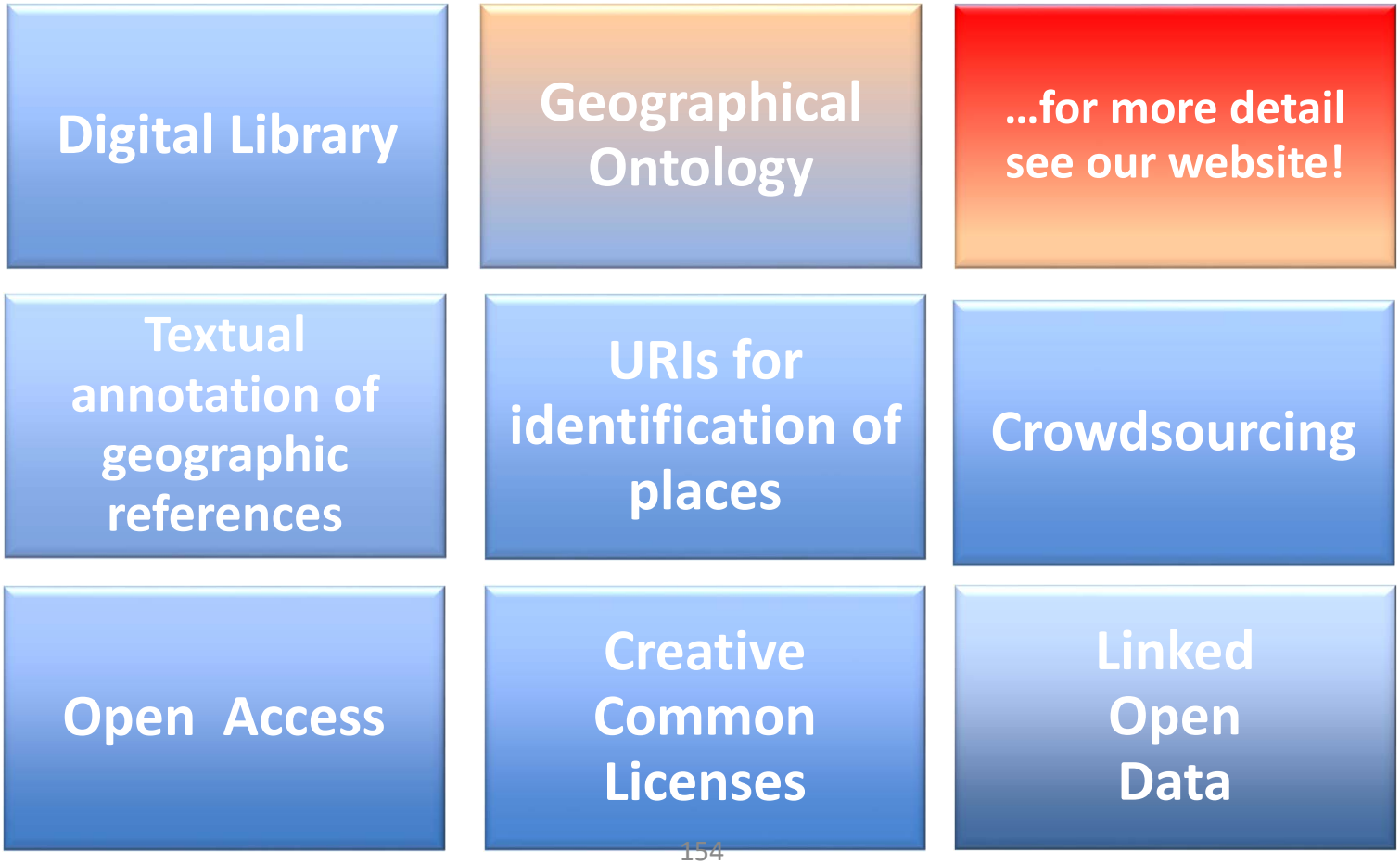
Thanks Alice Borgna for the slide!

How to question a text?

