



Technical Specification

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IAT/ML by Institute of Heritage Sciences (Incipit), Spanish National Research Council (CSIC) & University of Santiago de Compostela (USC)



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Introduction

IAT/ML is a methodology for the combined ontological, argumentation and agency analysis of discourse, based on Inference Anchoring Theory (IAT) and the ConML conceptual modelling language. This document provides a semi-formal and detailed description of the elements that compose IAT/ML, collectively called its metamodel.

Goals

The main objective of IAT/ML is to provide an analytical, situated and design-oriented theory of ontology, argumentation and agency, as well as the connections between these. This theory should be directly actionable for the development of software-based systems while offering a detailed formal account of the major components in joint ontological, argumentation and agency analysis.

Agency analysis is not included in this version of the IAT/ML metamodel, but will be incorporated in future releases.

Design Criteria

The main design criterion for IAT/ML was that it should allow for multi-perspective discourse analysis, uniting the traditional strengths of approaches as diverse as argumentation theory, conceptual modelling, and critical discourse analysis.

An additional design criterion was that argumentation modelling under IAT/ML should be as similar to IAT [1], [6] as possible. In this regard, IAT has been taken as a strong foundation for IAT/ML, although some deviations exist.

Ontology modelling simplicity was also a design criterion, as it would not be practical to incorporate a fully-fledged ontology modelling language in IAT/ML. Instead, an extremely simple micro-language has been embedded, which works as a proxy to external, richer languages such as ConML [4], [5] via ontological proxies [2].

Furthermore, a design criterion was that all the analysis tasks (ontological, argumentation and agency) should be underpinned by common context information that describes the situation to be analysed and provides shared context. This facilitates the combination of the resulting models and the derivation of combined analytics.

An additional design criterion was that models obtained by ontology, argumentation and agency analysis should be traceable, both to other models and to the source text as well. This facilitates reproducibility and improves inter-analyst agreement.

A final design criterion was that the methodology should be highly modular, allowing users to select what components they wish to enact for each project, and even add their own plug-in components when necessary.

Architecture

The IAT/ML metamodel is organised around the following components:

- Common
- Context
- Ontology
- Argumentation
- Agency

Figure 1 depicts this architecture.

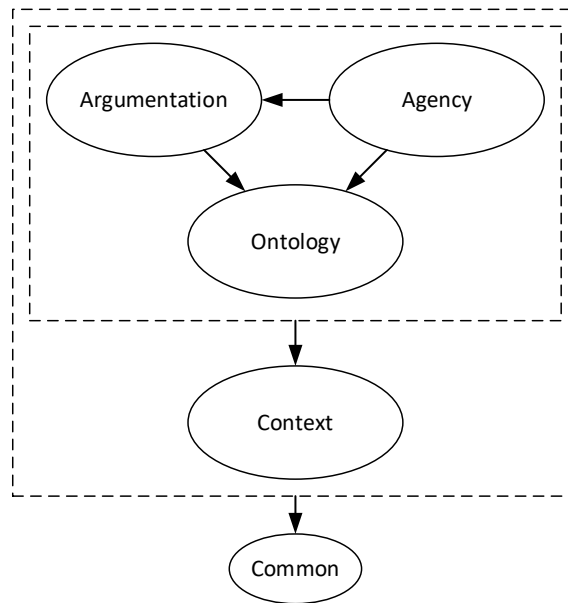


Figure 1. Overall architecture of the IAT/ML metamodel. Arrows express dependencies between components.

The Ontology component contains elements related to the ontology being referred to by the discourse, including ontology elements such as entities, facets and features. A diagram depicting the contents of the Ontology component is shown in Figure 2.

The Argumentation component contains elements related to the argumentative structure of the discourse, including its locutions, transitions, propositions and argumentation relations such as inferences, conflicts and rephrases. Propositions are connected to ontology elements through denotations. A diagram depicting the contents of the Argumentation component is shown in Figure 3.

