Ontological Requirements for Navigating Philosophical Resources

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knowledgeweb
realizing the semantic web

The Open University

Summary

1. Context, Generic approach & Requirements

2. Ontology Walkthrough

3. Modeling patterns for navigation (III)

4. Conclusions

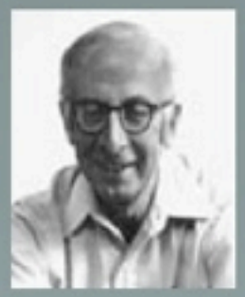
Background and rationale

- PhiloSURFical (2005): learning through semantic navigation
  - Annotation of learning materials *by means of* a domain ontology
  - Reasoning on annotated resources
  - Dynamic reorganization according to different perspectives
  - Mechanisms for contextual navigation
  - Tools for providing not answers, but documents!

- Other notable projects
  - InPhilo Project (USA, 2007)
    Ontological backbone for the Stanford Encyclopedia of Philosophy
    Funded by the *National Endowment for the Humanities Digital Humanities Initiative*
  - Discovery Project (Europe, 2006)
    Generic framework for collaborative annotation/navigation in the *philo*-SW
    Funded by the EU EcontentPlus Grant (2M)

What we'd like: a vision...

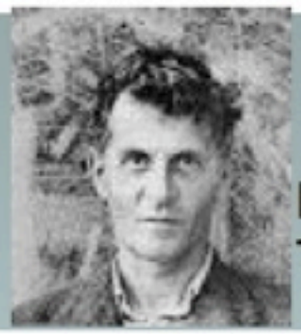
Interpretative



Max Black 1909-1988,
Commentary on the Tractatus

7

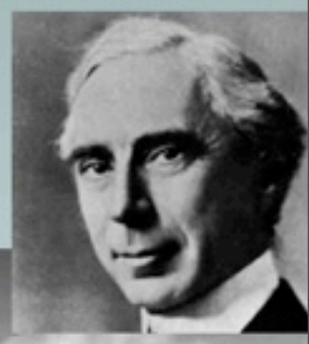
What we cannot speak about we must pass over in silence.



Ludwig Wittgenstein 1889-1951,
Tractatus Logico-Philosophicus

Comparative

B. Russell, 1872-1970



6.2

Mathematics is a logical method. The propositions of mathematics are equations, and therefore pseudo-propositions.

Cambridge, 1920-1930

Textual

platonism

empiricism

logicism

realism formalism

Theoretical

epistemology

ph.of logic

ph.of mathematics

ph.of language

Theoretical

F. Ramsey, 1903-1930

G.E.Moore, 1873-1948

Generic Approach

A Pragmatic Perspective

- Ontologies are not about truth or beauty.
- They are agreements, made in a social context, to accomplish some objectives.
- It's important to understand those objectives, and be guided by them.

Adapted from Gruber, 2003

The Semantic Web is about sharing and accessibility: REUSE!

Requirements:

Varying granularity

e.g. a philosophy is unique, but still within a tradition

Uncertainty

e.g. the birth of Heraclitus

Viewpoints

e.g. theories, schools and other philosophical ideas

Historical events

e.g. publication of a book, meeting, work conception

Contradictory information

e.g. concurring opinions on the same subject

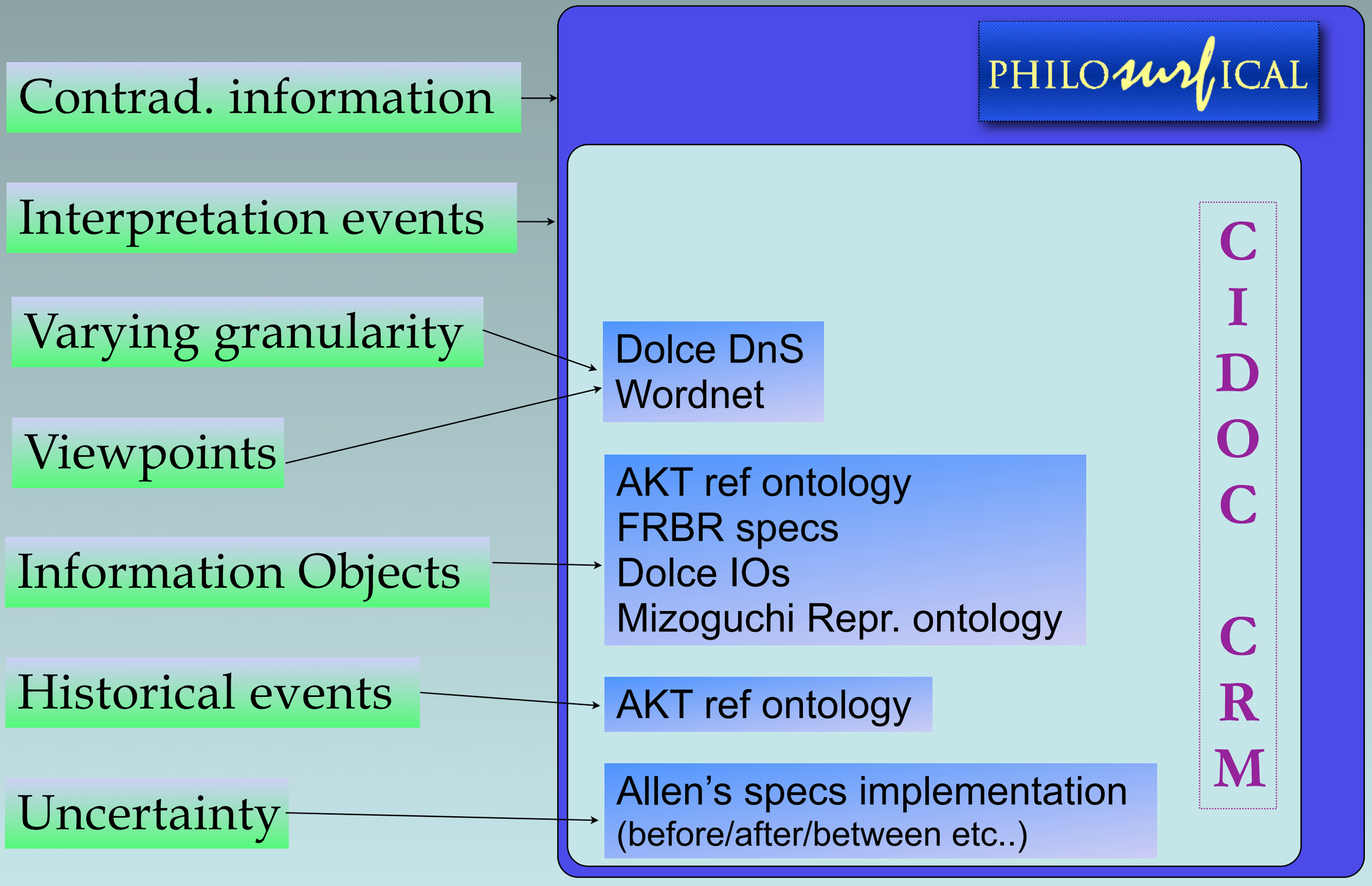
Information objects

e.g. texts, paintings, musical works and their contents

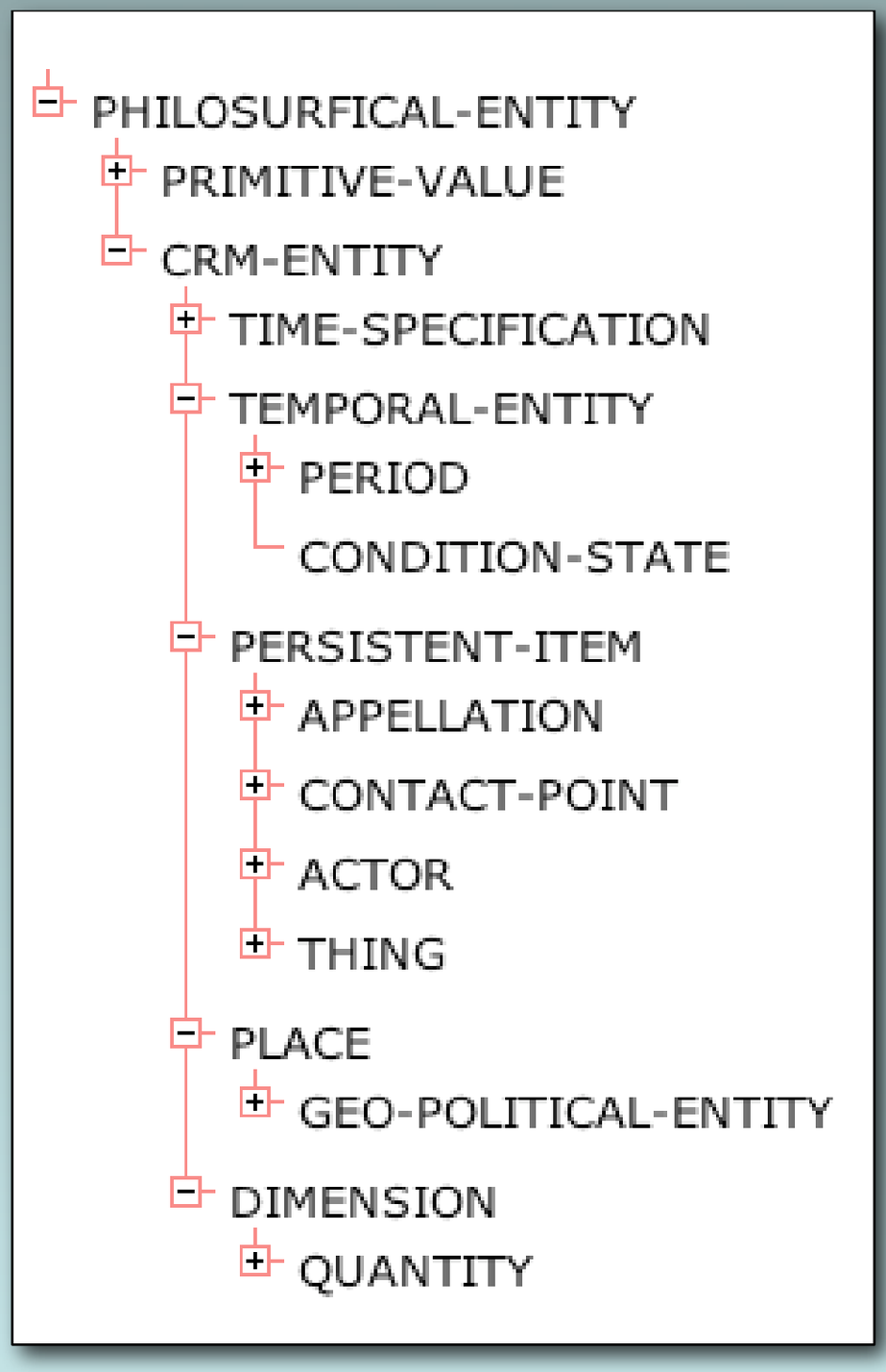
Interpretation events

e.g. “the paragraph is about concept X”