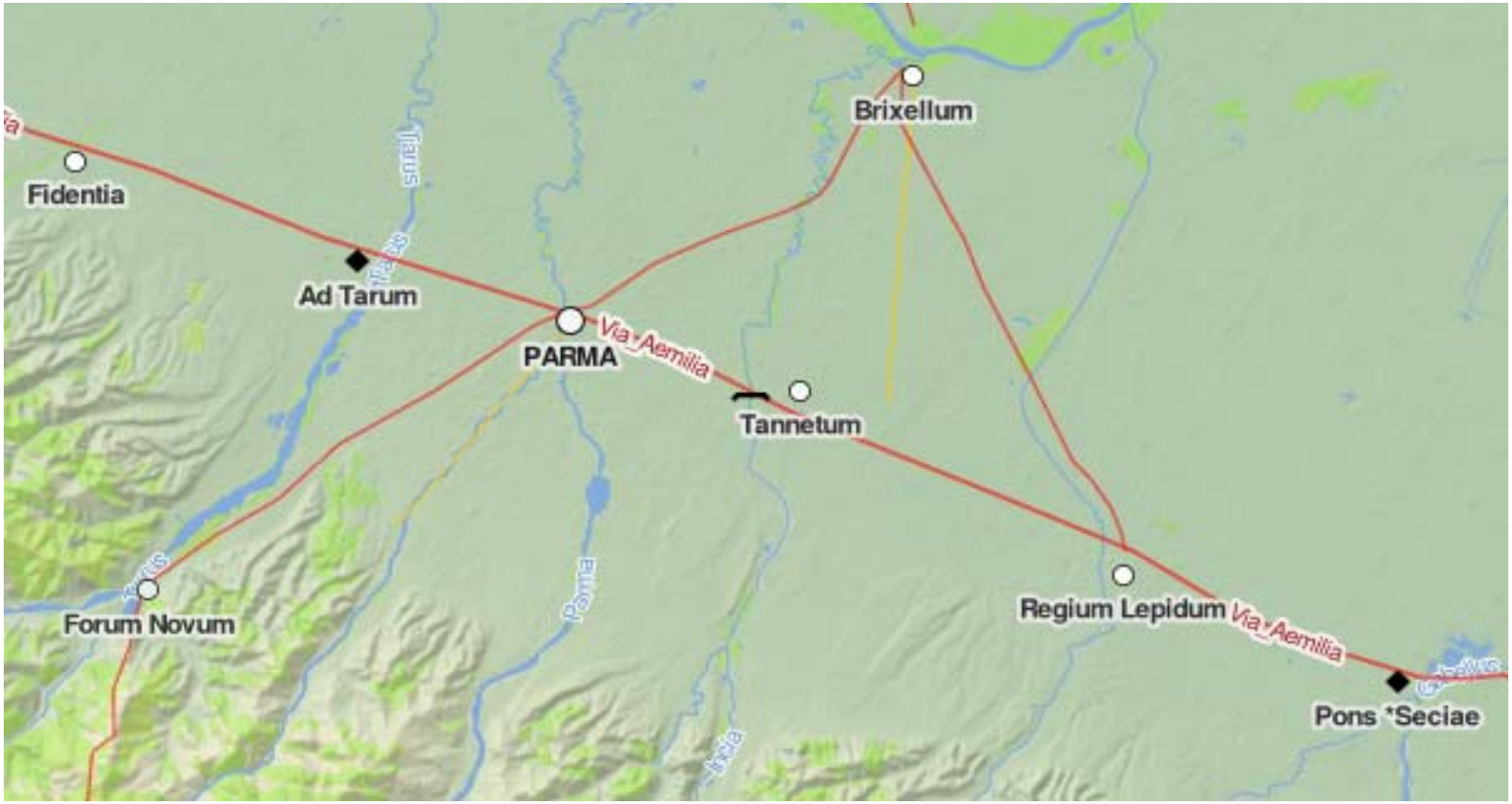
With an ontology…

Or better… with a geo-ontology!

Main components



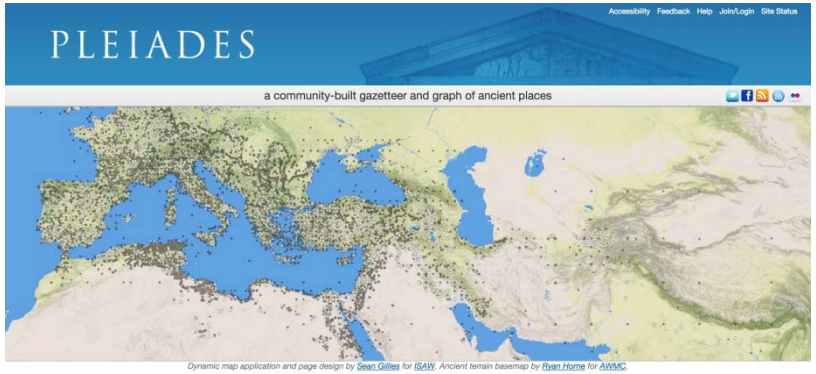
Ancient maps?



Relevant similar projects

Pleiades

pleiades.stoa.org



Pelagios

pelagios-project.blogspot.co.uk

PELAGIOS

Geolat adopts a geographical ontology for the annotation of the place names in the texts

GO, the Geolat Ontology

general aims:

- accessibility, both for the scientific community and for general public;
- informativeness;
- completeness;
- re-use?

GO: the Geolat Ontology

Specific aims:

- describing geographical information contained in Latin texts – the first development started from the analysis of Caesar, Sallust, Tacitus, Lyvi, Ammianus Marcellinus;
- providing an inventory of classes and relation in order to annotate semantically Latin texts

Some features of GO!

- GPS coordinates of the places; and actual names if any
- historical events description
- evolution of a given place (e.g. from village to city)
- physical and geopolitical description of a given place
- connection with places data in Pleiades
- management of imaginary places
- connection with the Barrington Atlas
- connection with the Open Annotation ontology to cite the passages

geolat
geografia per la letteratura latina
geography for latin literature

Too many domains of interest

1. Ontology (vs Ontologies)
2. Latin Literature
3. Library Science
4. History
5. Ancient Geography (Classical Geography)
6. Contemporary Geography
7. … Common Sense?!

Four long steps

Building such an ontology has required a division of work in four different steps:

- the analysis of Latin literature texts (20000 pages);
- the study of the differences between ancient and contemporary geography;
- a critical review of the contemporary geo-informatics ontologies;
- a reunification of these information in a geo-informatics ontology for Latin literature.

More in detail…

What does it mean to analyze Latin literature texts? Choosing what to read, underline, select and… Understanding that something is missing…

What? We should understand the relation between Romans (in this case) and the geographical world that surrounded them

The idea is to learn to see the world through the eyes of ancient populations

Geography in the ancient world
Topological problems

- measurement and measurability of distances;
- location of places;
- organization, shapes, sizes and boundaries of the inhabited world;
- representations of the world itself.

Geography in the ancient world
Source problems

- lack of reliability and homogeneity of some data;
- disagreement among different authors;
- difficulties of autoptical confirms;
- isolation of properly geographical contents from the rest of the texts.

Geography in the ancient world
Metodological problems

- the heterogeneity of aims, points of view, interpretations and perspectives;
- the use of assumptions and models representing cosmos;
- the attempts to make the data more consistent;
- the selection processes of sources;
- places whose existence is only theorized;
- the importance of imagination;
- the use of geometrical and mathematical models.

