


Linking Latin Philosophical Expressions

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Motivation





The inspiration for this project is a collection of Latin (and Greek) philosophical expressions created by prof. James Lesher. Only the Latin expressions are considered here.

Each entry includes the literal translation, the linguistic analysis (e.g., parts of speech, cases), the philosophical meaning, often with examples from notable philosophers like Aristotle, Descartes, or Kant.

Examples of Latin expressions from the collection

A posteriori: preposition + the ablative neuter singular of the comparative adjective *posterior/posteriorus* (literally: ‘from the later thing’): things known *a posteriori* are known on the basis of experience (e.g. ‘We can know only *a posteriori* that all swans are white’).

A priori: preposition + the ablative neuter singular of the comparative adjective *prior/prius* (literally: ‘from the earlier thing’): what is known to be true *a priori* can be known independently of (or prior to) empirical investigation or confirmation (e.g. ‘Kant held that we can know *a priori* that a straight line is the shortest distance between two points.’)

Amicus Plato sed magis amica veritas: ‘Plato is a friend but truth is a greater friend’, based loosely on Aristotle, *Nicomachean Ethics* 1096a.

Can this resource be improved?

This resource is very useful for students, but it has some limitations:



It gives short definitions or translations, but many philosophical terms have been interpreted in different ways by different thinkers. Expanding the entries to briefly indicate key philosophical interpretations would help students develop a critical understanding of concepts.



When philosophers are mentioned, it does not provide direct links or references to their works or biographical information. Adding these connections would make it easier for students to place the terms in their proper philosophical context.



Some entries are related (i.e. "a priori" and "a posteriori") but these relationships are not explicitly indicated in the document. Making these connections visible would help students understand the logical and conceptual relationships among terms.

Can this resource be improved?



This resource exists in a relatively **isolated** form. Publishing it as **linked data** by integrating it with existing ontologies or connecting entries to structured resources like Wikidata would significantly enrich its role as a resource for philosophical study.



This would allow students to situate each term within a broader conceptual and historical network, and to explore philosophical concepts across languages and interpretations more effectively.



Linking terms, expressions, and philosopher names to external sources would transform the resource from a static glossary into a dynamic, **interoperable** tool for philosophical study and research.



Methodology



Steps taken to enrich the resource (1)

- Converted the original textual content into a structured CSV format.
- Added additional expressions (e.g., *homo homini lupus*); the final version is not fully aligned with Prof. Leshner's original collection.
- Provided more extensive definitions (with the help of ChatGpt) to clarify the general philosophical concepts.
- Classified expressions by branch of philosophy (e.g., epistemology, ethics, logic).
- Included alternative interpretations from different philosophers.

Steps taken to enrich the resource (2)

- Linked expressions, philosophers, and philosophical branches to external resources (Wikidata).
- Created internal links between related expressions (e.g., *a priori* and *a posteriori*, *res cogitans* and *res extensa*).
- Performed grammatical analysis (part of speech, morphological features, dependency relations) following the Universal Dependencies framework.
- Linked Latin lemmas to the LiLa “Linking Latin” knowledge base.
- Published as linkguistic linked data as triplestore in Turtle format

Tools used

- OpenRefine for reconciliation with Wikidata page of entry, philosopher, branch of philosophy.
- Python procedure to call LiLa TextLinker (link to [notebook](#)).
- Python procedure to call UDPipe API for annotation.
- Python procedure using RdfLib to generate the triplestore (link to [notebook](#)).
- Apache Jena Fuseki and LodLive for visualization.
- Basic [SPARQL queries](#) for analysis.

Linking to LiLa

Problems:

- No matches: solved by manual search in Lemma Bank query interface
- More than one match: ambiguity resolved with a SPARQL query to go from written rep to synset

lila-erc.eu/sparql/

LILA: SPARQL ACCESS POINT

PREFIXES: RDF RDFS DC DCTERMS LILA LILACORPORA ONTOLEX LIME LEMONETY LEXINFO POWLA MARL

Query × Query 1 × Query 2 × Query 3 × +

```
1 PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
2 PREFIX ontolex: <http://www.w3.org/ns/lemon/ontolex#>
3 PREFIX lila: <http://lila-erc.eu/ontologies/lila/>
4 PREFIX wn: <http://wordnet-rdf.princeton.edu/ontology#>
5 PREFIX skos: <http://www.w3.org/2004/02/skos/core#>
6
7 SELECT DISTINCT ?wrp ?pos ?lexical_entry ?synset_definition WHERE {
8   ?lexical_entry ontolex:writtenRep ?wrp . FILTER regex(?wrp, "^fundo$", "i") .
9   ?lexical_entry lila:hasPOS ?pos .
10  ?canonical_form ontolex:canonicalForm ?lexical_entry .
11  ?canonical_form ontolex:evokes ?synset .
12  ?synset rdfs:label ?synset_label ;
13     skos:definition ?synset_definition .
14  FILTER regex(?synset_label, "^Wordnet Synset.*")
15 }
16
```

Table Response 29 results in 0.47 seconds

| wrp | pos | lexical_entry | synset_definition |
|-------|-----------|---|---------------------------------|
| fundo | lila:verb | http://lila-erc.eu/data/id/lemma/104012 | spend thoughtlessly; throw away |
| fundo | lila:verb | http://lila-erc.eu/data/id/lemma/104013 | make more firm |
| fundo | lila:verb | http://lila-erc.eu/data/id/lemma/104013 | set up or found |

