

Overlapping and Competing Ontologies

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Wittgenstein and his Nachlass

- Briefly about Wittgenstein
- ...and his Nachlass
- Not traditional, discursive writing
- ...or a neat system of defined concepts
- ...but non-linear, multi-dimensional, «criss-cross in every direction» (album style)
- ...and the «same» remark is used in different contexts with different functions.

An example of different variants

“Denken muß etwas Einzigartiges sein.”
 (“Thinking has to be something unique.”)

Die Sprache (oder, das
Denken) ist etwas
Einzigartiges.
Language (or thinking) is
something unique.

“Sprechen” oder
“Schreiben“ muß etwas
Einzigartiges sein.
Speaking or writing has
to be something unique.

An example of different contexts

„Denn, daß es mit gewöhnlichen Dingen zugeht, das zu sehen, verhindern uns auf mannigfache Weise unsere Ausdrucksformen, indem sie uns auf die Jagd nach Chimären schicken. Oder: Ich möchte auch sagen: **”Denken muß etwas Einzigartiges sein”**. Wenn wir sagen — meinen — daß es sich so und so verhält, so halten wir mit dem, was wir meinen, nicht irgendwo vor der Tatsache; sondern meinen, daß das und das so und so ist.“

”Die Sprache ist Sprache durch die Regeln nach denen sie gehandhabt wird.“ Die Logik darf nichts Erfahrungsmäßiges an sich haben. Oder auch: **”Denken muß etwas Einzigartiges sein.”** (Warum?) (Hier liegt der Hund begraben.) Aber wie wenn man sagte: **”Sprechen”** oder **”Schreiben muß etwas Einzigartiges sein”**?

The difficulty of interpreting Wittgenstein

“Although Wittgenstein is widely regarded as one of the most important and influential philosophers of this century, there is very little agreement about the nature of his contribution.” (David Stern, *Companion to Wittgenstein*, p. 442)

This disagreement shows itself

- in secondary literature
- in editions (editorial choices and selections)
- in translations (much interpretation)

...because Wittgenstein's writings are compressed, inconsistent, obscure, non-linear – and the Nachlass a compilation of remarks occurring in many different variations in many different places

Overview of the project

- How can text ontologies be supportive in resolving interpretational and translational issues?
 - Text ontologies as opposed to more general approaches to map whole fields.
 - Human input, not automatically generated ontologies

Earlier work by the Wittgenstein archives

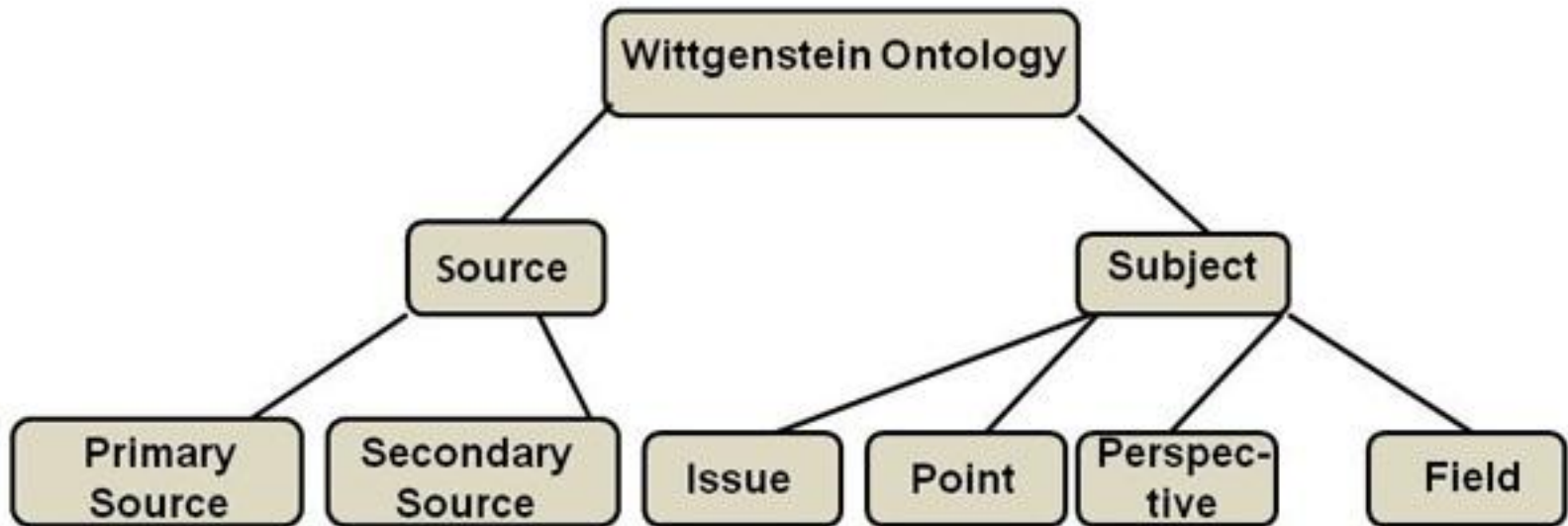
- Bergen Electronic Edition (2000)
- WittgensteinSource.org (2009)
- Agora and DM2E projects (2011-)
- WAB ontology (2006-