Requirements: approach



Onto Walkthrough: temporal entities

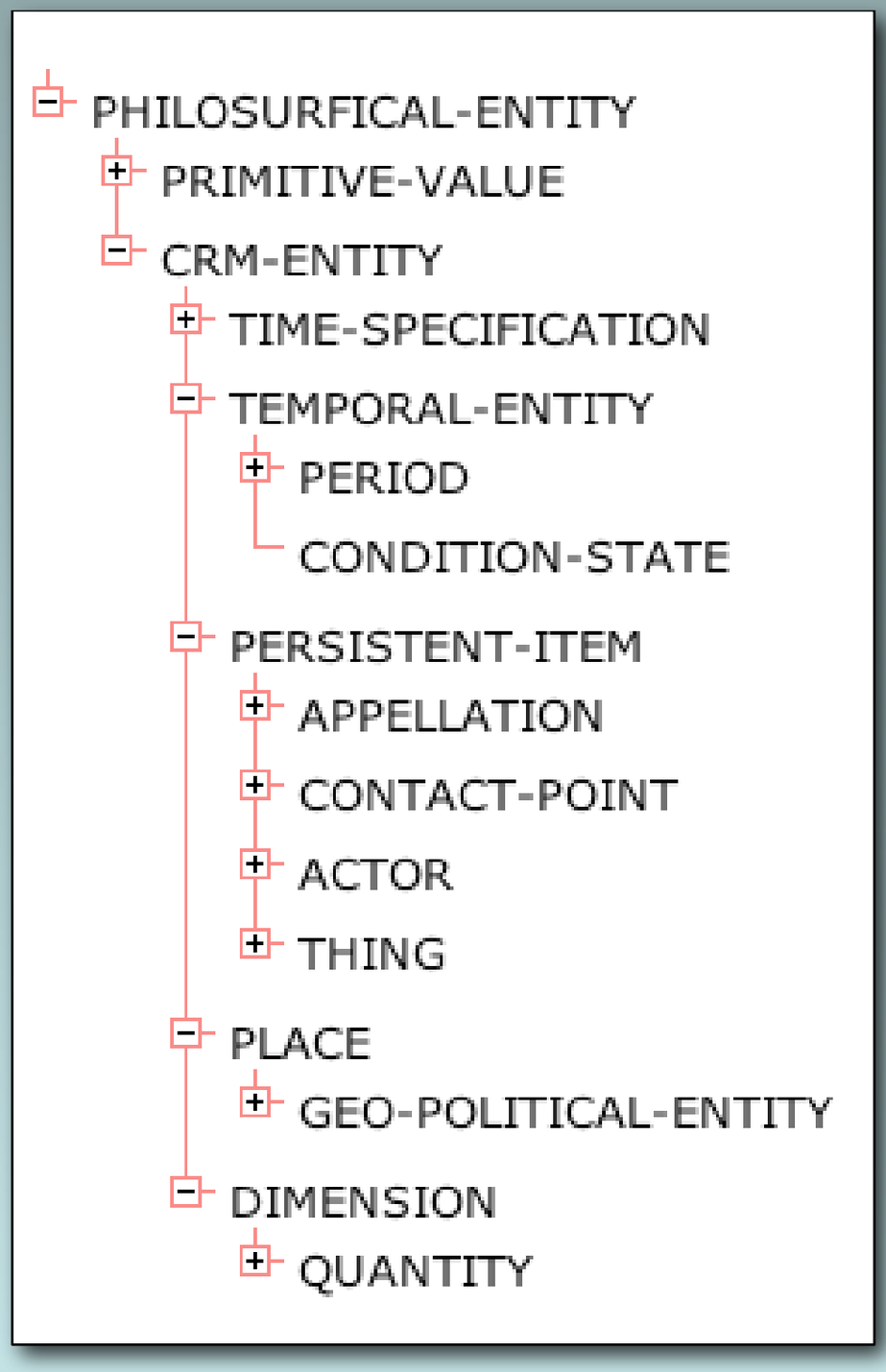


Onto Walkthrough: temporal entities

- PHILOSURFICAL-ENTITY
  - PRIMITIVE-VALUE
  - CRM-ENTITY
    - TIME-SPECIFICATION
    - TEMPORAL-ENTITY
      - PERIOD
      - CONDITION-STATE
    - PERSISTENT-ITEM
      - APPELLATION
      - CONTACT-POINT
      - ACTOR
      - THING
    - PLACE
      - GEO-POLITICAL-ENTITY
    - DIMENSION
      - QUANTITY

- PERIOD
  - EVENT
    - END-OF-EXISTENCE
    - BEGINNING-OF-EXISTENCE
    - ACTIVITY
      - INTELLECTUAL-ACTIVITY
        - INTERPRETATION
        - VIEW-SUBSCRIPTION
        - STUDY
        - IDEA-USAGE
        - IDEA-MODIFICATION
        - CONCEPTUAL-CREATION
      - SOCIAL-ACTIVITY
      - ATTRIBUTE-ASSIGNMENT
      - ACQUISITION
      - TRANSFER-OF-CUSTODY
      - MOVE
      - MODIFICATION
      - EXPERIMENT
      - FORMATION
  - INTELLECTUAL-MOVEMENT
    - PHILOSOPHICAL-MOVEMENT

Onto Walkthrough: conceptual objects



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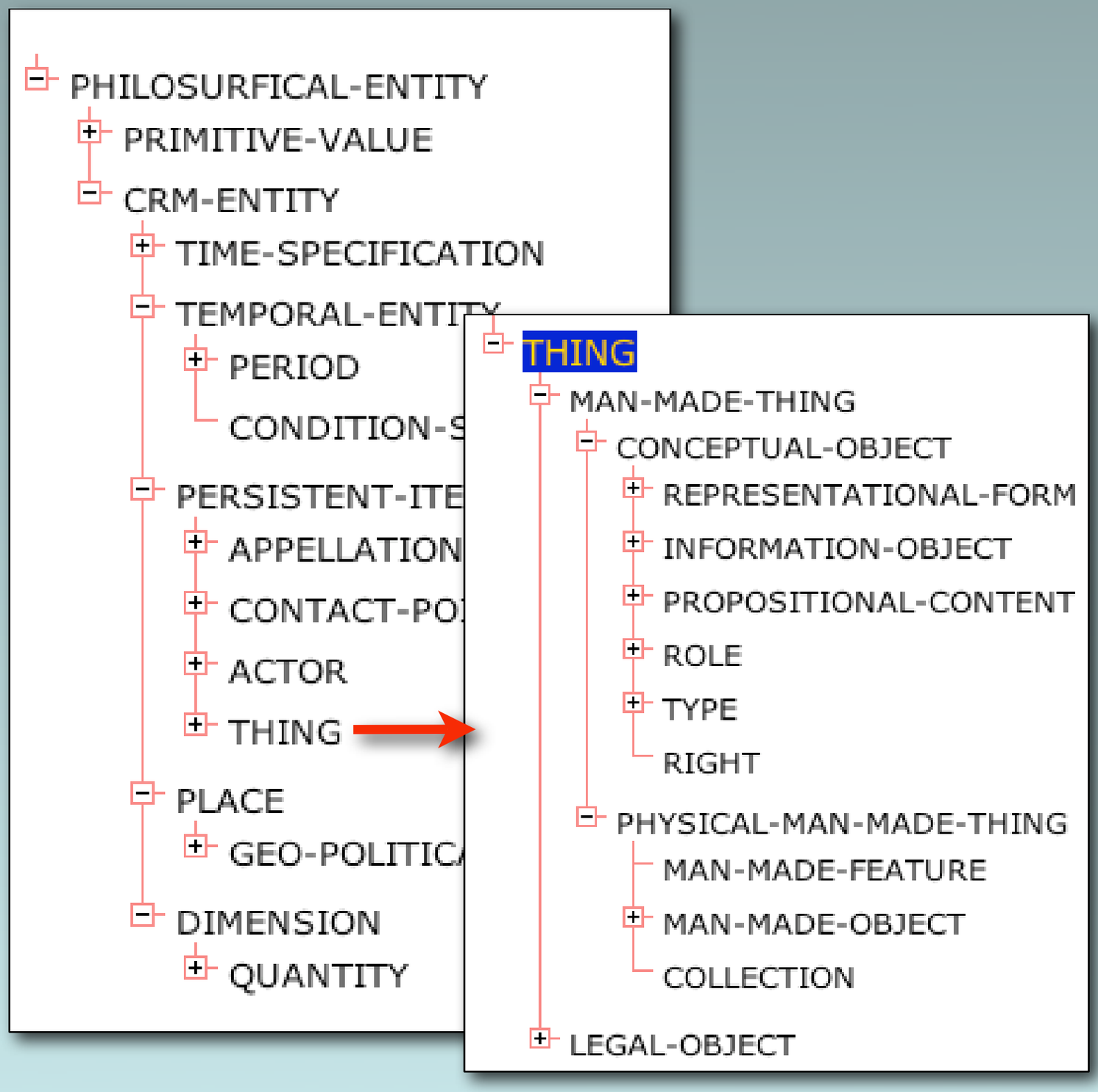

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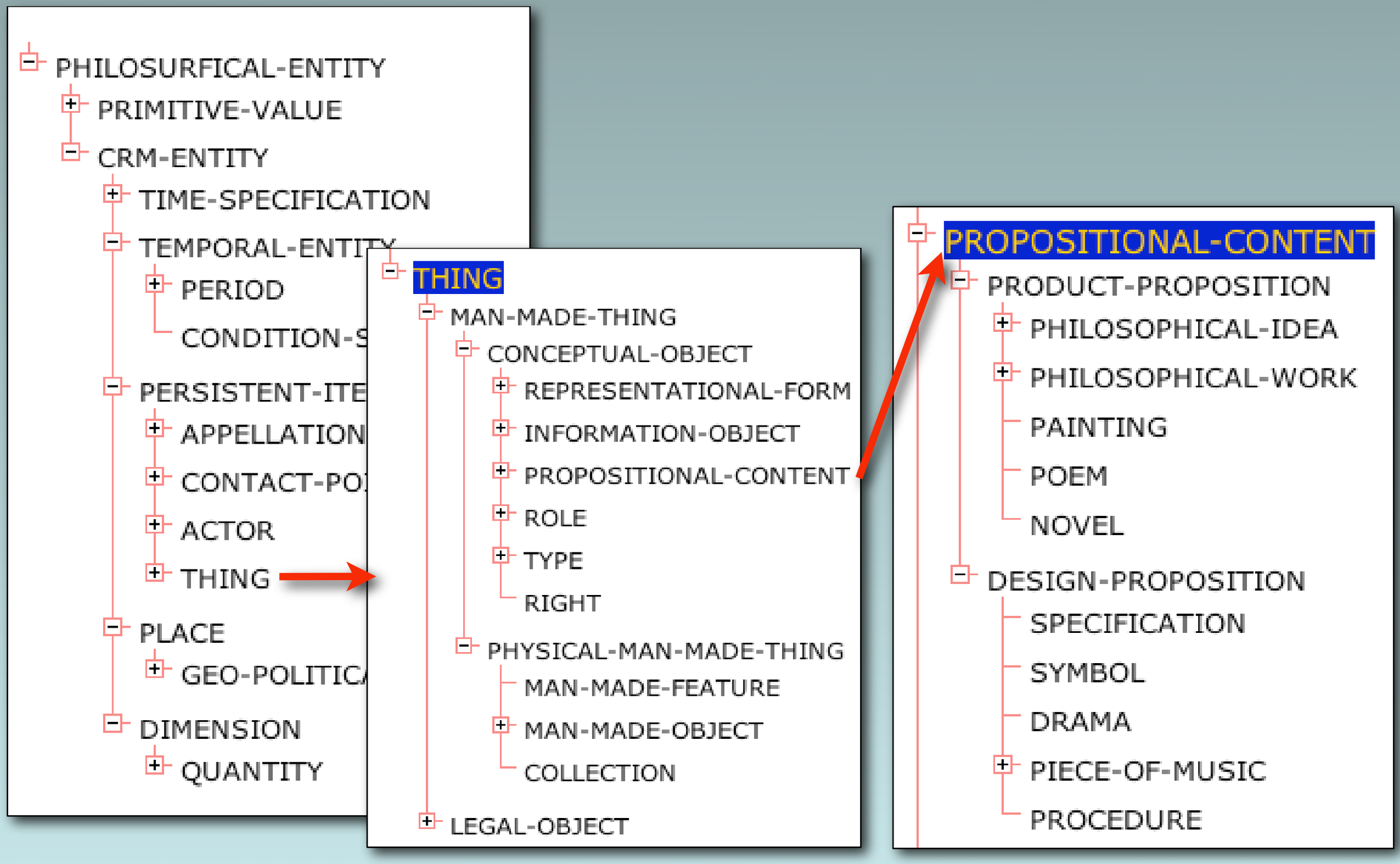
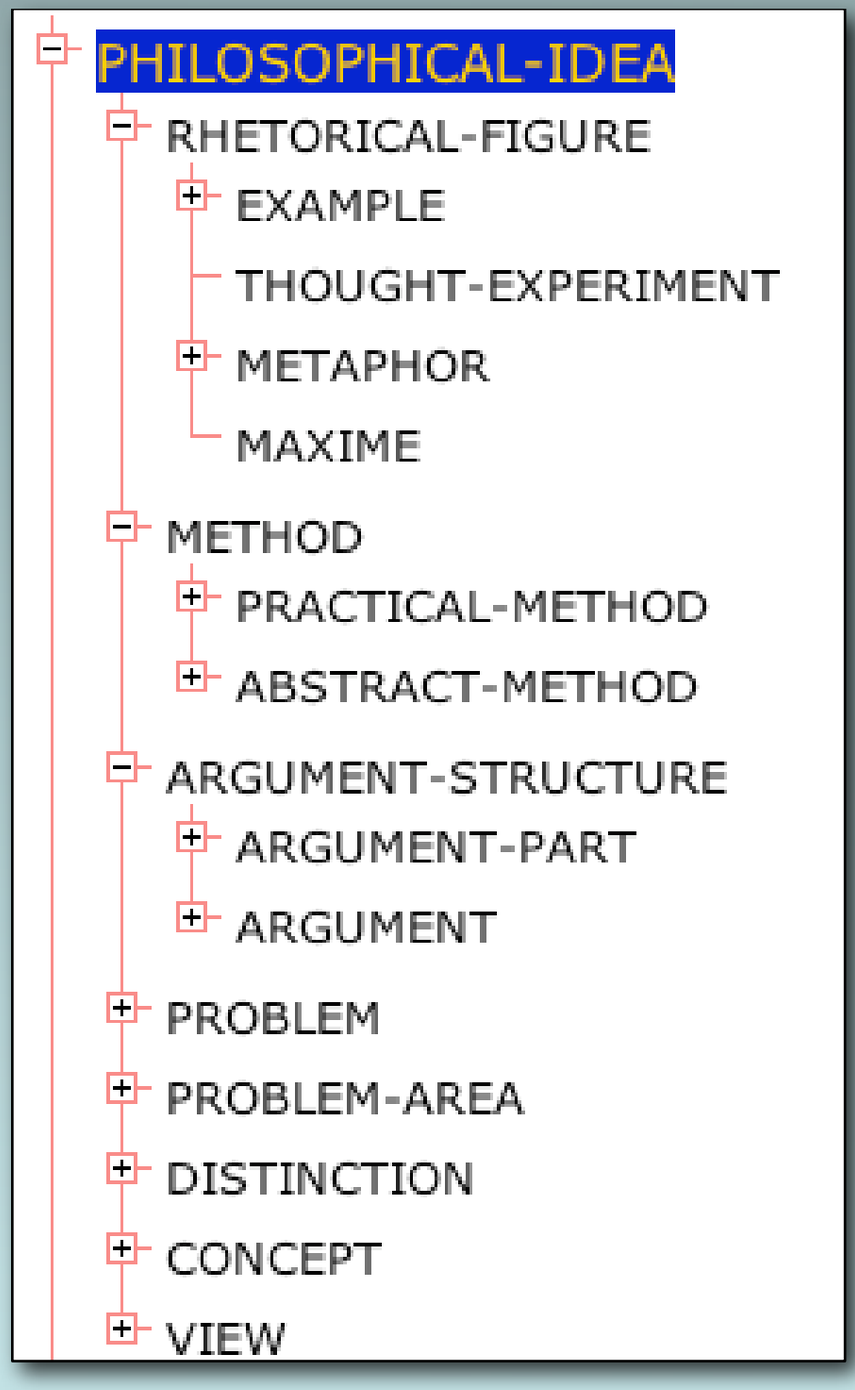