Input data for Turtle file

- CSV files for entries and interpretations
- JSON file for LiLa links
- Manually curated list of linked concepts
- Response in CoNLL-U format returned by UDPipe (using model "latin-evalatin24-240520")

Modeling

I considered the resource both as a corpus and as a lexical resource

Corpus

Modular approach: distinguish between content and annotation layer

Content:

Expressions belong to the "ExpressionLayer"

Tokens belong to the "DocumentLayer"

Each expression is a POWLA Root that belongs to the Expression Layer

The tokens are terminals in the Document Layer, they are linked to the root via the hasTerminal relation and to other tokens as prev, next

Syntax

Lemma feats deprel

Semantics

General concept modeled as LexicalConcept evoked by the lexical entry (both Latin and English lexical entry evoke the same concept)

The lexical concept has SKOS definition and link to wikidata page

Relations between expressions (a priori a posteriori) as relation between lexical concepts

Specific interpretations by different philosophers as different senses, linked to the general concept via SKOS narrower relation

Philosopher are connected to the sense as dc:creator of that particular interpretation

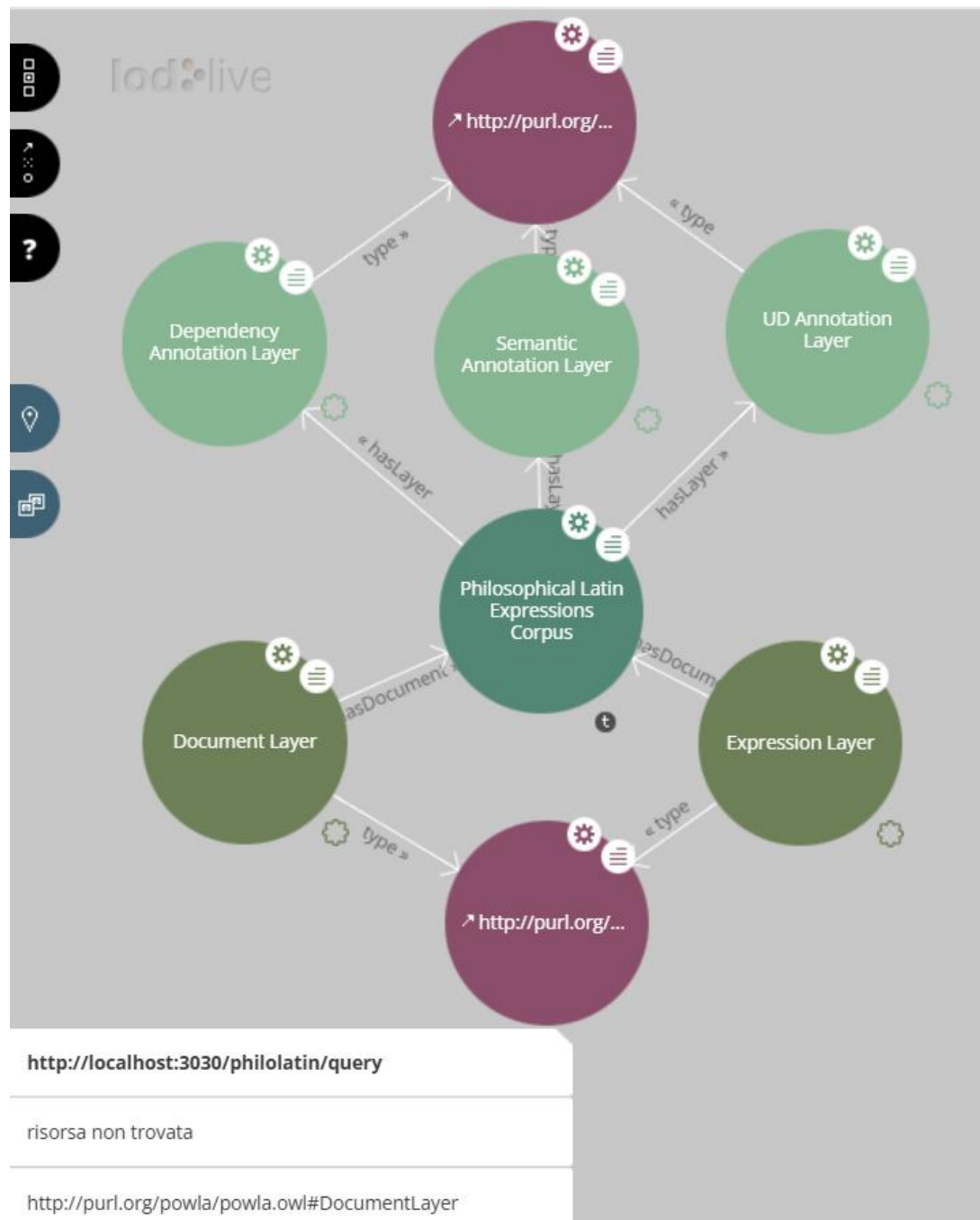
Branch of philosophy linked to lexical concept as broader concept