The Agency and Context components are not described as part of the metamodel yet, but they will in the future. Please see the *IAT/ML Analysis Process Guidelines* document for an informal description.

All these components are supported by a Common component.

The following sections in this document provide a detailed description of the metamodel elements in these components.

Common Component

This component contains metamodel elements related to utilities and helper classes.

Text Content

A text content is *a body of text obtained from a relevant source*.

Text contents typically contain some text and an indication of the language the text is in.

Text Range

A text range is *a span of text within a text content*.

Text ranges are used to indicate where a particular fragment of text is located within a larger body.

Ontology Component

This component contains metamodel elements related to the ontology referred to by the speakers. Please see Figure 2 for a diagram depicting the Ontology component.

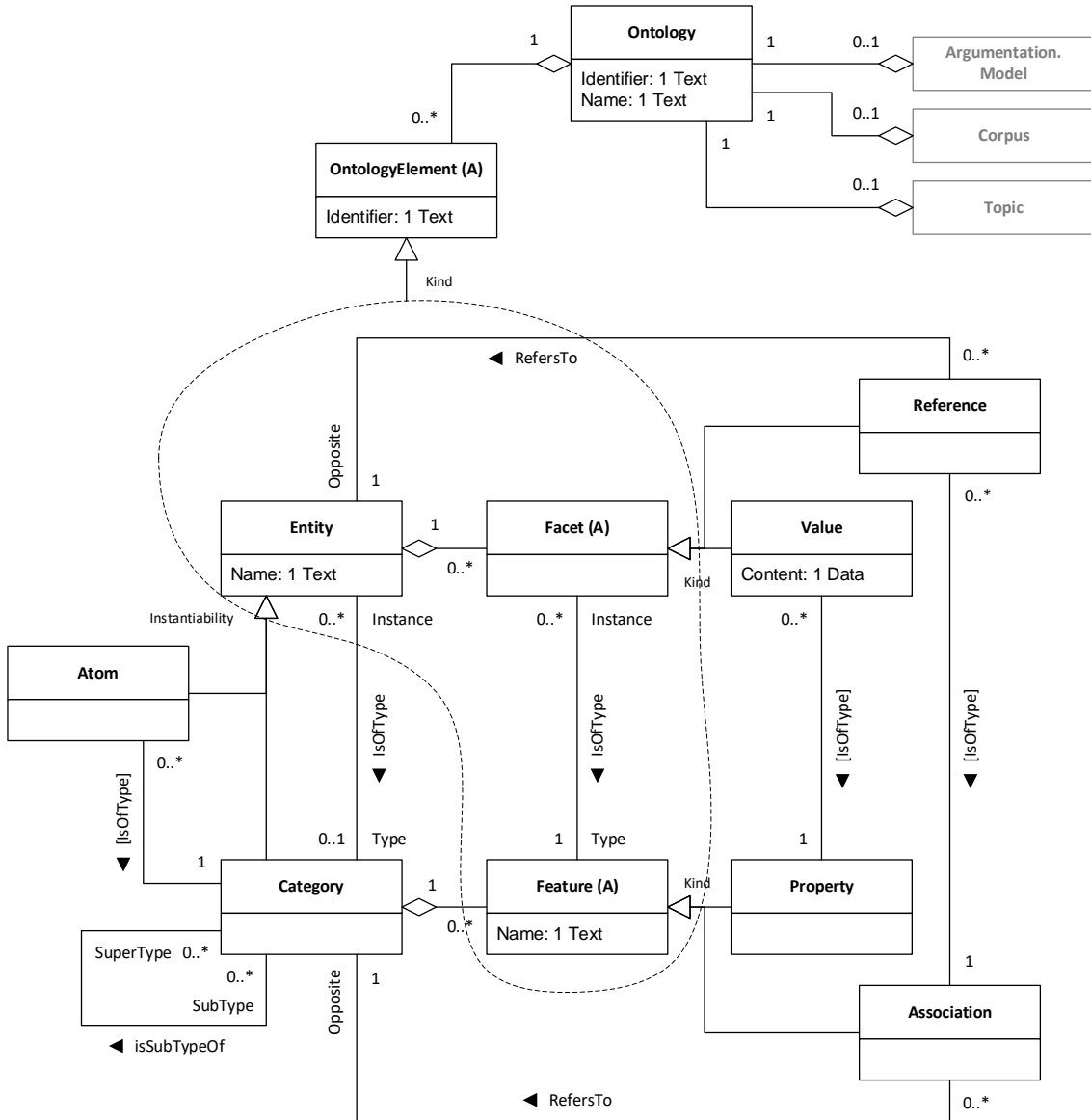


Figure 2. Section of the IAT/ML metamodel depicting the contents of the Ontology component.

Ontology

In IAT/ML, an ontology is *a collection of elements that represent things in the world*.

The signature of an ontology is this:

$$Ontology(Name: 1 Text, Elements: 1 \dots n OntologyElement)$$

Ontology Element

An ontology element is *an atomic element in an ontology*.

Ontology elements in IAT/ML work as proxies to elements in an associated ontology expressed in an external and richer compatible language such as ConML.

There are three kinds of ontology elements: entities, facets and features.

Entity

An entity is *an ontology element that represents an identity-bearing thing in the world*.

The signature of an entity is this:

$$\textit{Entity}(\textit{Name}: 1 \textit{Text}, \textit{Type}: 0 \cdots 1 \textit{Category}, \textit{Facets}: 0 \cdots n \textit{Facet})$$

Entities are organised in the metamodel according to a multi-level modelling scheme, so that high-order classification relationships are possible.

There are two kinds of entities: atoms and categories.

Atom

An atom is *an entity that represents a non-instantiable thing in the world*. Atoms are called urelements in set theory.