Onto Walkthrough: philosophical ideas

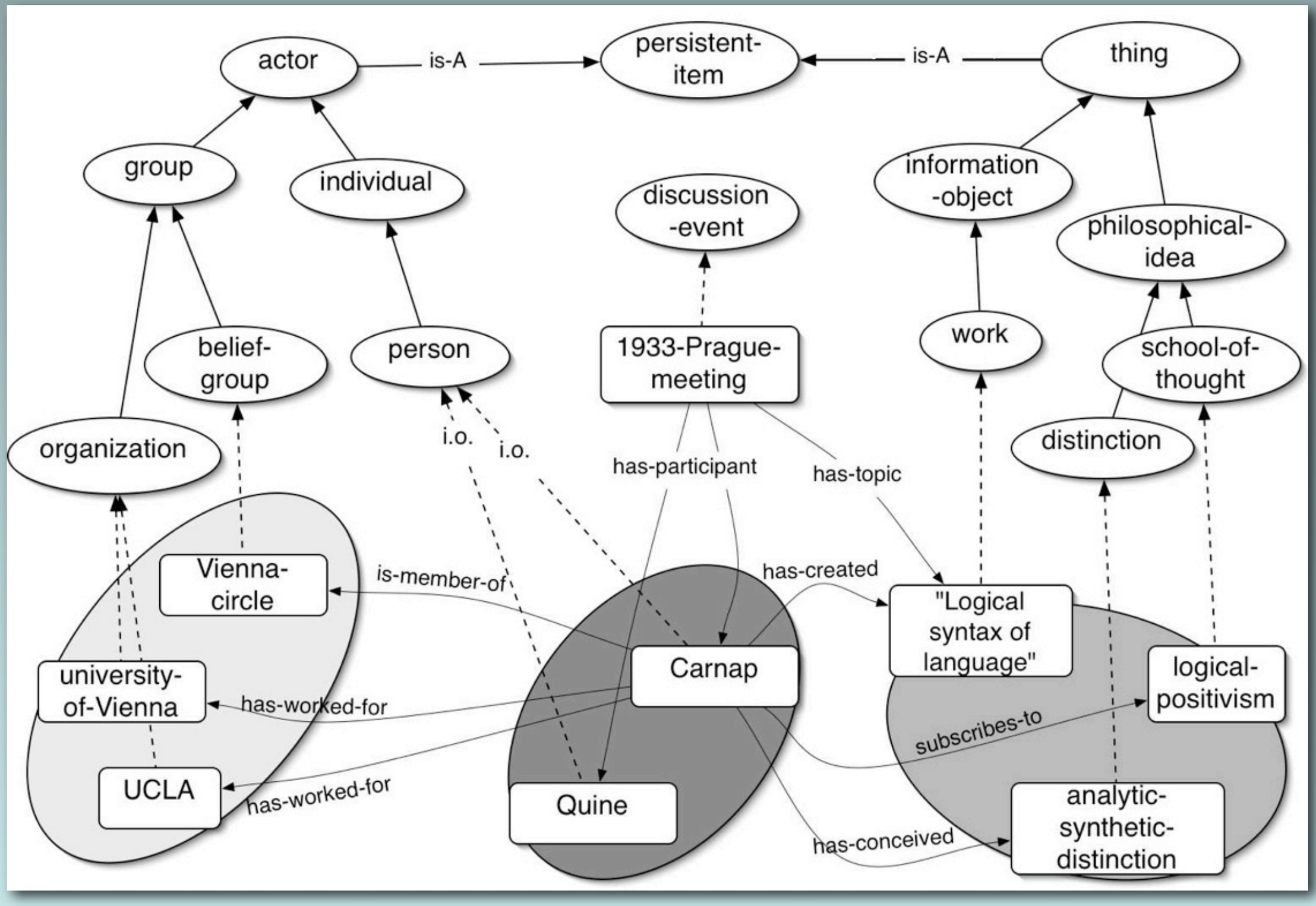


- **Constructivistic** approach: 'pragmatic minimalism'

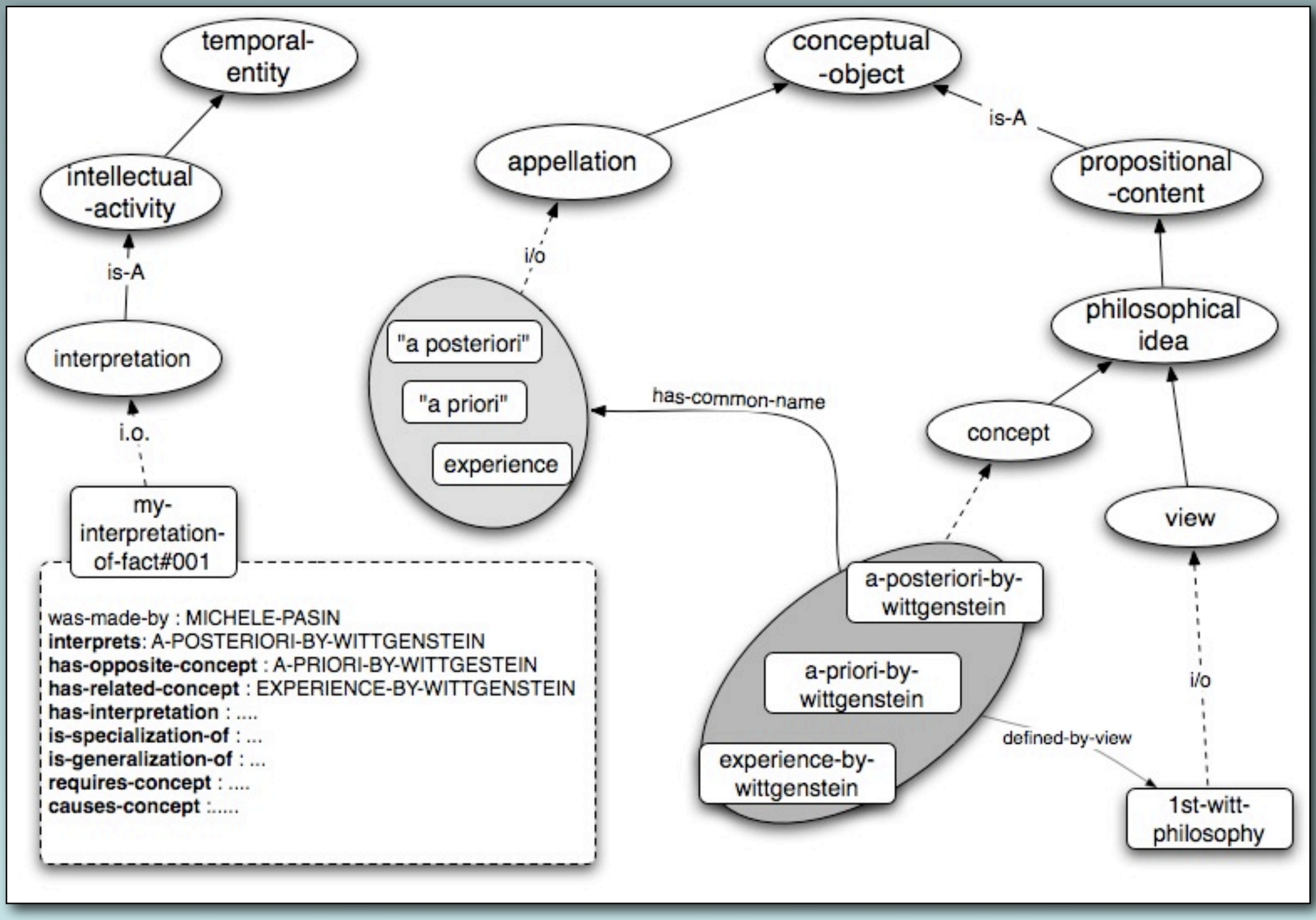
  ..."stone" can be a concept, if there's a view defining it!

- **Goal**: individuate the types of non-physical objs which play a role in the construction of viewpoints!