Translation

Relation between Latin and English lexical entries, reified, with category

POWLA Corpus

- Annotation Layers
- Expression and Document Layers



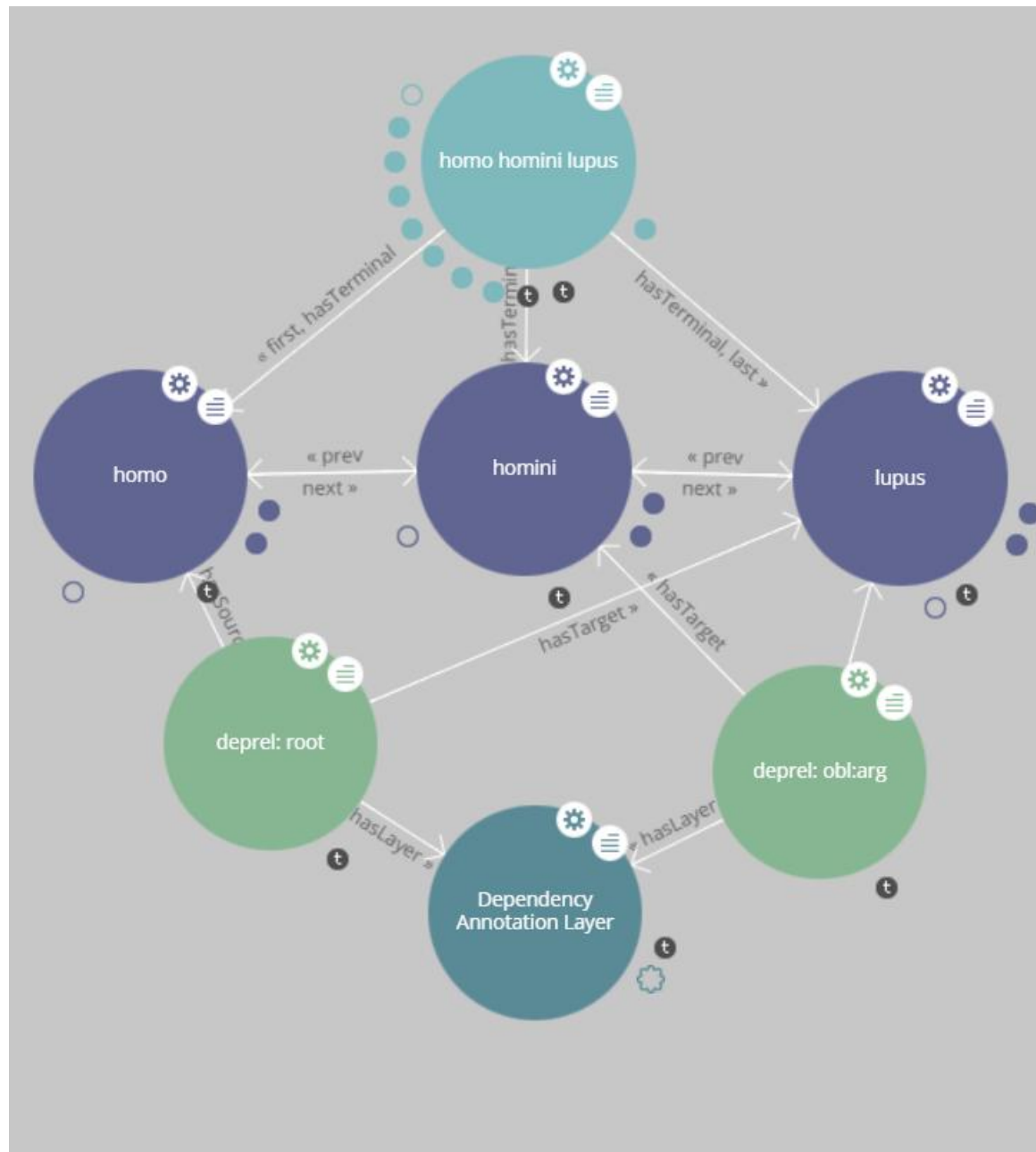
Content Layers

- Expression Layer: expressions as POWLA roots
- Document Layer: tokens as POWLA terminals, first - last
- Links between tokens: prev-next