The signature of an atom is this:

$$\textit{Atom}(\textit{Name}: 1 \textit{Text}, \textit{Type}: 0 \cdots 1 \textit{Category}, \textit{Facets}: 0 \cdots n \textit{Facet})$$

Category

A category is *an entity that represents a class of things in the world*. Categories correspond to sets in set theory.

The signature of a category is this:

$$\textit{Category}(\textit{Name}: 1 \textit{Text}, \textit{Type}: 0 \cdots 1 \textit{Category}, \textit{Facets}: 0 \cdots n \textit{Facet}, \textit{Features}: 0 \cdots n \textit{Feature})$$

In addition, categories can be arranged in subtyping hierarchies.

Facet

A facet is *an ontology element that represents a predication on an entity in the world*.

The signature of a facet is this:

$$\textit{Facet}(\textit{Owner}: 1 \textit{Entity}, \textit{Type}: 1 \textit{Feature})$$

There are two kinds of facets: values and references.

Value

A value is *a facet corresponding to a quantity or quality of an entity*.

The signature of a value is this:

$$\textit{Value}(\textit{Owner}: 1 \textit{Entity}, \textit{Type}: 1 \textit{Property}, \textit{Content}: 1 \textit{Data})$$

Reference

A reference is *a facet corresponding to a relationship of an entity to another entity*.

The signature of a reference is this:

Reference(Owner: 1 Entity, Type: 1 Association, Opposite: 1 Entity)

Feature

A feature is *an ontology element that represents a type of predication on entities of a given category.*

The signature of a feature is this:

Feature(Owner: 1 Category)

There are two kinds of features: properties and associations.

Property

A property is *a feature corresponding to quantities or qualities of the entities of the category.*

The signature of a property is this:

Property(Owner: 1 Category)

Association

An association is *a feature corresponding to relationships of entities of the category to other entities.*

The signature of an association is this:

Association(Owner: 1 Category, Opposite: 1 Category)

Argumentation Component

This component contains metamodel elements related to the argumentation as issued by speakers. Please see Figure 3 for a diagram depicting the Argumentation component.