Example: a philosophical event

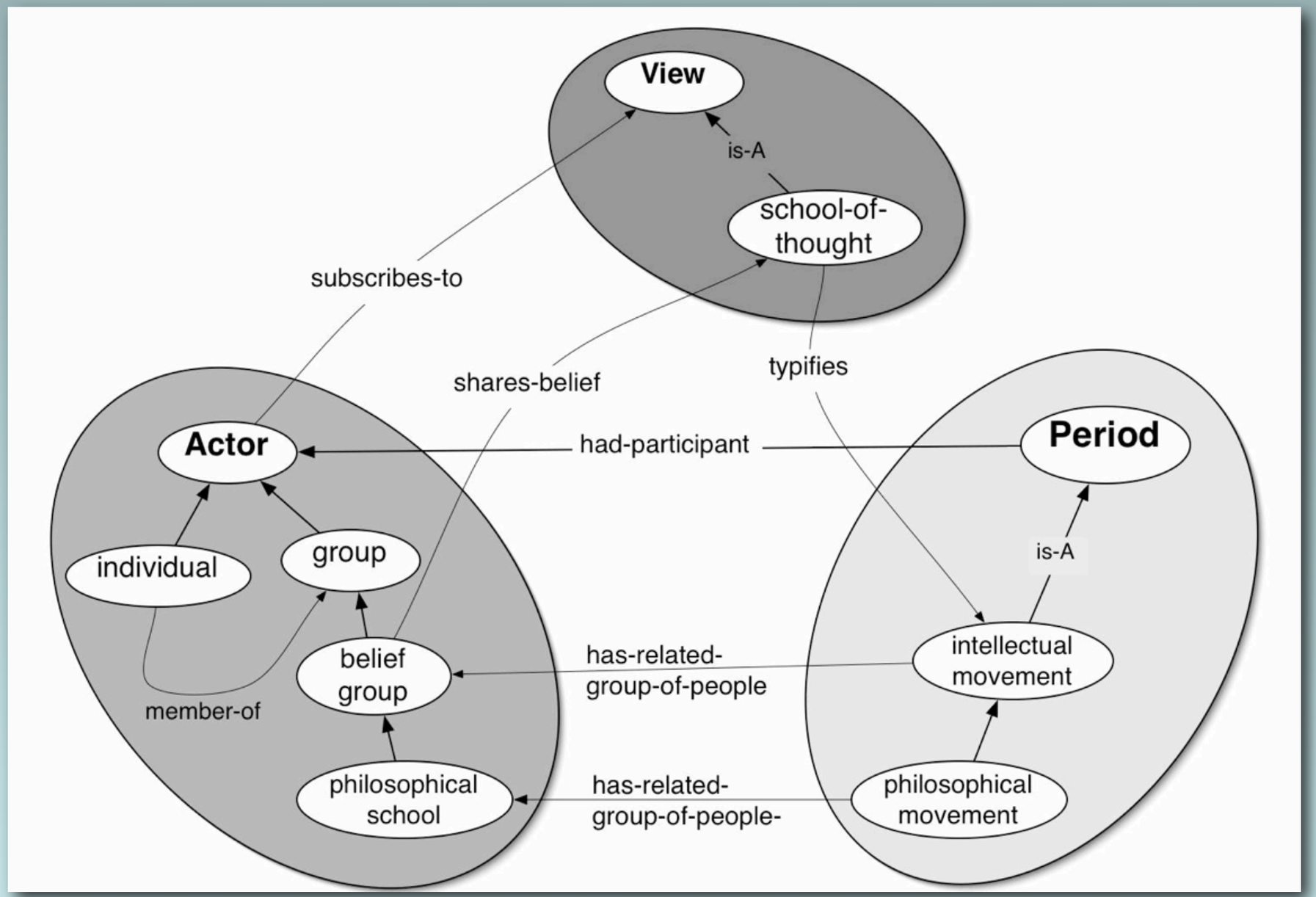


Important: interpretations vs ideas



Ex. I: how many senses of rationalism?

"This theory is clearly a new and re-shaped rationalism"
"Descartes was one of the founders of modern rationalism"
"Throughout history, the attacks of rationalism against empiricism has diminished"



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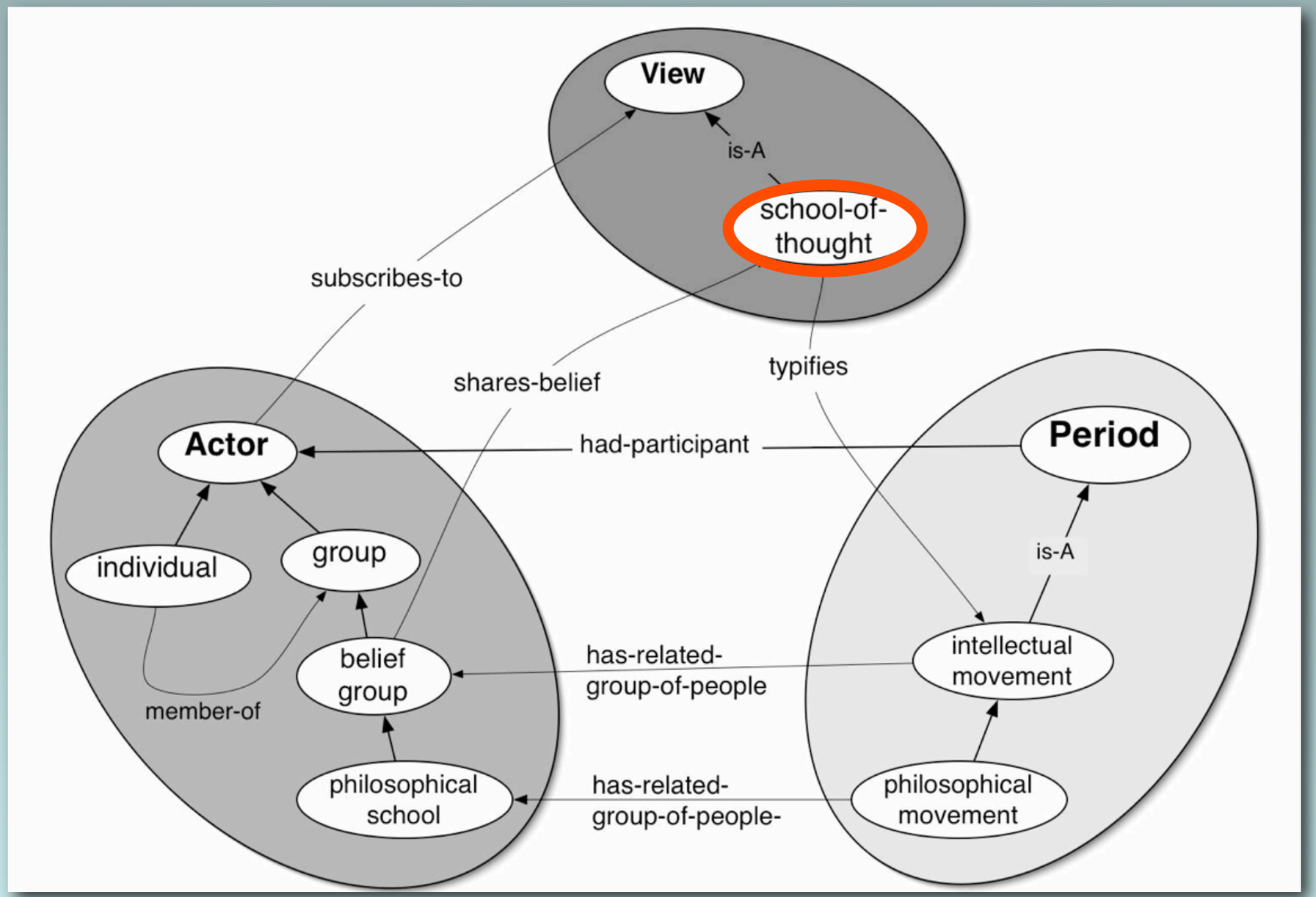

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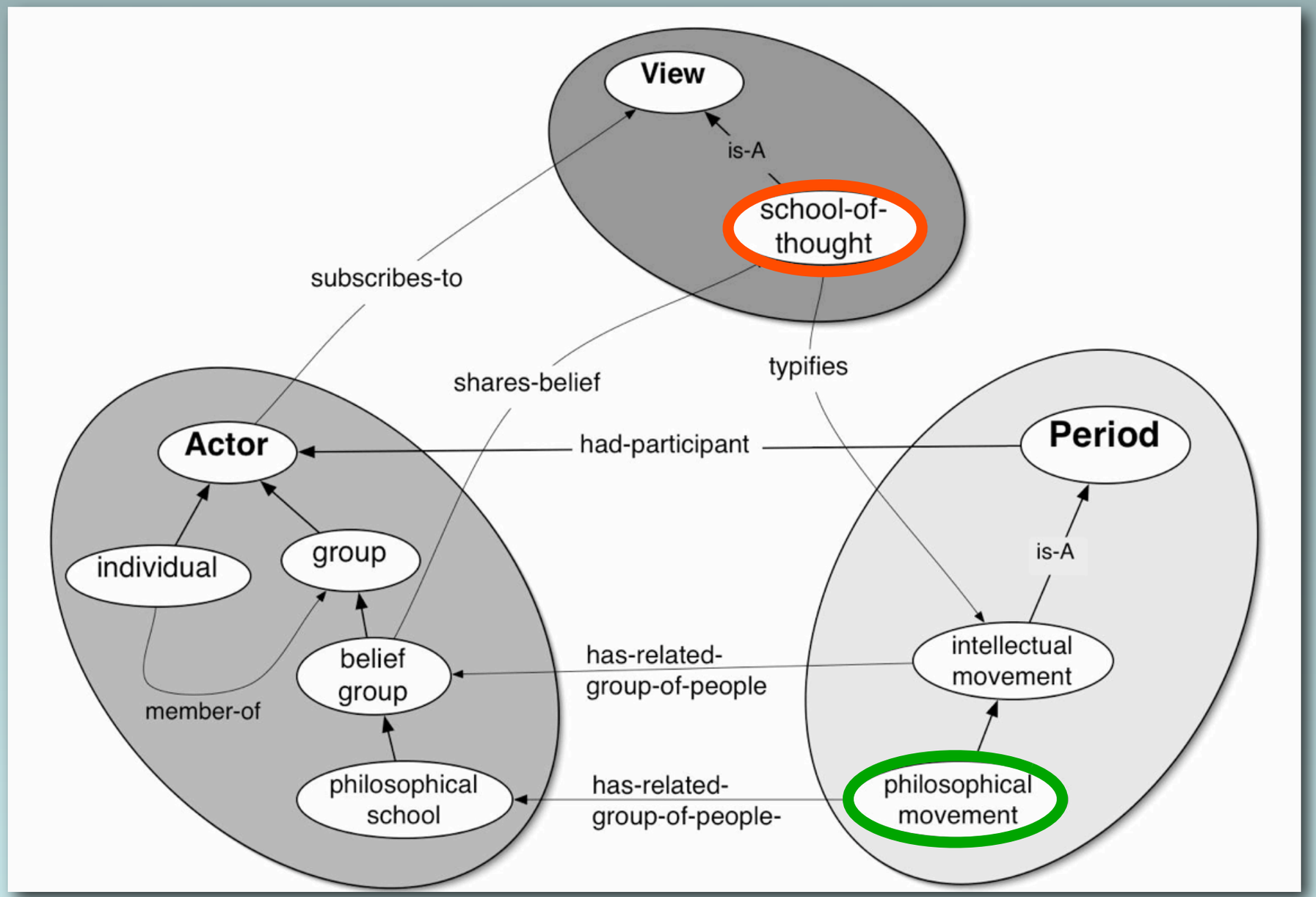

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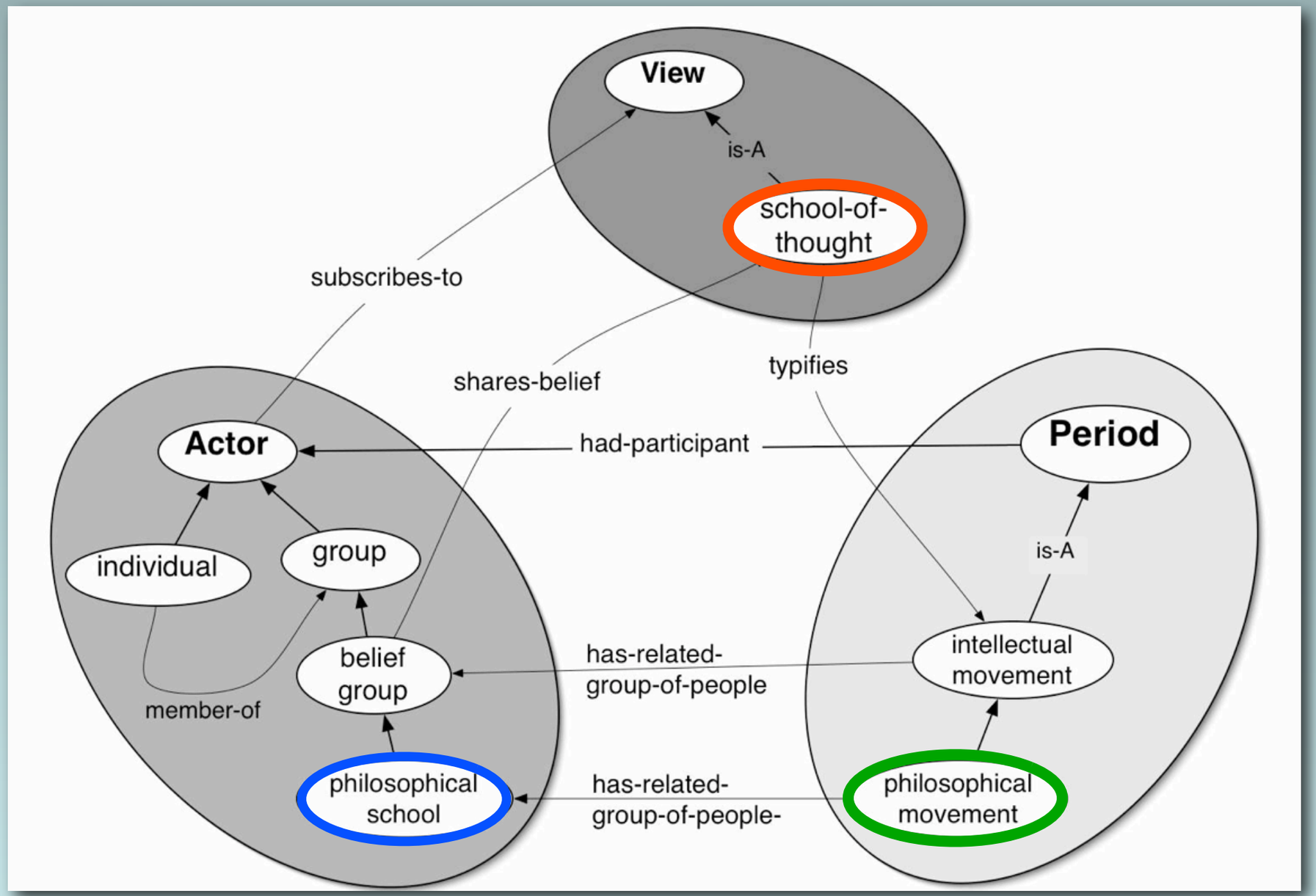