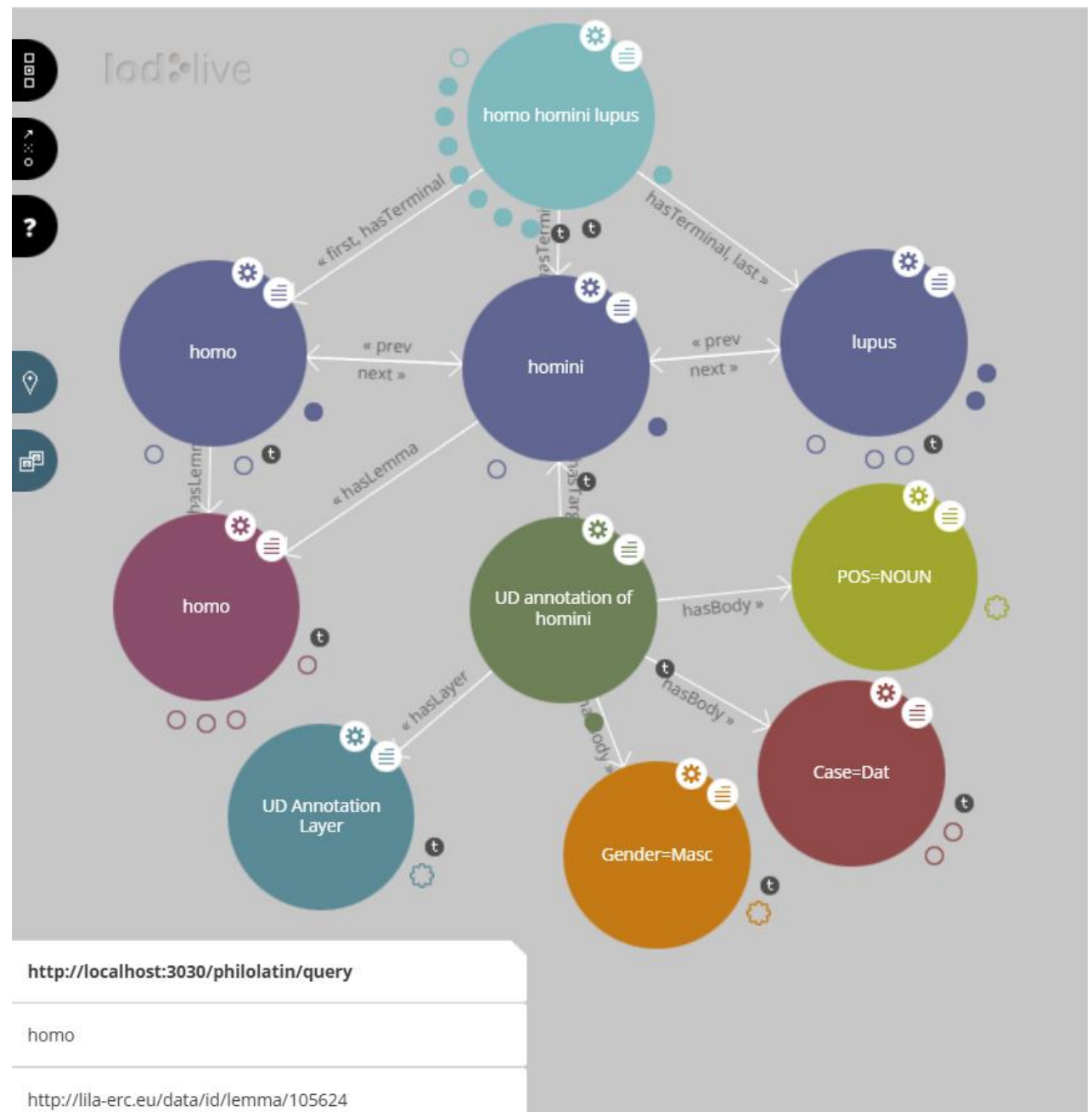
Syntax

- Dependency annotation layer
- Source, target, deprel



Syntax

- UD annotation layer
- POS and morphological features
- Link to LiLa lemma



Ontolex

- Each expression is a LexicalEntry of a lexicon
- Latin lexicon and English lexicon
- Translation as LexicalRel between lexical entries
- Translation is reified and it is of category “philosophy”