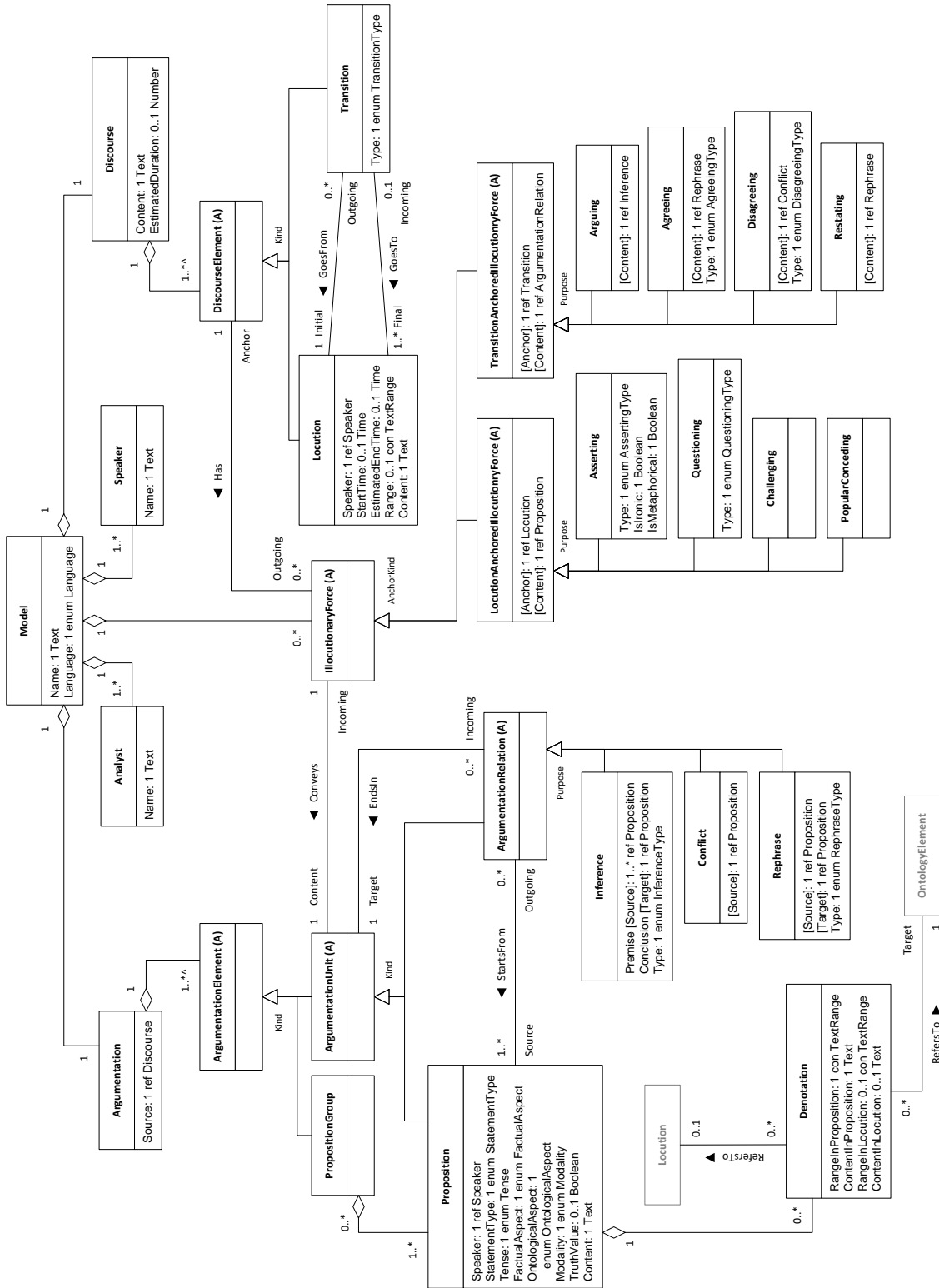


Figure 3. Section of the IAT/ML metamodel depicting the contents of the Argumentation component.