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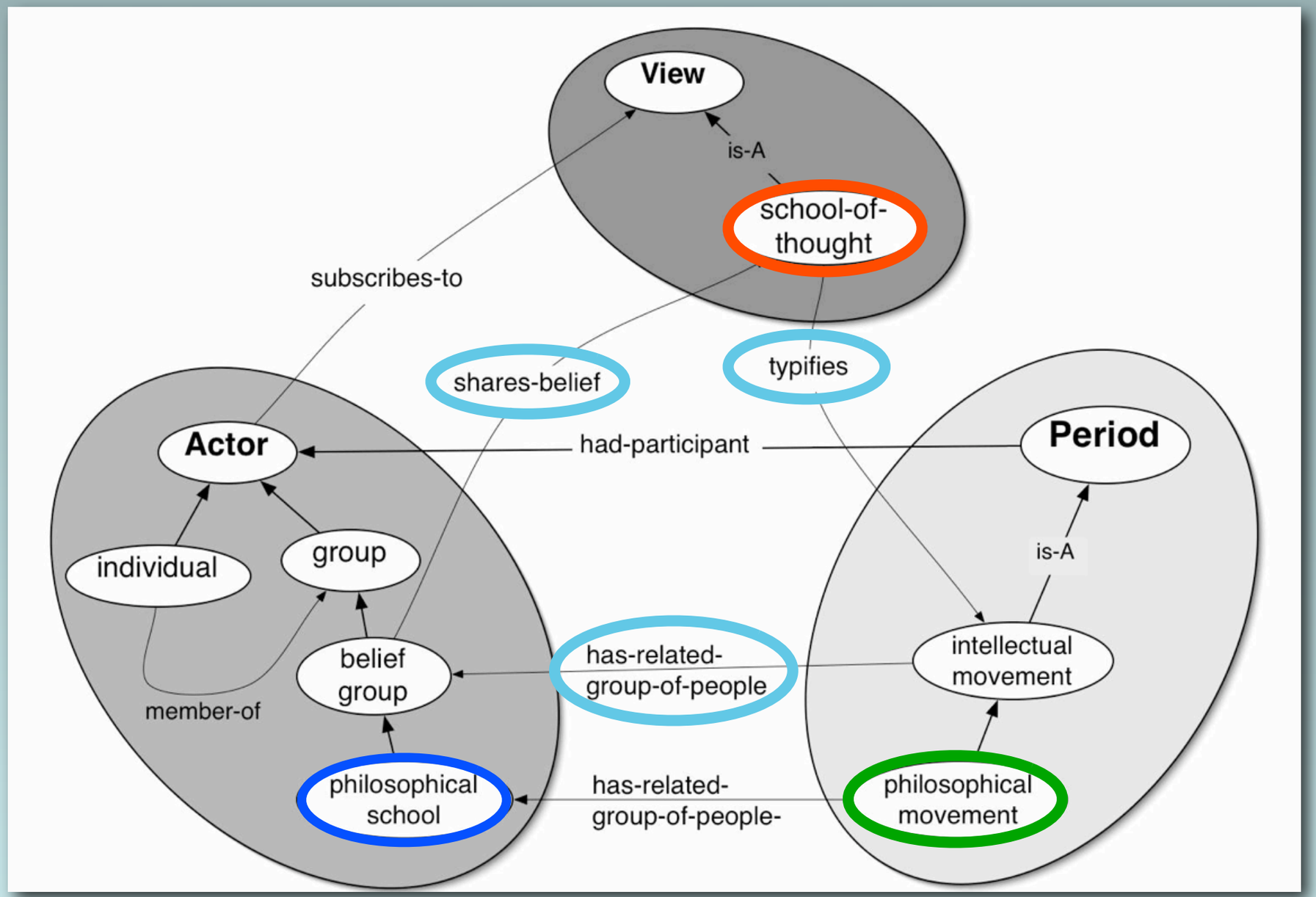
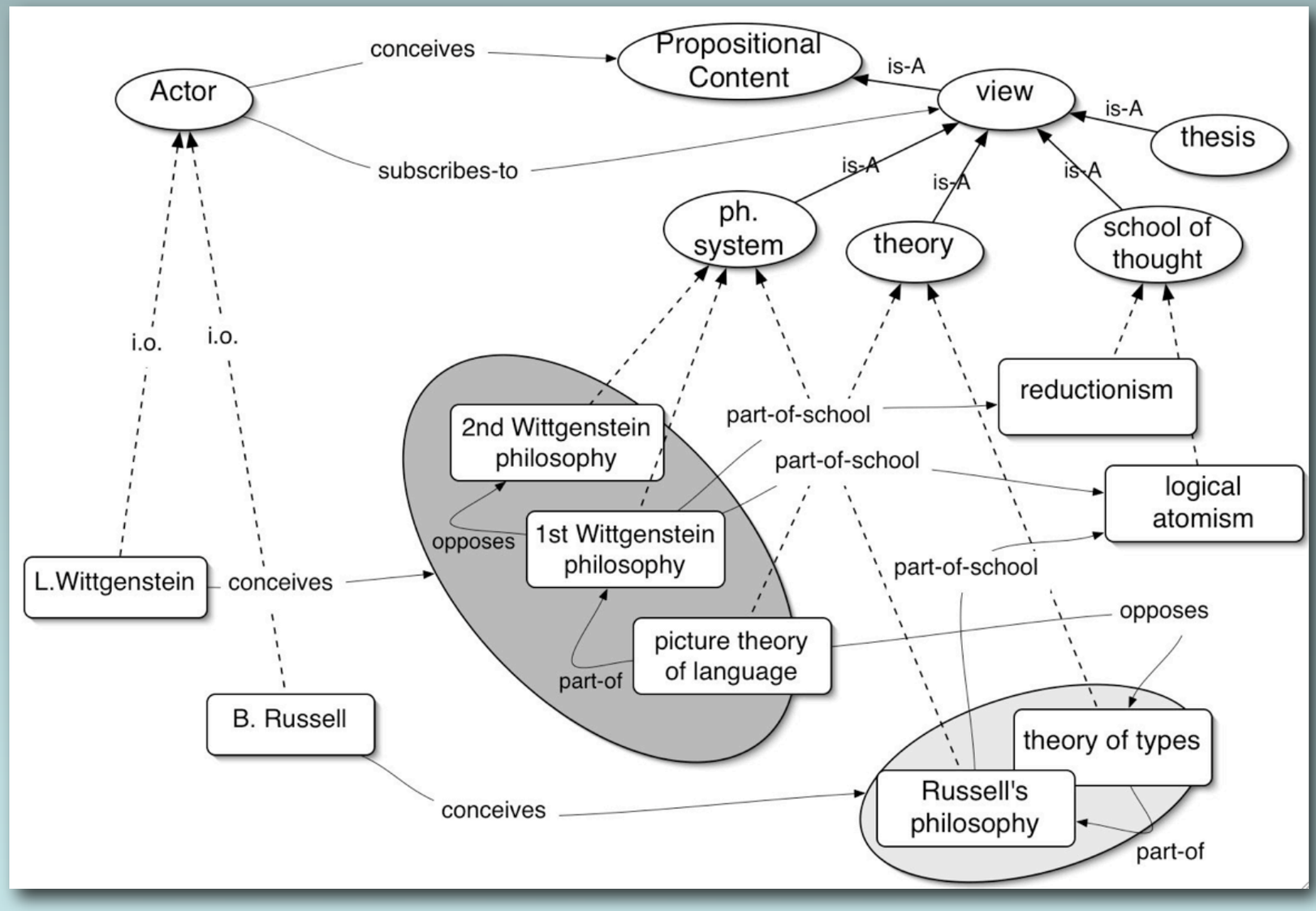


Ex. II: not all views are theories!

"Wittgenstein's philosophy, differently from Frege's one, deals also with problems typical of aesthetics"
"The 2nd Wittgenstein philosophy is much inspired from a kantianism, than from a logical positivism"
"Within the pictorial theory of language, Wittgenstein demonstrated that we can derive complex sentences from atomic ones"



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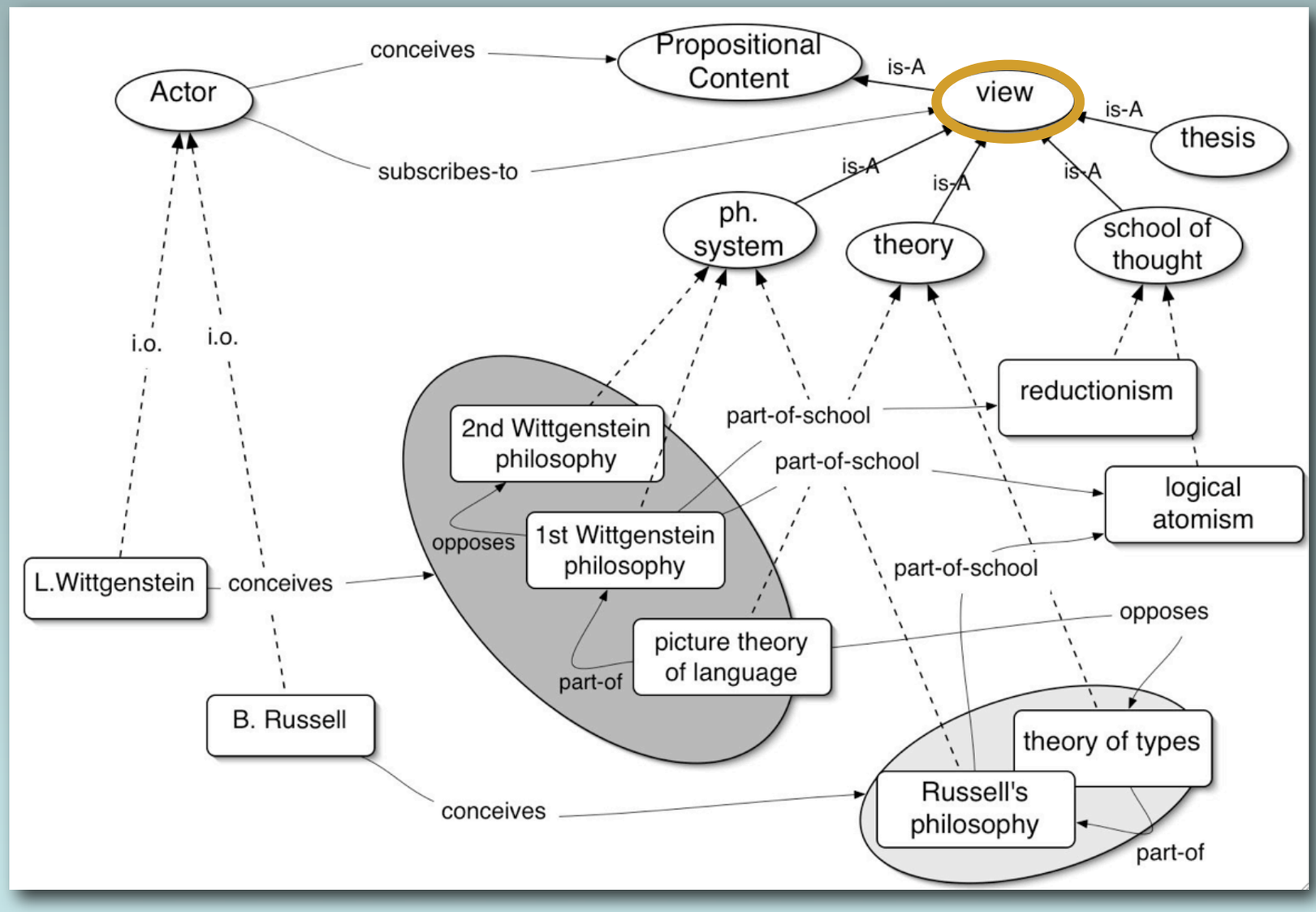