But…

Are we watching the ancient world with our eyes or with their eyes? And what about the technology we use?

The idea: to use common sense geography as a (communicative) bridge between the past and the present

GO modules

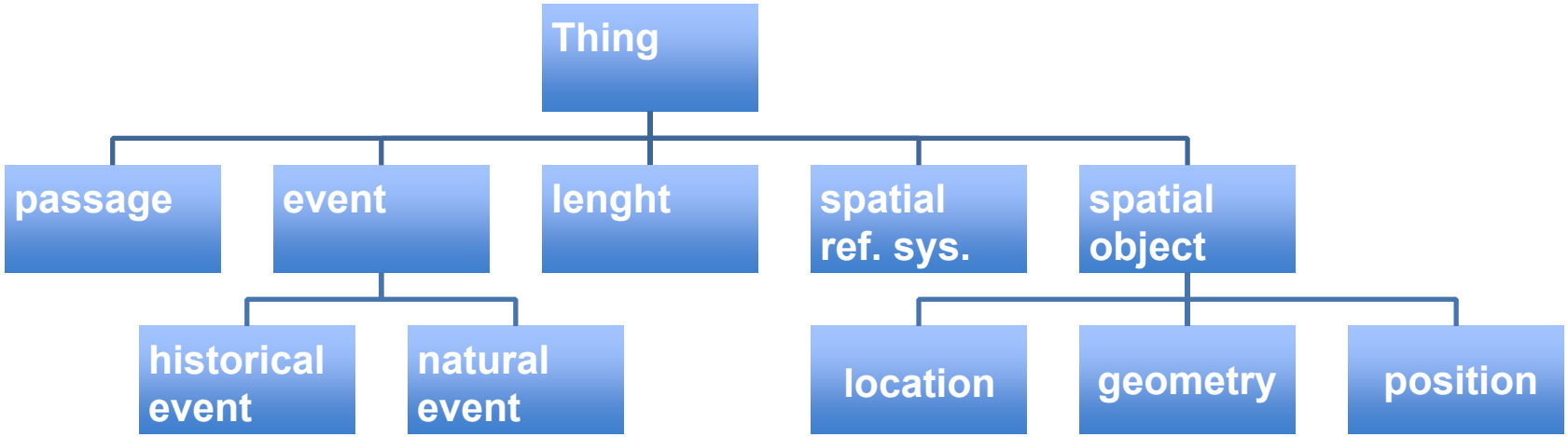
GO-TOP

contains the most general classes and properties, which would be repeated in all the other modules

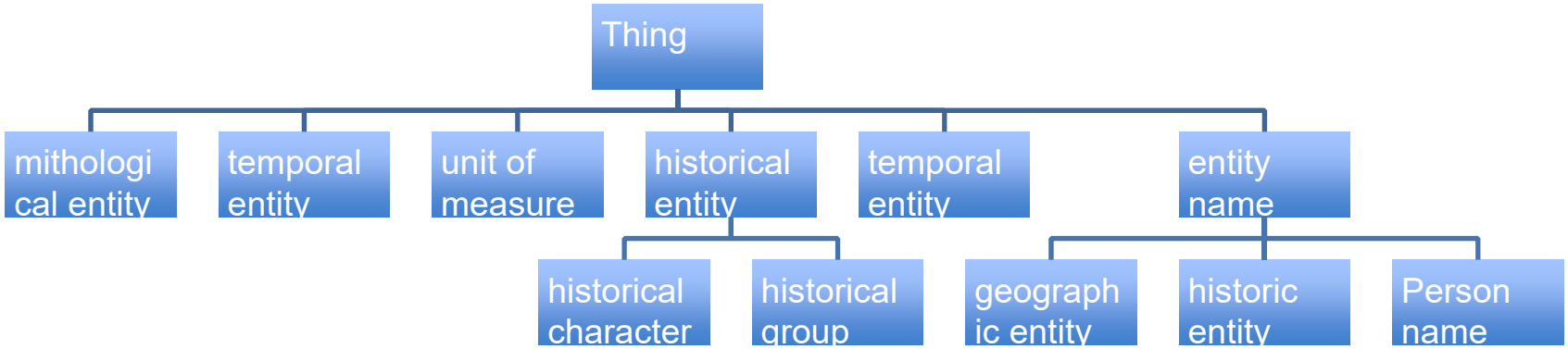
Imported Ontologies

Geosparql

Some classes of GO-TOP (1/2)



Some classes of GO-TOP (2/2)



Relations between objects: Object Properties defined in GO-TOP

about space: above, below, borderToTheEast, borderToTheNorth, borderToTheSouth, borderToTheWest, hasLocation, hasRealPlace, hasSRID, identify, inPlace, inSRID, isUnder, leftOf, nearby, rightOf, visibleFrom, beginningPlace, endingPlace, partOf

about time: after, before, occurIn

about names: deriveFrom (describes the dependency of the meaning of a givenname from another name or entity), hasNAme, nameOf

about actors: becomes, wins, composedBy (describes by which people/parties an alliance is made), owns, foughtBetween (connects a battle or a war to the involved coalitions), hasPath, hasStopOver (allows to split a route into steps), involves, isStopOverOf (indica una tappa di un percorso), objectOf, subjectOf (these properties allow to describe events happening in given places), to, by, passesThrough, controls, belongsTo

about measurement: hasLength; measuredBy (connects a lenght to a measure unit)