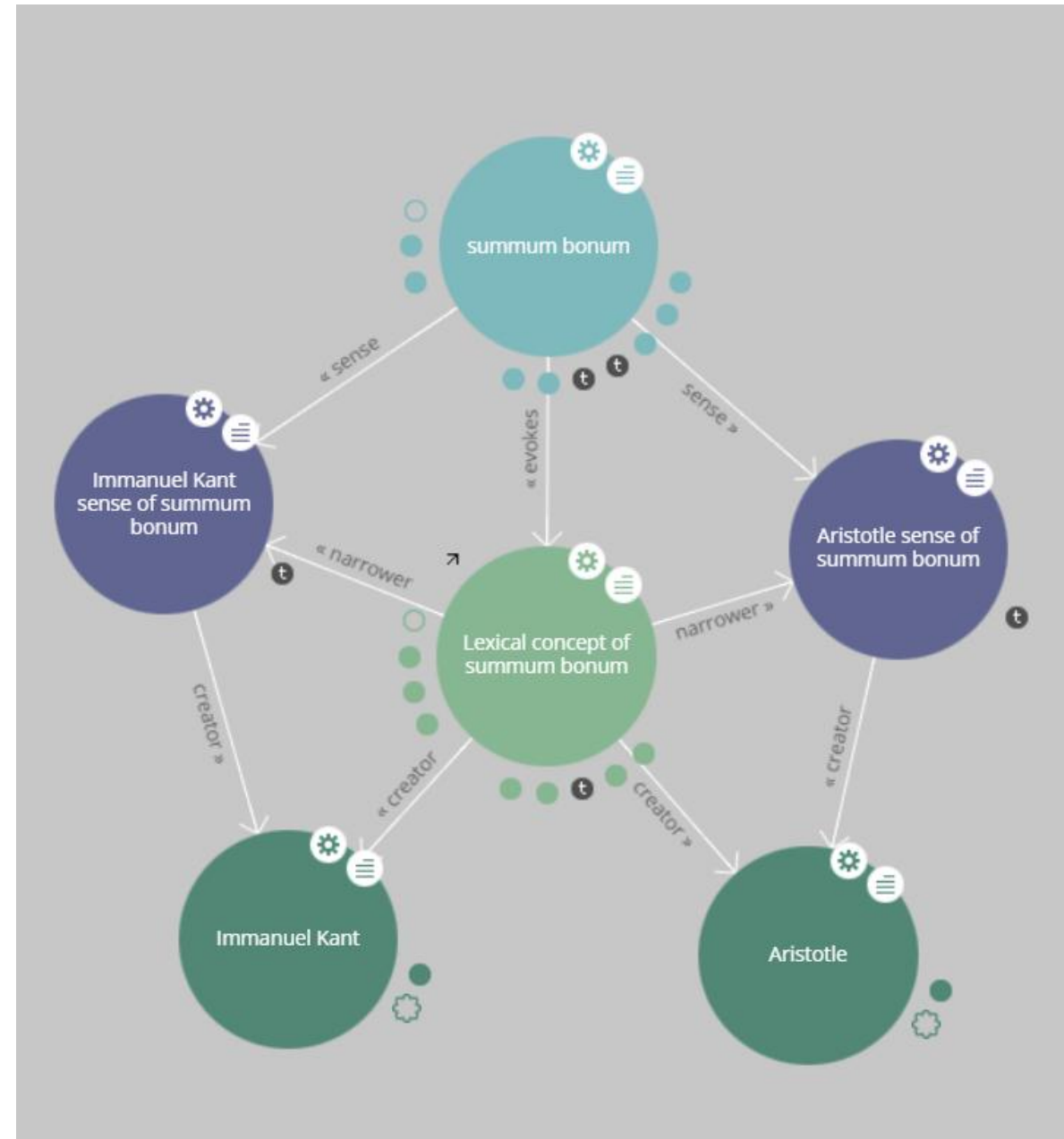
Semantics

- Lexical Entry evokes a Lexical Concept
- Branch of philosophy as broader concept
- Links to entry, philosopher and branch in Wikidata
- Interpretations by philosophers are lexical senses



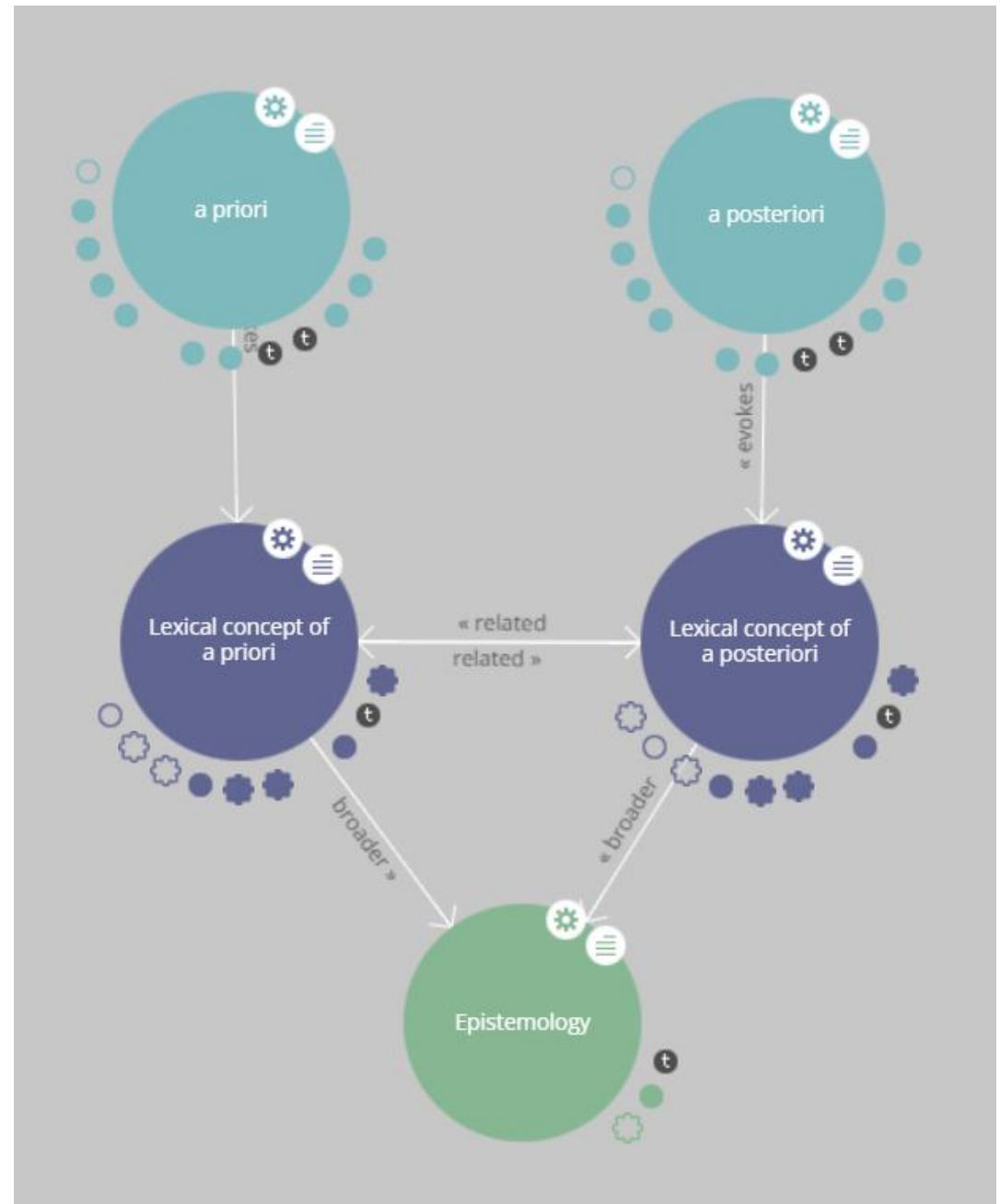
Interpretations

- Different interpretations by philosophers as lexical senses
- Narrower concepts of lexical concept
- Philosopher as dc:creator