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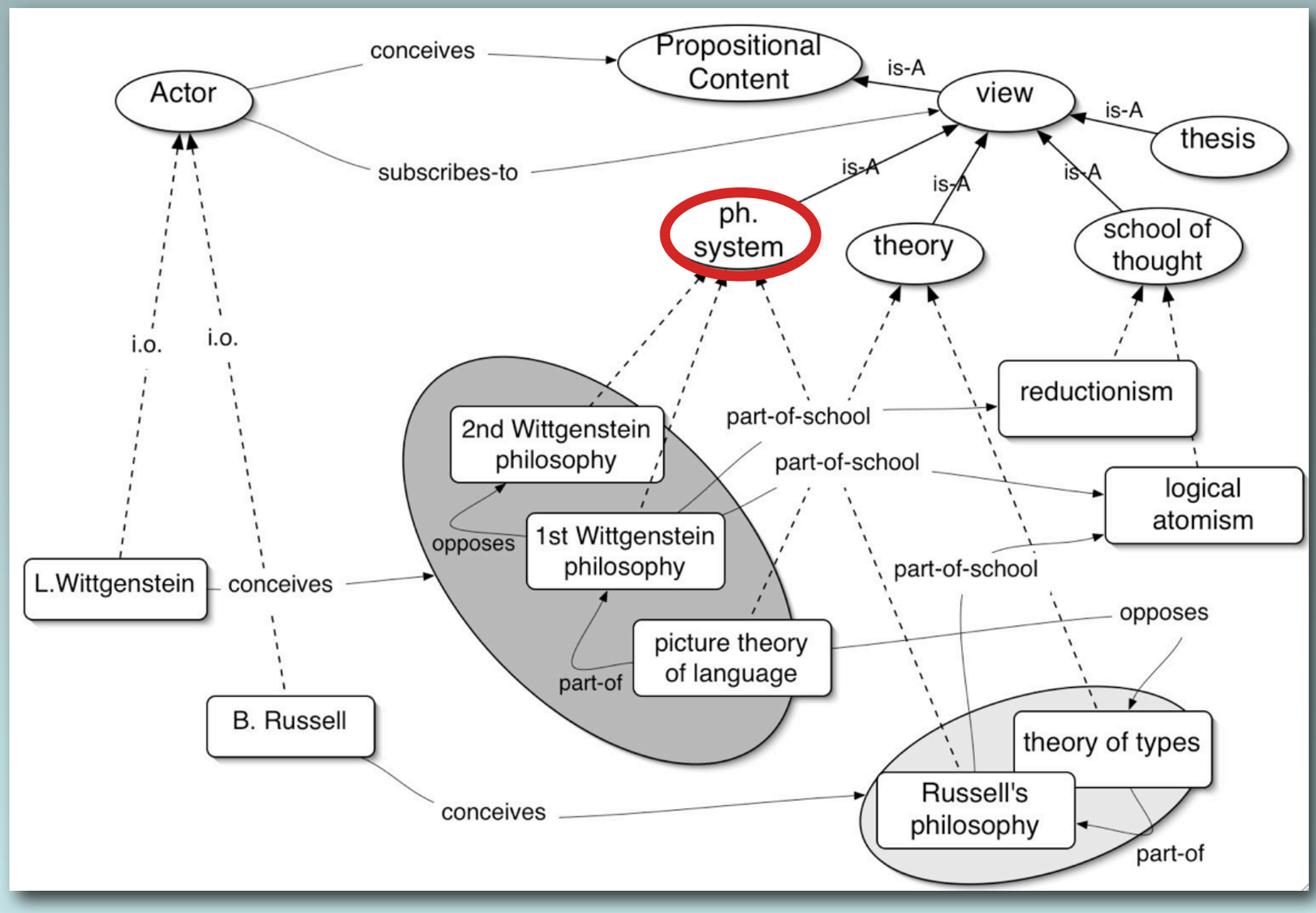

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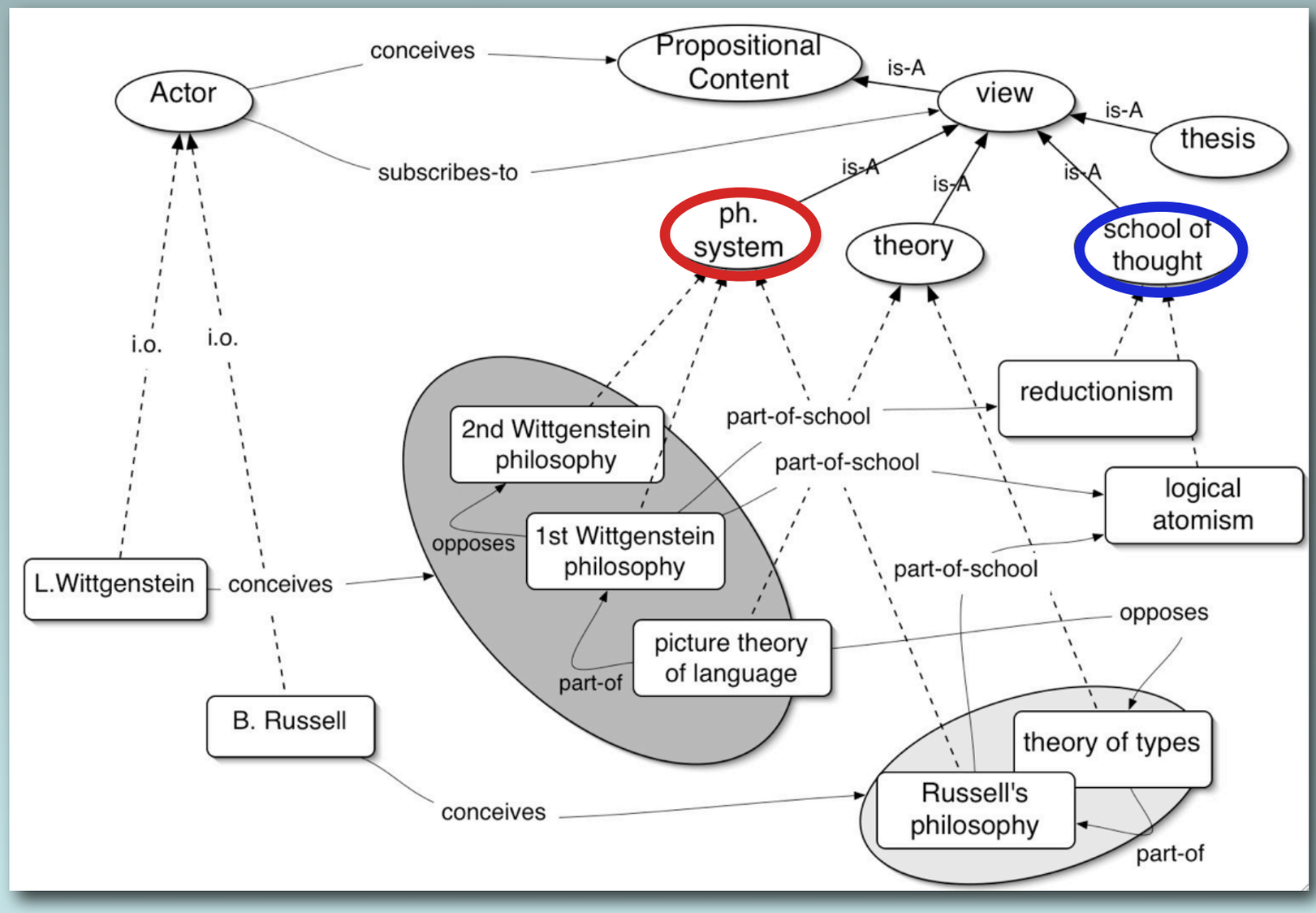

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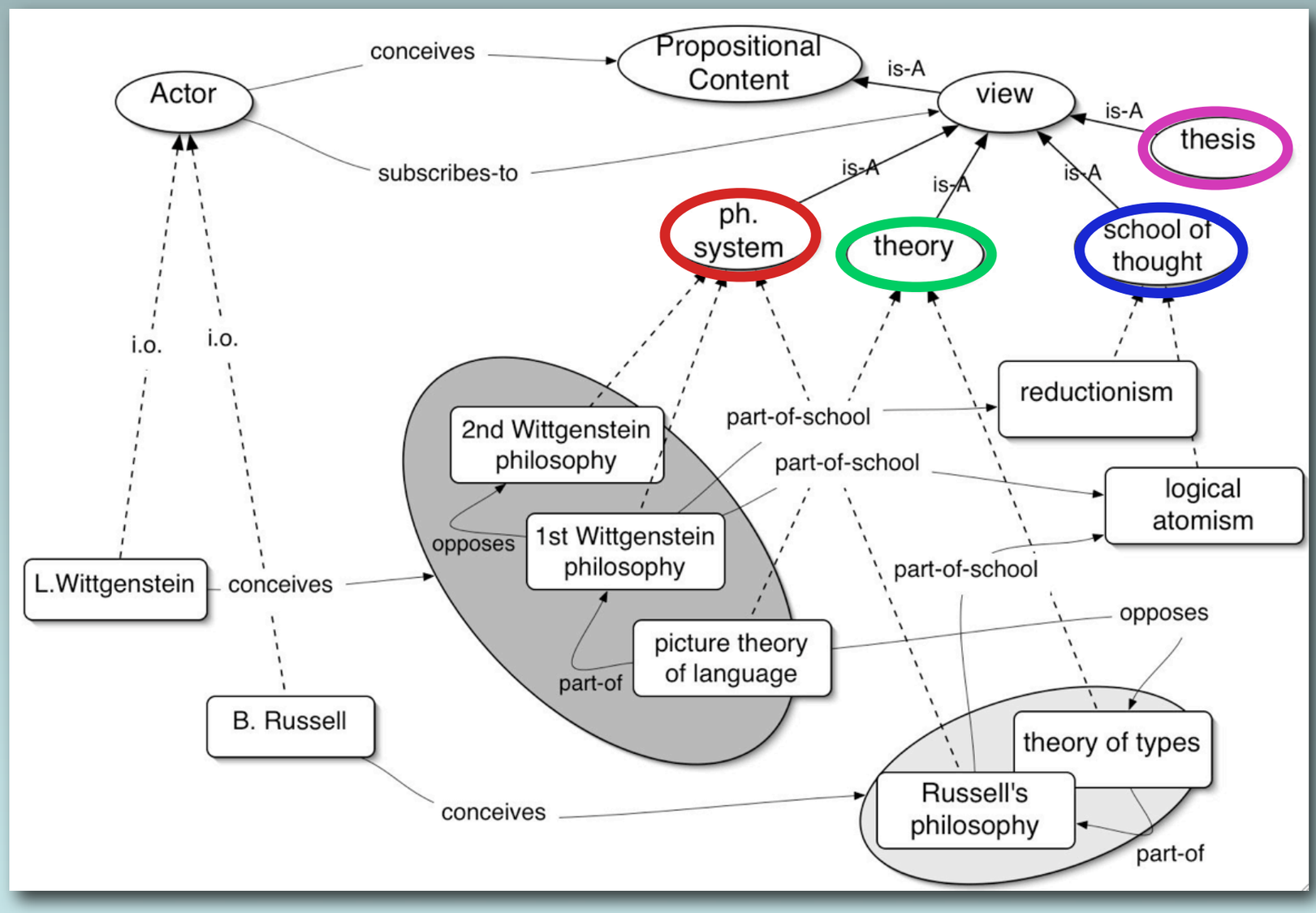
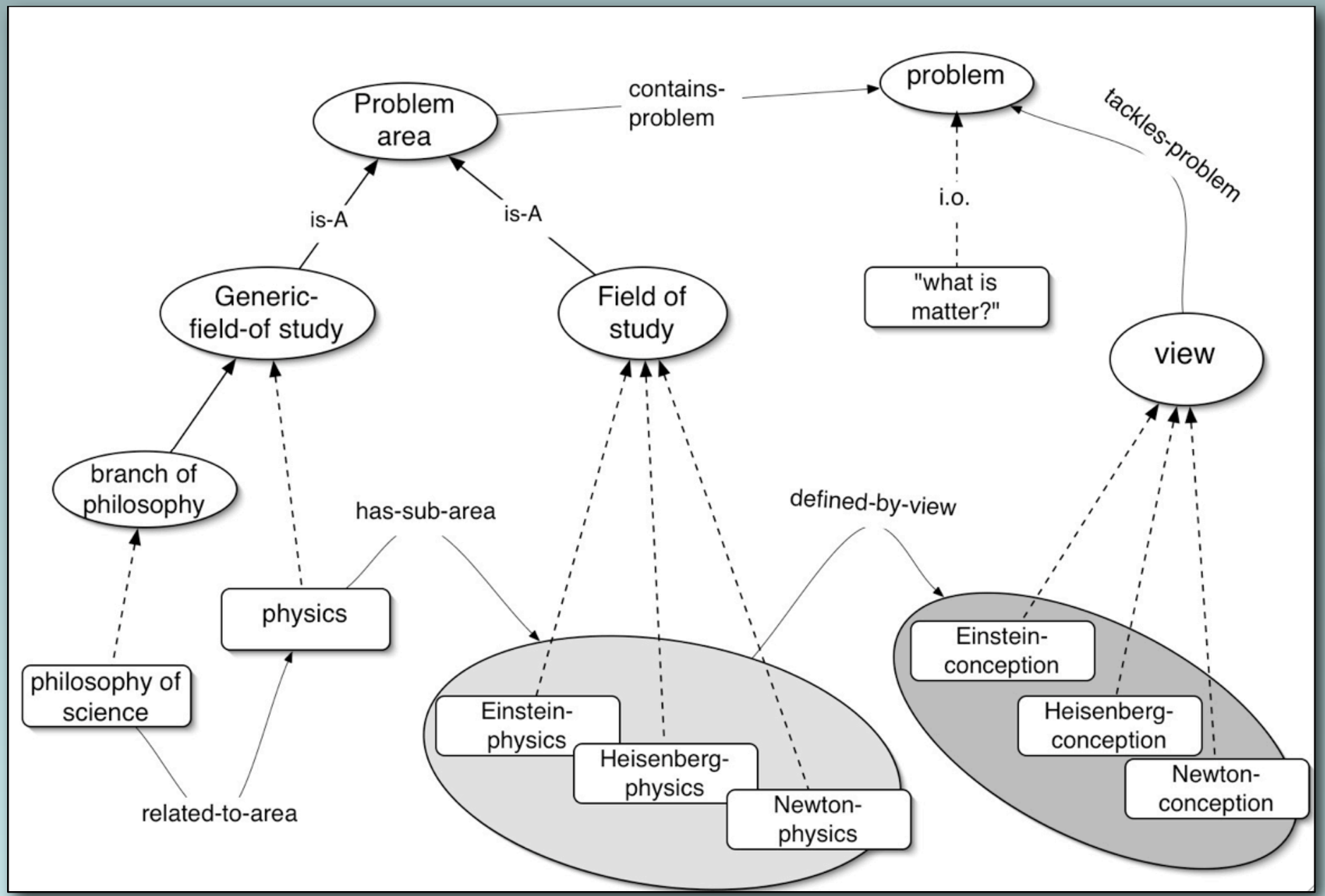