WAB Ontology

Our backbone ontology consists of

- sources (Source)
- persons (Person)
- subjects (Subject)
 - philosophical subject terms (Issue)
 - philosophical claims (Point)
 - interpretations (Perspective)

WAB Ontology



Main classes of the Wittgenstein Ontology

Our goals

We want to investigate:

1. Methods and methodologies for building ontologies and topic maps
2. Differences in mappings originating in different interpretations
3. Differences in mappings originating in different translations
4. Experimental part: How real users deal with different ontologies.

1. Methods and tools

- Preference of **OWL** over SKOS and RDFS.
- Hierarchical/non-hierarchical text vs. hierarchical/non-hierarchical markup languages.
- OWL/RDF ontologies or topic maps?
- Computational resources
 - processing time
 - memory

2. Different interpretations

What are the sources of differences in mappings from a document to an ontology?

- Differences in text understanding and background information
- Decisions that have to be made during the ontology engineering
- Ambiguities in the text itself

Disagreement

- Disagreement is not only the presence of a contradiction.
- Disagreement may arise on two levels:
 1. in entities (instances of Issue) -> ontology matching.
 2. in statements (instances of Point).

Perspective

A ***Perspective*** P is a class containing subclasses which each represent a specific grouping or filtering of the instances of Issue and Point.

A Perspective must be **closed**: Each Point of P has to mention only Issues from P; and each Issue of P has to be mentioned in some Point of P.

Issues-alignment

A ***Issues-alignment*** between Perspectives P_1 and P_2 is a set of RDF triples of the form

$\langle i_1, \text{matches}, i_2 \rangle$

where $[i_1]$ asserts Perspective $[P_1]$ and $[i_2]$ asserts Perspective $[P_2]$.

An Issues-alignment is **complete/partial** if it contains all/some Issues from P_1 and P_2 . If there is a partial Issues-alignment between Perspectives P_1 and P_2 , we can say they are **overlapping**.

Points matching

Let IA be a partial Issues-alignment between Perspectives P_1 and P_2 . Let x_1, x_2 be points (in the form $\langle s_1, r_1, o_1 \rangle$ and $\langle s_2, r_2, o_2 \rangle$) such that $[x_1]$ asserts Perspective $[P_1]$ and $[x_2]$ asserts Perspective $[P_2]$. Points x_1, x_2 are ***matching*** in IA if IA contains all triples $\langle s_1, \text{matches}, s_2 \rangle$, $\langle r_1, \text{matches}, r_2 \rangle$ and $\langle o_1, \text{matches}, o_2 \rangle$.

Points alignment

Let IA be a partial Issues-alignment between Perspectives P_1 and P_2 . Their ***Points-alignment*** is a set of matching Points from these Perspectives.