Assigning data values to objects: Data Properties defined in GO-TOP

about space: latitude, longitude

about time: beginningPeriod, temporalPeriod, endingPeriod, inDate, validSince, validUntil (queste ultime due proprietà servono a legare un'entità geografica antropica, spesso a carattere istituzionale e convenzionale ad una data o un periodo in cui tale istituzione/convenzione è valida)

about names: etymology (connects to the name of an entity its etymology), name (generic property which can be connected to any class and which can contain any value)

about measurement: hasValue (gives a numeric value to an entity of the class "lenght")

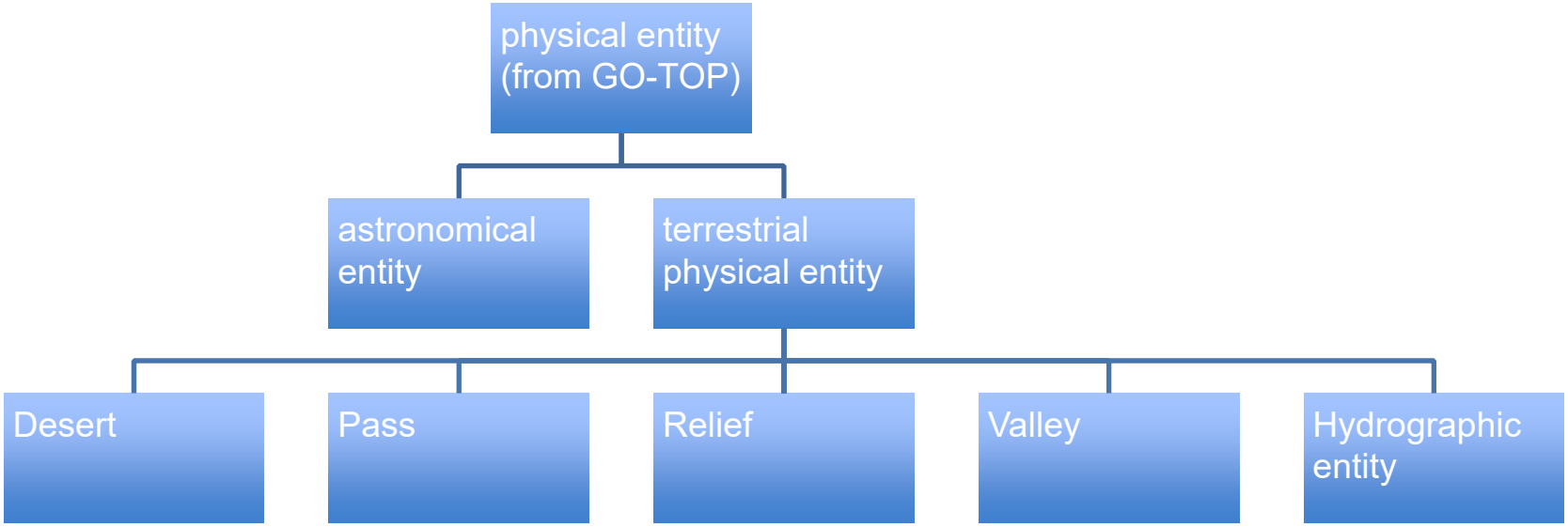
GO-PHY

includes a taxonomy of geographic entities that can be found in nature