Related concepts

SKOS:realtd





Results



Table

| | # | Category 4 |
|-----------------------------|-----|------------|
| Number of triples | 1.7 | 5 |
| Number of Latin expressions | 4.4 | 3 |
| Number of philosophers | 2.5 | 2.8 |
| Number of senses | 1.7 | 7 |

From LiLa to philosophy

```
7 SELECT DISTINCT ?wrp ?philoexpr ?expression_wiki ?philosopher ?philosopher_wiki
8 WHERE {
9   SERVICE <https://lila-erc.eu/sparql/lila_knowledge_base/sparql> {
10     ?lilalemma ontalex:writtenRep ?wrp . FILTER regex(?wrp, "^homo$", "i") .
11   }
12   ?terminal lila:hasLemma ?lilalemma.
13   ?expression owl:hasTerminal ?terminal ;
14     rdfs:label ?philoexpr .
15   ?expression ontalex:evokes ?concept.
16   ?concept dct:creator ?creator ;
17     rdfs:seeAlso ?expression_wiki.
18   ?creator rdfs:label ?philosopher ;
19     rdfs:seeAlso ?philosopher_wiki.
20 }
21 ORDER BY ?philoexpr
22
23
```

Table Response 20 results in 0.698 seconds

Simple view ☐ Ellipse ☒ Fill

| wrp | philoexpr | expression_wiki | philosopher | philosopher_wiki |
|-------------|----------------------------|--|-------------------------|---|
| 1"homo"@la | "argumentum ad hominem"@la | <http://www.wikidata.org/entity/Q189183> | "Aristotle"@en | <https://www.wikidata.org/wiki/Q84473023> |
| 2"homo"@la | "argumentum ad hominem"@la | <http://www.wikidata.org/entity/Q189183> | "David Hume"@en | <https://www.wikidata.org/wiki/Q37160> |
| 3"homo"@la | "argumentum ad hominem"@la | <http://www.wikidata.org/entity/Q189183> | "Immanuel Kant"@en | <https://www.wikidata.org/wiki/Q9312> |
| 4"homo"@la | "argumentum ad hominem"@la | <http://www.wikidata.org/entity/Q189183> | "John Stuart Mill"@en | <https://www.wikidata.org/wiki/Q50020> |
| 5"homo"@la | "homo faber"@la | <http://www.wikidata.org/entity/Q422282> | "Hannah Arendt"@en | <https://www.wikidata.org/wiki/Q60025> |
| 6"homo"@la | "homo faber"@la | <http://www.wikidata.org/entity/Q422282> | "Karl Marx"@en | <https://www.wikidata.org/wiki/Q9061> |
| 7"homo"@la | "homo faber"@la | <http://www.wikidata.org/entity/Q422282> | "Martin Heidegger"@en | <https://www.wikidata.org/wiki/Q48301> |
| 8"homo"@la | "homo faber"@la | <http://www.wikidata.org/entity/Q422282> | "Simone de Beauvoir"@en | <https://www.wikidata.org/wiki/Q7197> |
| 9"homo"@la | "homo homini lupus"@la | <http://www.wikidata.org/entity/Q284809> | "Hannah Arendt"@en | <https://www.wikidata.org/wiki/Q60025> |
| 10"homo"@la | "homo homini lupus"@la | <http://www.wikidata.org/entity/Q284809> | "Jean-Paul Sartre"@en | <https://www.wikidata.org/wiki/Q9364> |



Interpretations of "Summum bonum"

```
3 PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
4 PREFIX skos: <http://www.w3.org/2004/02/skos/core#>
5 PREFIX rdfs: <http://www.w3.org/2000/01/rdf-schema#>
6 PREFIX rdf: <http://www.w3.org/1999/02/22-rdf-syntax-ns#>
7 PREFIX ontolex: <http://www.w3.org/ns/lemon/ontolex#>
8
9 SELECT ?philosopher ?definition
10 WHERE {
11   ?form ontolex:writtenRep ?wr.
12   FILTER (?wr = "Summum bonum"@la).
13   ?expression rdf:type ontolex:LexicalEntry ;
14               ontolex:canonicalForm ?form .
15   ?expression ontolex:sense ?sense.
16   ?sense skos:definition ?definition ;
17          dct:creator ?creator .
18   ?creator rdfs:label ?philosopher .
19 }
```

Table Response 4 results in 0.012 seconds

| philosopher | definition |
|-----------------------|--|
| 1 "Immanuel Kant"@en | "Kant interprets 'summum bonum' as the highest good, which combines both virtue and happiness. He posits that moral actions should lead to ha |
| 2 "Nietzsche"@en | "Nietzsche challenges traditional notions of 'summum bonum', arguing that the concept is a construct of slave morality that suppresses individual |
| 3 "Aristotle"@en | "For Aristotle, the 'summum bonum' is the ultimate goal of human life, which he identifies as eudaimonia, often translated as 'happiness' or 'flouri |
| 4 "Utilitarianism"@en | "Utilitarian philosophers like Bentham and Mill interpret 'summum bonum' as the greatest happiness principle. They argue that the moral worth of |