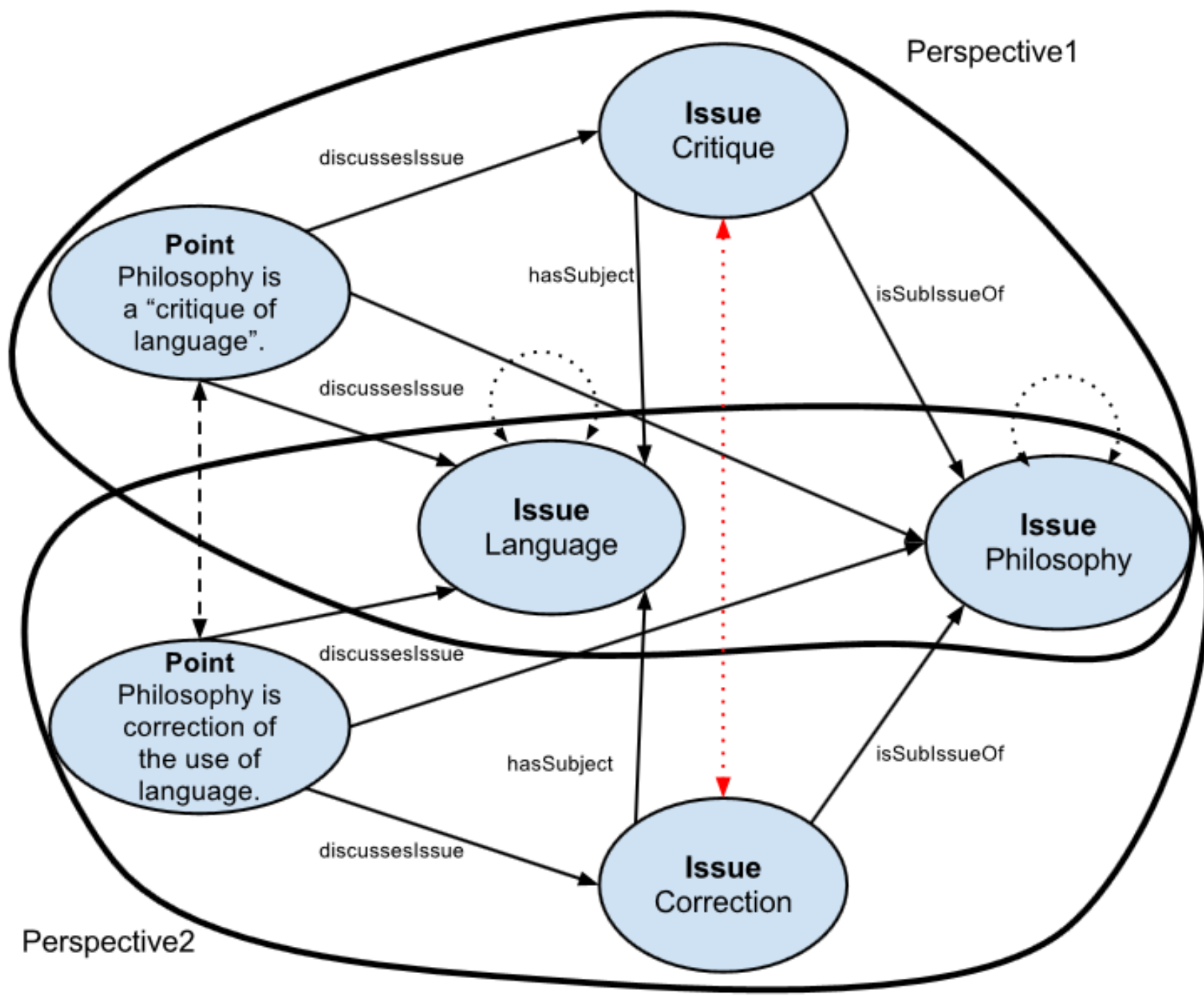
The Points-alignment is **complete/partial** if it contains all/some Points from P_1 and P_2 .

Agreement/difference/conflict

- Perspectives P_1 and P_2 are in a ***complete/partial agreement*** if there is their complete/partial Points-alignment.
- Perspectives P_1 and P_2 are ***different*** if there is not any complete Points-alignment between them.
- Perspectives P_1 and P_2 are ***conflicting*** if there is an Issue-alignment IA between them and there are matching Points x_1, x_2 such that $[x_1]$ asserts Perspective $[P_1]$ and $[x_2]$ denies Perspective $[P_2]$.

Example

- Points:
 - Philosophy is a “critique of language” (Wittgenstein).
 - Philosophy is correction of the use of language (Wittgenstein quoting Lichtenberg).
- Issues:
 - Philosophy, Language, Correction, Critique.



Tasks: Ontology matching

- How to detect agreement, overlap, difference?
- How to explain overlap or difference, i. e., to find out where exactly the ontologies disagree or overlap?
- How to represent alignment and make it accessible for users?
- How to improve matching by background knowledge which is not part of the final ontology.

Tasks: Disagreement in Points

- Could there be conflicting mappings originating in different interpretative strategies / in the markup language / in the nature of the text?
- If so, could these conflicts be reconciled within a single ontology or even within a single Perspective?
- How do we detect conflicting ontologies (given their alignment report)?
- How do we reconcile conflicting ontologies? Can ontology work help resolve differences in interpretations?
- Could conflicting ontologies be merged into one single topic map?

3. Differences in translations

- Do translations bias ontologies?
- Can be different translations mapped as different Perspectives?
- Can ontology framework resolve differences in interpretations caused by different translations?
- A translation may be considered successful if the ontology of the translation is isomorphic to the ontology of the original text.

4. Experimental part

- Extraction and articulation of ontologies in seminal works on Wittgenstein
 - ... by WAB
 - ...or by the authors or the community
- Translational issues in editions of Wittgenstein's writings
- Example: German "Satz" trans. as both "sentence" and "proposition"

Concluding questions

- Can we do it?
 - Can we implement it?
 - Can we attract users to participate?
- Can we achieve our goals?
 - Can competing text-ontologies really be helpful in resolving content related issues (viz. interpretational or translational ones)?