Ex. III: “Problematic” problem-areas..

*“**Physics** deals with problems linked to the definition of the properties of matter, and many others”*
*“The problems of newtonian **physics** have just become a particular case of those in einstein **physics**”*
*“Across time, the problems and methods of **physics** have been changing considerably”*



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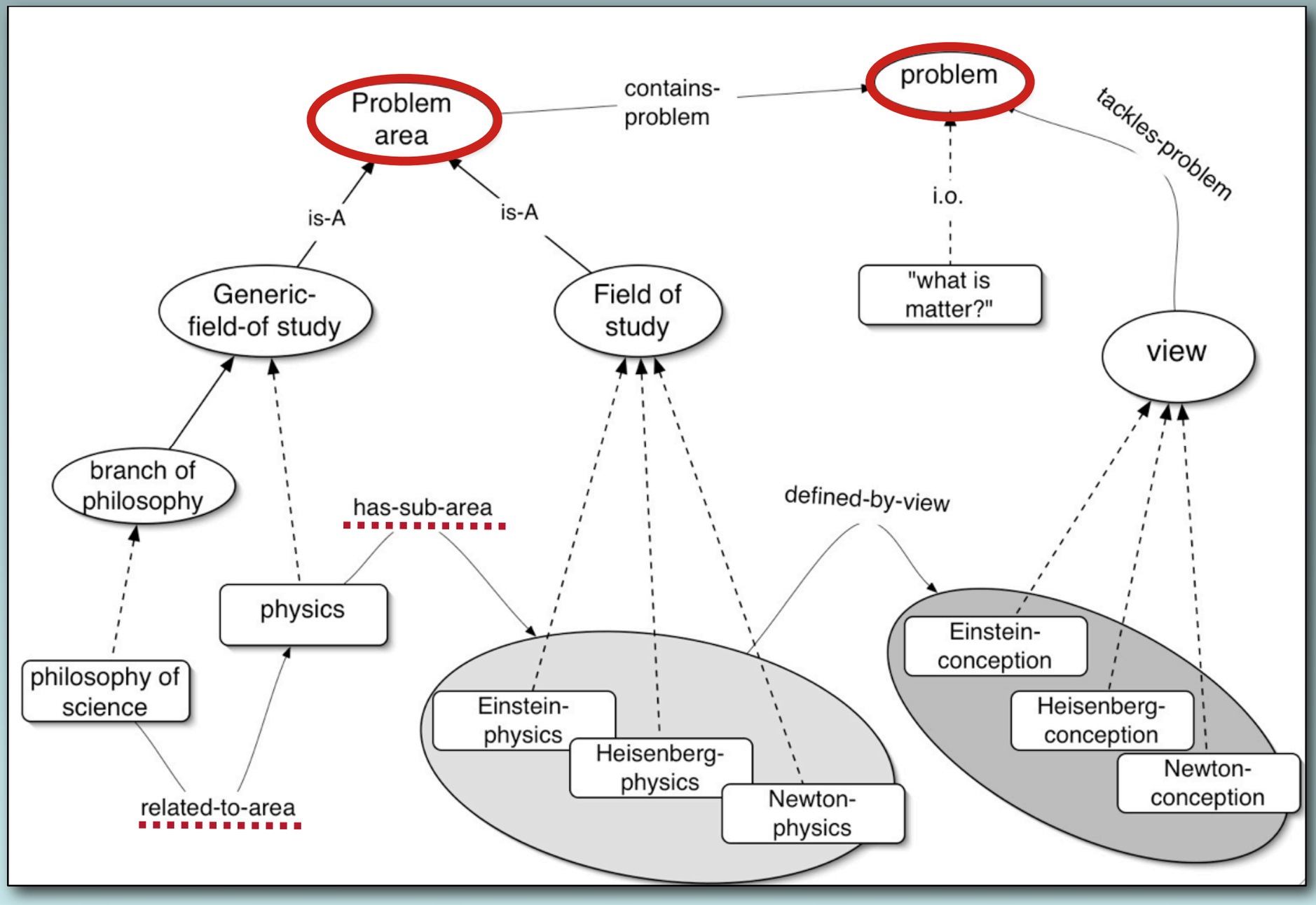

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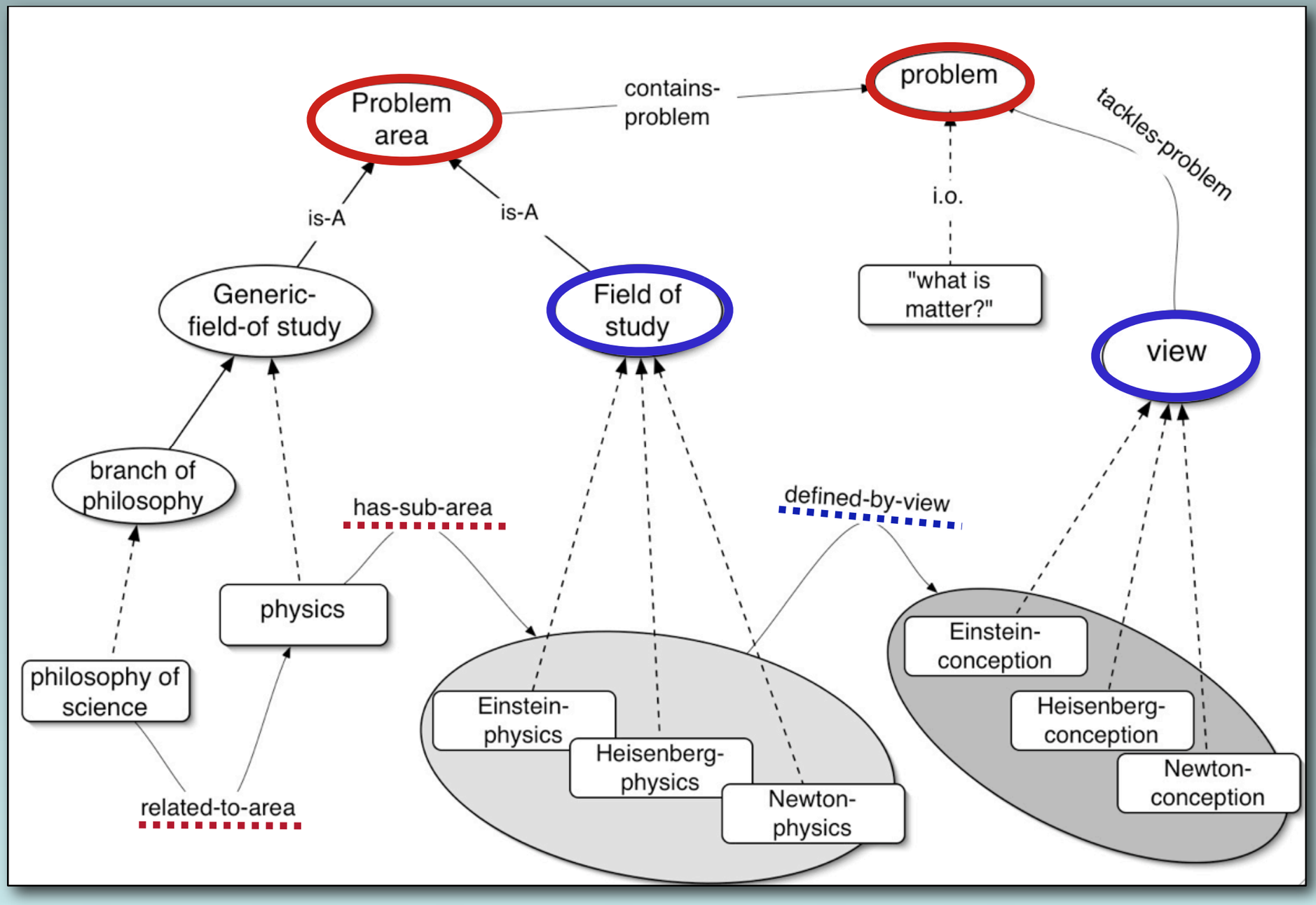