Imported Ontologies

GO-TOP, Geosparql

Some classes of GO-PHY



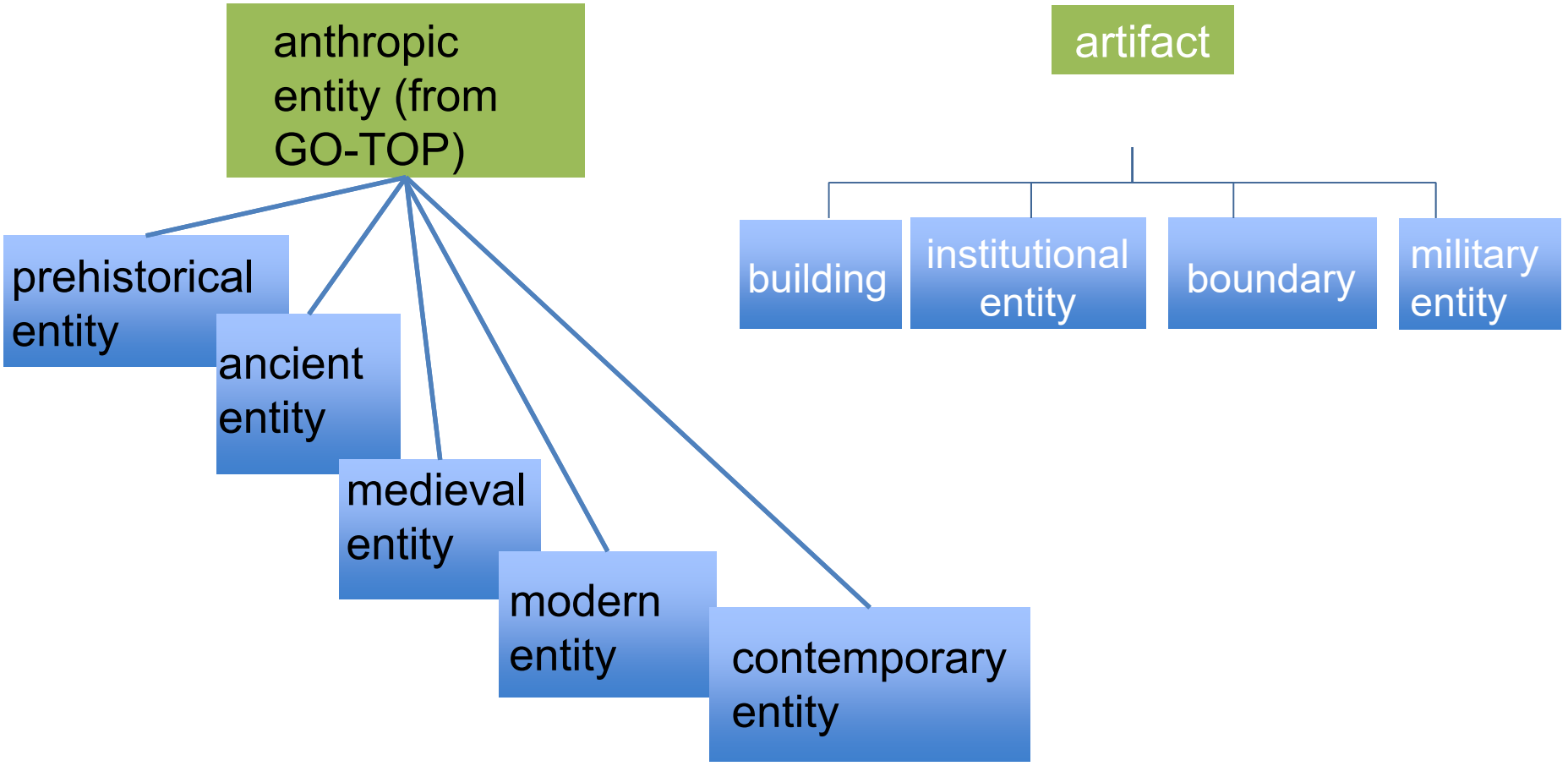
GO-HUM

includes a taxonomy of geographic features produced by humans

Imported Ontologies

GO-TOP, Geosparql

Some classes of GO-HUM



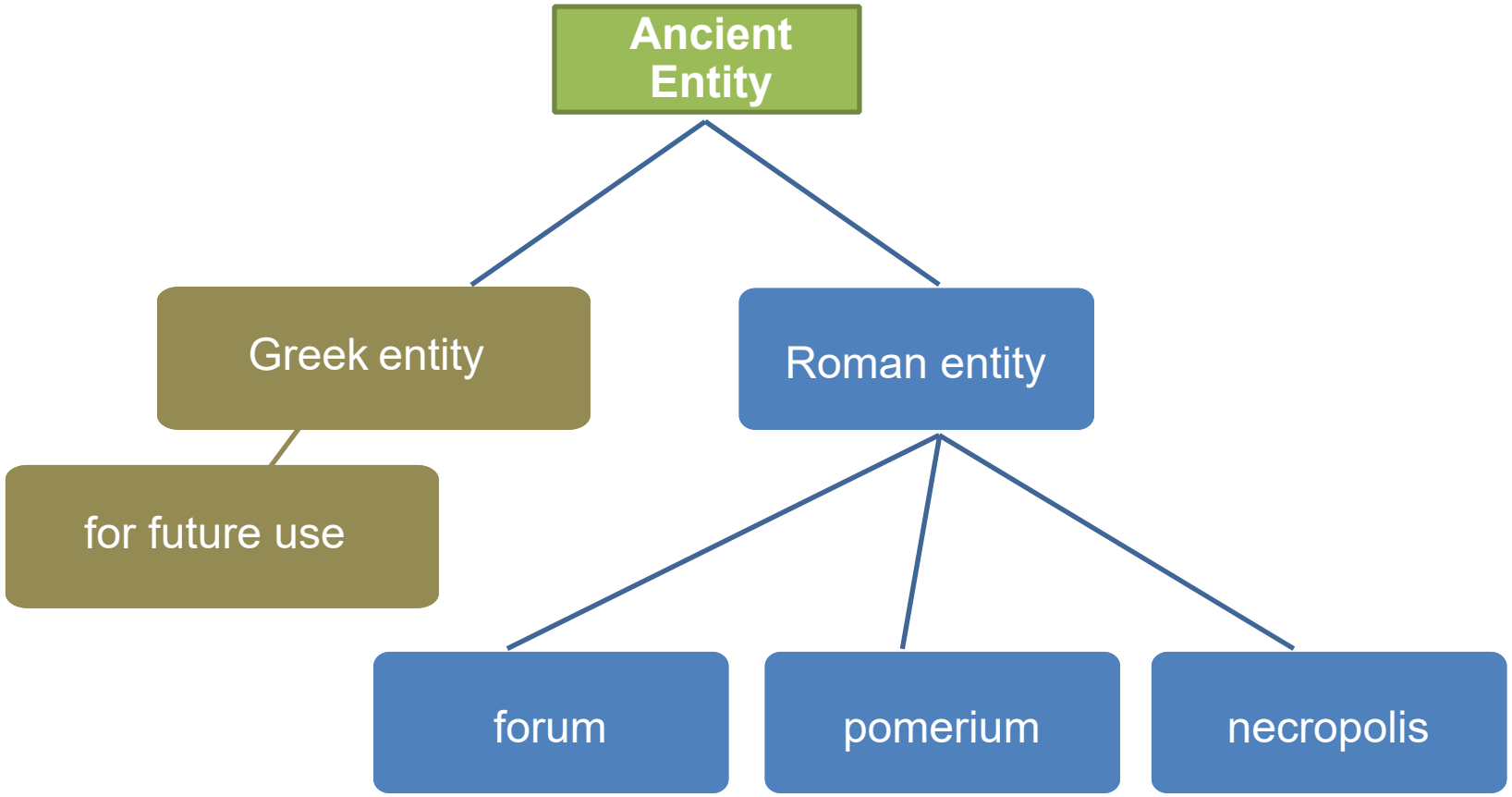
GO-FAR

describes geographic features produced by humans during ancient times, especially by ancient Romans

Imported Ontologies

GO-TOP, Geosparql

Some classes of GO-FAR



GO! a geographical ontology for classical texts

- essentially it contains classes and entities
- classes: e.g.
  [SpatialObject
  Feature]
  GeographicEntity
  PhysicalEntity
  HydrographicEntity
- the latter could refined by adding more detailed sibling subclasses like, e.g. for salted waters and for **acque dolci**