100%



Simple view ☐ Ellipse ☒ Filter query results Page size: 50

| wr | wrEn | def |
|----|---|---|
| 1 | "Homo homini ... "Man is a wolf to man" | <p>"The Latin phrase 'homo homini lupus' translates to 'man is a wolf to man.' This concept, attributed to the Roman playwright Plautus and later popularized by the philosopher Thomas Hobbes, suggests that humans, in their natural state, are prone to aggression and selfishness, akin to predatory animals. The phrase encapsulates a cynical view of human nature, emphasizing that individuals are often in competition with one another, leading to conflict and violence. Hobbes, in his work 'Leviathan,' argued that without a strong central authority to impose order, life would be 'solitary, poor, nasty, brutish, and short.' This perspective contrasts with more optimistic views of human nature that emphasize cooperation and altruism. The phrase serves as a reminder of the darker aspects of humanity, suggesting that social structures and moral codes are necessary to mitigate our inherent tendencies towards hostility and self-interest."</p> |

Philosophers connected to most expressions

```
6 SELECT ?philosopher (COUNT(?philoxpr) AS ?expr_count)
7 WHERE {
8   ?concept rdf:type ontolox:LexicalConcept ;
9             dct:creator ?creator .
10  ?creator rdfs:label ?philosopher .
11  ?expression ontolox:evokes ?concept ;
12             rdfs:label ?philoxpr.
13  FILTER (lang(?philoxpr) = 'la')
14 }
15 GROUP BY ?philosopher
16 ORDER BY DESC(?expr_count)
17
```

Table Response 109 results in 0.02 seconds

Sim

| philosopher | expr_count |
|------------------------|--|
| 1"Immanuel Kant"@en | "88"^^<http://www.w3.org/2001/XMLSchema#integer> |
| 2"Aristotle"@en | "69"^^<http://www.w3.org/2001/XMLSchema#integer> |
| 3"Nietzsche"@en | "61"^^<http://www.w3.org/2001/XMLSchema#integer> |
| 4"David Hume"@en | "57"^^<http://www.w3.org/2001/XMLSchema#integer> |
| 5"Thomas Aquinas"@en | "49"^^<http://www.w3.org/2001/XMLSchema#integer> |
| 6"Leibniz"@en | "45"^^<http://www.w3.org/2001/XMLSchema#integer> |
| 7"Descartes"@en | "17"^^<http://www.w3.org/2001/XMLSchema#integer> |
| 8"John Stuart Mill"@en | "17"^^<http://www.w3.org/2001/XMLSchema#integer> |
| 9"Martin Heidegger"@en | "12"^^<http://www.w3.org/2001/XMLSchema#integer> |
| 10"Plato"@en | "11"^^<http://www.w3.org/2001/XMLSchema#integer> |

Expressions connected to Aristotle

```
9 SELECT ?philosopher ?philoexpr
10 WHERE {
11     ?concept    rdf:type ontolex:LexicalConcept ;
12                 dct:creator ?creator .
13     ?creator    rdfs:label ?philosopher FILTER regex(?philosopher, "^Aristotle$", "i") .
14     ?expression ontolex:evokes ?concept ;
15                 rdfs:label ?philoexpr.
16     FILTER (lang(?philoexpr) = 'la')
17 }
18 ORDER BY ?philoexpr
19
```

Table Response 69 results in 0.012 seconds

| philosopher | philoexpr |
|------------------|--|
| 1"Aristotle"@en | "a dicto secundum quid ad dictum simpliciter"@la |
| 2"Aristotle"@en | "a dicto simpliciter ad dictum secundum quid"@la |
| 3"Aristotle"@en | "a fortiori"@la |
| 4"Aristotle"@en | "a necesse ad esse valet consequentia"@la |
| 5"Aristotle"@en | "ab esse ad posse valet consequentia"@la |
| 6"Aristotle"@en | "ab ovo"@la |
| 7"Aristotle"@en | "actus purus"@la |
| 8"Aristotle"@en | "ad hoc"@la |
| 9"Aristotle"@en | "ad infinitum"@la |
| 10"Aristotle"@en | "amicus Plato sed magis amica veritas"@la |

Expressions belonging to "Logic"

```
9 SELECT DISTINCT ?branch_label ?branch_wiki ?expression ?definition ?concept_wiki
10 WHERE {
11     ?branch skos:prefLabel ?branch_label FILTER regex(?branch_label, "^Logic$", "i") .
12     ?branch a skos:Concept ;
13         rdfs:seeAlso ?branch_wiki .
14     ?concept skos:broader ?branch ;
15         skos:definition ?definition .
16     ?concept rdfs:seeAlso ?concept_wiki .
17     ?expr ontolex:evokes ?concept ;
18         a powla:root ;
19         rdfs:label ?expression .
20 }
```