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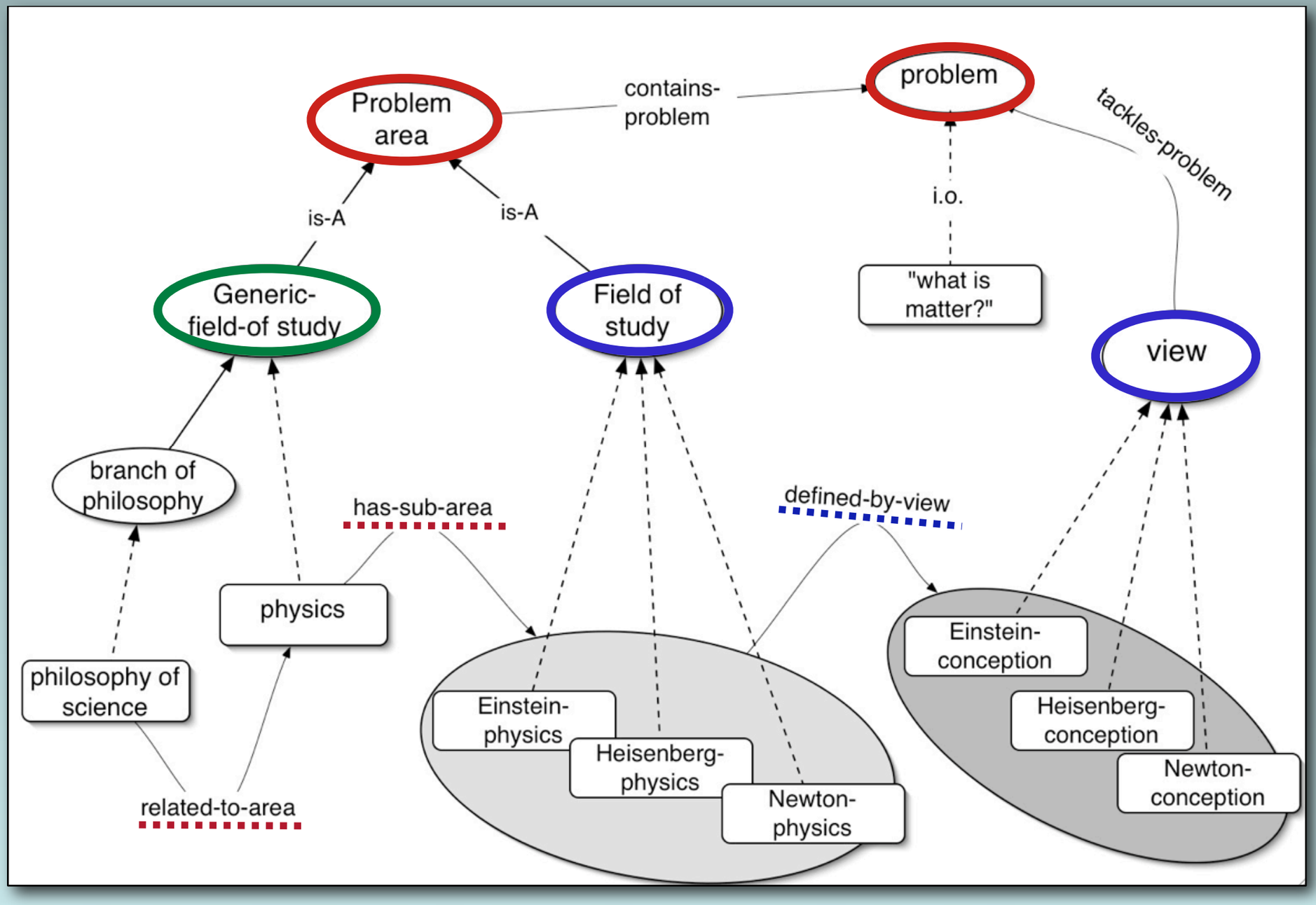

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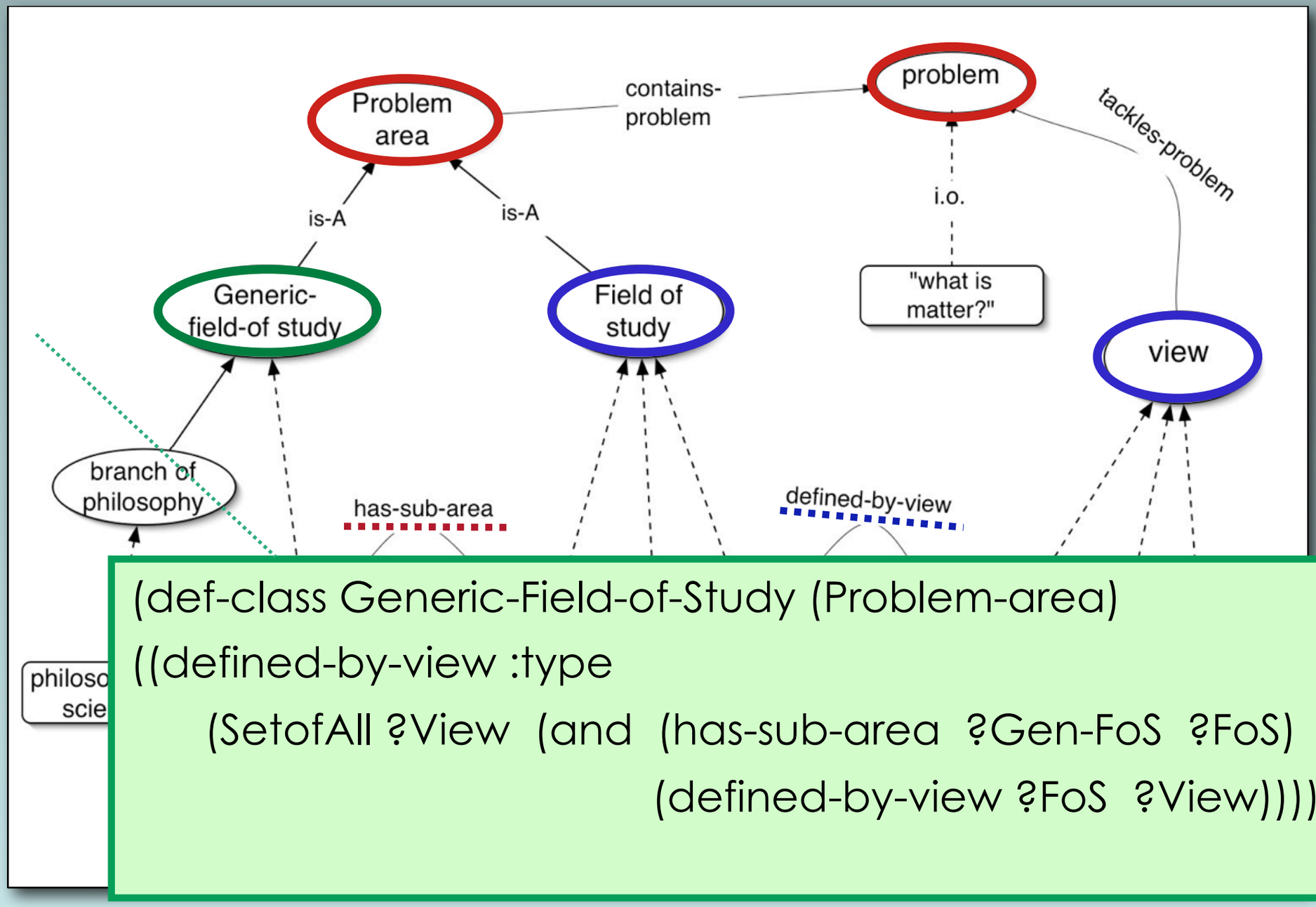



```
(def-class Generic-Field-of-Study (Problem-area)
((defined-by-view :type
      (SetofAll ?View  (and  (has-sub-area  ?Gen-FoS  ?FoS)
                             (defined-by-view ?FoS  ?View))))))
```

Lesson learned: modeling patterns for navigation

- Disclaimer: different from “normal” ontology modeling patterns!
  - not focused on architectural issues
  - not involved in the ontology creation process
  - they are not prescriptive!

- Purpose: interpreting a (philosophical) concept/text, so to create *applicable* formal models for navigation
  - they open up new senses which can be used for exploring a subject domain

- Strategy: taking advantage of natural language ambiguities, overlapping word senses, hidden categories in language
  -the granularity of the ontology is crucial!

Key achievements

- New approach for modeling philosophical domain
  - In particular, viewpoints and other ideas

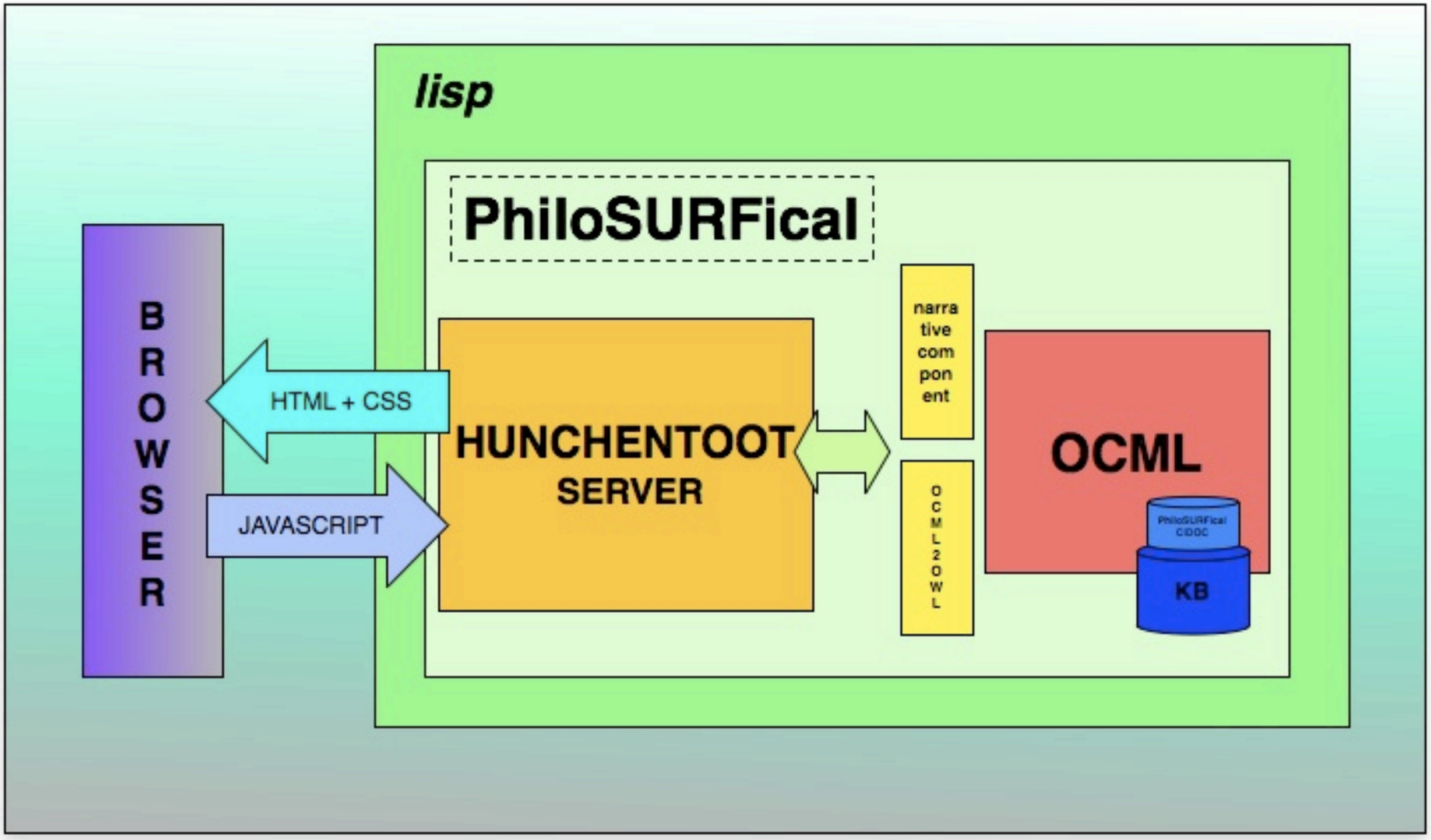
- Implementation includes:
  - Domain model
    - 440 classes (100 cidoc)
    - +15000 instances (at the time of speaking)
      - ~7000 persons related to philosophy
      - ~ 500 ideas mostly related to the first wittgenstein
      - ~ 700 interpretations of ideas and texts
      - ~ 7000 events (mainly teacher/student relationships)
  - PhiloSURFical tool (demonstration available)
    -Supports smart browsing of a philosophical text, tx to the ontology

Conclusions

- Evaluation (ongoing)
  - KA experiment
    - how do the classes mirror philosophers' understanding?
  - Qualitative evaluation on Philosurfical tool
    - how does the model support interesting navigations?
  - ..any hints?

- Future work:
  - Build bridges to other sources in the web of data: e.g. Dbpedia
  - Make the PhiloSURFical kb available as a sparql endpoint

THE END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PhiloSURFical
BROWSER
HTML + CSS
JAVASCRIPT
HUNCHENTOOT
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OCML2OWL
OCML
PhiloSURFical
CDOC
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