GO! a geographical ontology for classical texts

- essentially it contains classes and entities
- entities: according to the class to whom the entity belongs, a number of properties are available to describe that entity

GO! a geographical ontology for classical texts

- as usually (historical) events occurs in a given place, GO! allows to describe events
- basically the properties are a subject and an object, plus a period and a place
- the birth of Caesar (expressed in triples):
  <GO:Caesar> <GO:subjectOf> <GO:birth_1>
  <GO: birth_1> <GO:inDate> "101 BC"
  <GO:birth_1> <GO:inPlace> <GO:Rome>

GO! a geographical ontology for classical texts

- another example of event with time period indication
- the construction of the Imperial Palace:
  <GO:August> <GO:subjectOf> <GO:constructing_1>
  <GO:imperialPalace_1> <GO:objectOf> <GO:constructing_1>
  <GO: constructing_1> <GO: beginningPeriod> "10 BC"
  <GO: constructing_1> <GO: endingPeriod> "8 BC"

GO! a geographical ontology for classical texts

- it is clear that GO! it is not a ...son of Geonames
- GO! is a complex representation of the knowledge of the world an ancient human can have when thinking and seeing in geographical terms, expressed in modern terms

What can we build, in detail

- select a corpus of texts you want to study
- define which domain of knowledge you are interested to
- create or choose an ontology for that knowledge domain
- formally annotate the relevant text passages using the ontology
  - it will be an exposition/explicitation of the part of your knowledge about that passage which can be expressed using that ontology

What do we obtain

- if we annotated the names of lakes, ponds, rivers, torrents, sea, gulfs, etc. placing them inside the class HydrographicEntity, we will be able to search for that class and obtain the names of all the entities of that type contained in the text

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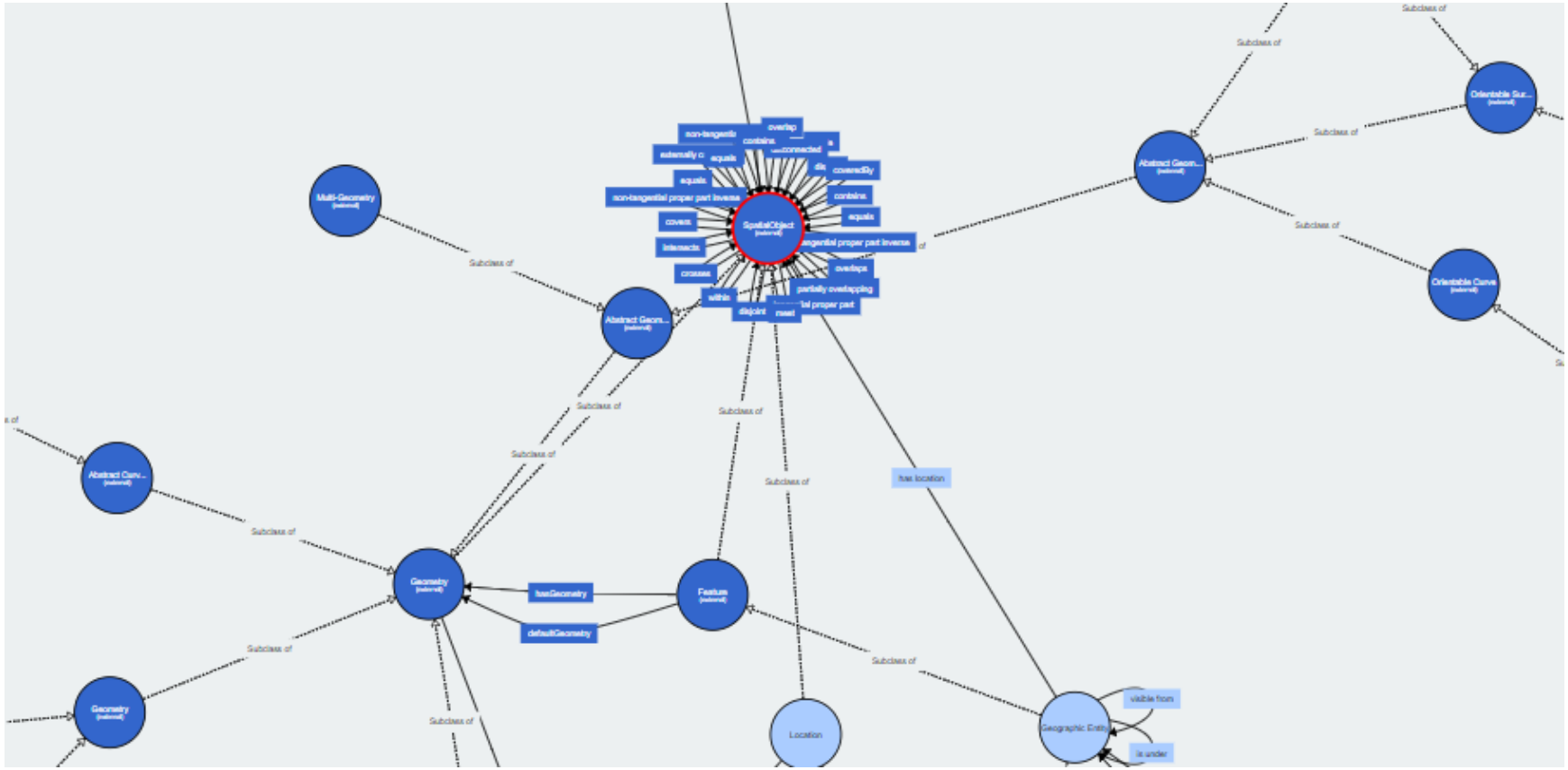
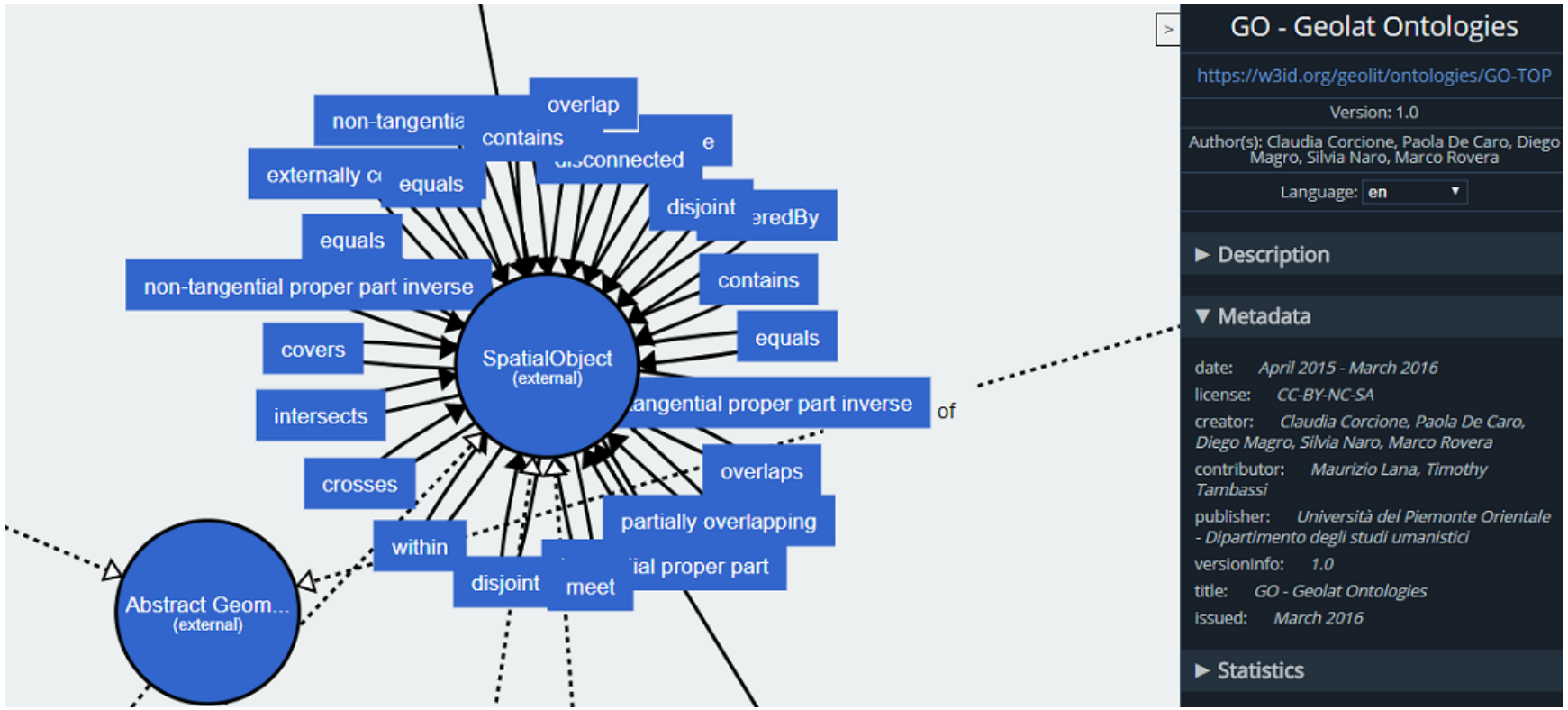
geography for latin literature