Table Response 26 results in 0.022 seconds

Simple view ☐ Ellipse ☒ Filter query results Page size: 50

| branch_label | branch_wiki | expression | definition | concept_wiki |
|--------------|--|------------|--|---|
| 1"Logic"@en | < https://www.wiki... "characteristica universalis"... | | "The term 'characteristica universalis' refers to a philosophical and lin... | < http://www.wikidata.org/entity/Q2142306 > |
| 2"Logic"@en | < https://www.wiki... "nihil obstat"@la | | "Nihil obstat is a Latin phrase meaning 'nothing hinders' or 'nothing s... | < http://www.wikidata.org/entity/Q1994297 > |
| 3"Logic"@en | < https://www.wiki... "a fortiori"@la | | "The Latin phrase 'a fortiori' translates to 'from the stronger' and is us... | < http://www.wikidata.org/entity/Q1753631 > |
| 4"Logic"@en | < https://www.wiki... "salva veritate"@la | | "The Latin phrase 'salva veritate' translates to 'saving the truth' or 'wit... | < http://www.wikidata.org/entity/Q11892155 > |
| 5"Logic"@en | < https://www.wiki... "argumentum ad populum"... | | "Argumentum ad populum, also known as the appeal to the masses ... | < http://www.wikidata.org/entity/Q251695 > |
| 6"Logic"@en | < https://www.wiki... "petitio principii"@la | | "Petitio principii, often translated as 'begging the question', is a logic... | < http://www.wikidata.org/entity/Q219429 > |
| 7"Logic"@en | < https://www.wiki... "dictum de omni et nullo"@la | | "Dictum de omni et nullo is a Latin phrase that translates to 'a statem... | < http://www.wikidata.org/entity/Q12764637 > |
| 8"Logic"@en | < https://www.wiki... "argumentum ad hominem"... | | "Argumentum ad hominem is a Latin phrase that translates to 'argum... | < http://www.wikidata.org/entity/Q189183 > |

Most frequent POS and most frequent nouns

```
13 SELECT ?pos_id (COUNT(?token_id) AS ?token_count)
14 WHERE {
15   ?pos rdfs:label ?pos_id. FILTER regex(?pos_id, "^POS=", "i") .
16   ?annot oa:hasBody ?pos .
17   ?annot oa:hasTarget ?token_id .
18 }
19 GROUP BY ?pos_id
20 ORDER BY DESC(?token_count)
21
```

Table Response 13 results in 0.018 seconds

| pos_id | token_count |
|-------------|---|
| 1POS=NOUN | "148"^^<http://www.w3.org/2001/XMLSchema#integer> |
| 2POS=ADP | "60"^^<http://www.w3.org/2001/XMLSchema#integer> |
| 3POS=VERB | "58"^^<http://www.w3.org/2001/XMLSchema#integer> |
| 4POS=ADJ | "57"^^<http://www.w3.org/2001/XMLSchema#integer> |
| 5POS=PRON | "29"^^<http://www.w3.org/2001/XMLSchema#integer> |
| 6POS=DET | "19"^^<http://www.w3.org/2001/XMLSchema#integer> |
| 7POS=ADV | "16"^^<http://www.w3.org/2001/XMLSchema#integer> |
| 8POS=AUX | "15"^^<http://www.w3.org/2001/XMLSchema#integer> |
| 9POS=PART | "11"^^<http://www.w3.org/2001/XMLSchema#integer> |
| 10POS=SCONJ | "6"^^<http://www.w3.org/2001/XMLSchema#integer> |

```
5 SELECT ?lemma (COUNT(?lemma) as ?occurrences)
6 WHERE {
7   ?pos rdfs:label ?pos_id. FILTER regex(?pos_id, "^POS=NOUN", "i") .
8   ?annot oa:hasBody ?pos .
9   ?annot oa:hasTarget ?token_id .
10  ?token_id lila:hasLemma ?lemma_id .
11  ?lemma_id rdfs:label ?lemma .
12 }
13 GROUP BY ?lemma
14 ORDER BY DESC(?occurrences)
```

Table Response 95 results in 0.021 seconds

| lemma | occurrences |
|--------------|---|
| 1homo | "6"^^<http://www.w3.org/2001/XMLSchema#integer> |
| 2res | "6"^^<http://www.w3.org/2001/XMLSchema#integer> |
| 3causa | "5"^^<http://www.w3.org/2001/XMLSchema#integer> |
| 4intellectus | "5"^^<http://www.w3.org/2001/XMLSchema#integer> |
| 5dictum | "4"^^<http://www.w3.org/2001/XMLSchema#integer> |
| 6ens | "4"^^<http://www.w3.org/2001/XMLSchema#integer> |
| 7argumentum | "3"^^<http://www.w3.org/2001/XMLSchema#integer> |
| 8modus | "3"^^<http://www.w3.org/2001/XMLSchema#integer> |
| 9mundus | "3"^^<http://www.w3.org/2001/XMLSchema#integer> |
| 10natura | "3"^^<http://www.w3.org/2001/XMLSchema#integer> |

Team



Name
Title



Name
Title



Name
Title



Name
Title



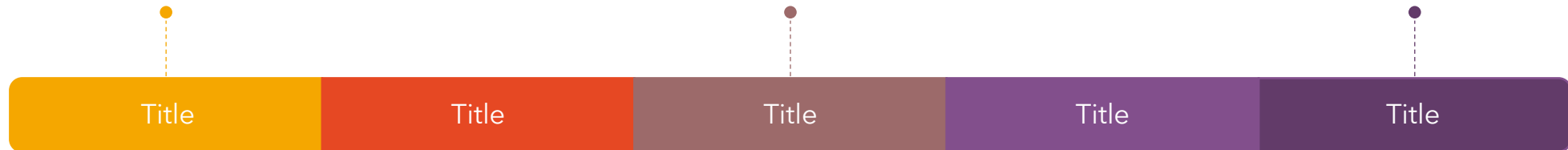
Name
Title

Timeline

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- Add transitions, animations, and motion.
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Subtitle

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- When we have design ideas, we'll show them to you right there.



Content

Subtitle

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- When we have design ideas, we'll show them to you right there.

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