GO!



GO! (deepeer…)


SpatialObject
(external)
Abstract Geom...
(external)
overlap
contains
equals
disjoint
equals
non-tangential proper part inverse
covers
intersects
crosses
within
meet
contains
equals
overlaps
partially overlapping
of
GO - Geolat Ontologies
https://w3id.org/geolit/ontologies/GO-TOP
Version: 1.0
Author(s): Claudia Corcione, Paola De Caro, Diego Magro, Silvia Naro, Marco Rovera
Language: en
Description
Metadata
date: April 2015 - March 2016
license: CC-BY-NC-SA
creator: Claudia Corcione, Paola De Caro, Diego Magro, Silvia Naro, Marco Rovera
contributor: Maurizio Lana, Timothy Tambassi
publisher: Università del Piemonte Orientale - Dipartimento degli studi umanistici
versionInfo: 1.0
title: GO - Geolat Ontologies
issued: March 2016
Statistics

Why using ontologies? (1/2)

describing (aspects of) the content of a text using the categories (the classes) of an ontology allows

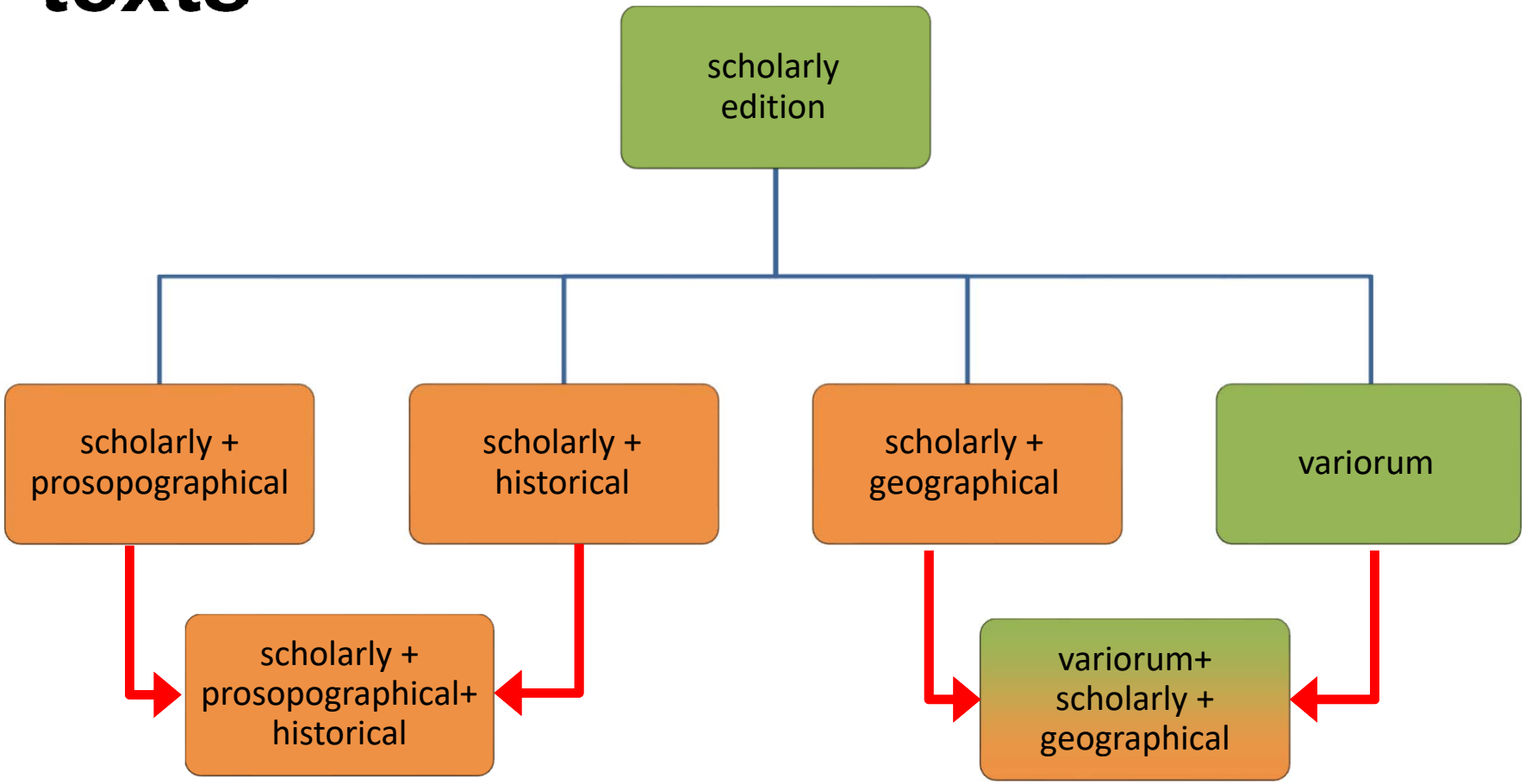
- to act *in the text* as interpreters (writing the annotation itself)
- to do searches based on some type of mixed reasoning ("which are the fresh waters occurring in the works of Augustan writers?")
- to build factual connections among different texts – so putting them in relation beyond times (which places of Roman Antiquity are mentioned in French Renaissance texts?)

Why using ontologies? (2/2)

in other words the adoption of ontologies in the study of texts

- helps DH to go from doing usual things with new means, to fully taking profit of the digital world envisaging new types of research otherwise impossible
- fully involves DHrs in the evolution of the digital world – the semantic web is an ontology-based web
- facilitates the access to the classical world by people not classics-aware – we don't want the "classical culture" to become (yet more) marginal in the digital world

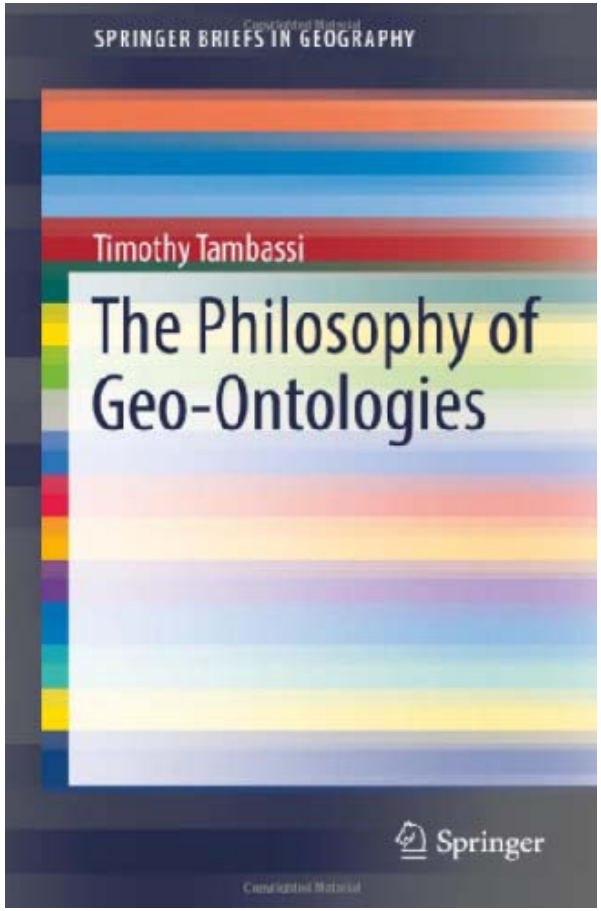
A possible outcome: new types of digital editions of texts



Documentality

(why) it is desirable to leave something

A boring suggestion



T. Tambassi
The Philosophy of Geo-Ontologies
Cham: Springer
2017

Grazie!