Model

A model is *a container for a discourse, an argumentation, an optional embedded ontology, and some additional elements such as speakers and analysts.*

The signature of a model is this:

*Model(Speakers: 1 … n Speaker, Analysts: 1 … n Analyst,
Discourse: 1 Discourse, Argumentation: 1 Argumentation,
Ontology: 0 … 1 Ontology)*

Speaker

A speaker is *an individual or group who participates in a discourse by speaking locutions and issuing propositions.*

The signature of a speaker is this:

Speaker(Name: 1 Text)

At least one speaker is necessary for a discourse to exist.

Analyst

An analyst is *an individual who carries out an analysis using IAT/ML.*

The signature of an analyst is this:

Analyst(Name: 1 Text)

Discourse

In IAT/ML, a discourse is *a portion of human speech that makes statements about the world and provides reasons to support, attack or comment on them.*

The signature of a discourse is this:

Discourse(Content: 1 Text, Elements: 1 … n DiscourseElement)

Discourse Element

A discourse element is *an atomic element in a discourse.*

There are two kinds of discourse elements: locutions and transitions.

Locution

A locution is *an utterance made by a speaker in the discourse.*

The signature of a locution is this:

Locution(StartTime: 1 Time, EndTime: 1 Time, Speaker: 1 Speaker, Content: 1 Text)

Locutions within a discourse are strictly time-ordered, even in multi-speaker settings. Each locution has unique start and end timestamps that position it within the discourse.

Transition

A transition is *a discursive relationship between locutions*. Transitions show discursive dependencies. Transitions do not represent the chronological order of the discourse (which is given by timestamps of locutions) but must be compatible with it. Transitions provide the links that help the interpretation of a locution in relation to immediately related ones.

The signature of a transition is this:

$$\textit{Transition}(\textit{Initial}: 1 \textit{ Locution}, \textit{Final}: 1 \cdots n \textit{ Locution})$$

where

$$\forall f: \textit{Final}. \textit{TimeStamp} > \textit{Initial}. \textit{TimeStamp}$$

Multiple transitions may share a common initial locution, but only one transition may arrive to any given final locution.

Subtypes

A transition may be of one of the following subtypes:

- **Adding**: the speaker continues talking by adding a new locution right after the previous one.
- **Alternating**: the speaker continues talking by offering an alternative locution to the previous one.
- **Contrasting**: the speaker continues talking by contrasting a new locution in relation to the previous one.
- **Embedding**: the speaker embeds a locution into another, by e.g. apposition.
- **Reporting**: the speaker reports a locution from another agent.
- **Turn Taking**: the speaker takes a turn right after the previous speaker.

Argumentation

In IAT/ML, an argumentation is *a collection of propositions and argumentation relations that work to make statements about the world and provides reasons to support, attack or comment on them*.

The signature of an argumentation is this:

$$\textit{Argumentation}(\textit{Base}: 1 \textit{ Discourse}, \textit{Elements}: 1 \cdots n \textit{ ArgumentationElement})$$

An argumentation is based on a discourse.

Argumentation Element

An argumentation element is *an atomic element in an argumentation*.

There are two kinds of argumentation elements: argumentation units and proposition groups.

Argumentation Unit

An argumentation unit is *an argumentation element that plays a role in an argumentation*.

There are two kinds of argumentation units: propositions and argumentation relations.

Proposition

A proposition is *an argumentation unit corresponding to a state of affairs about the world*. Propositions are self-contained and do not include unresolved references (such as anaphoric or deictic elements), so that their truth value is stable and as independent of the context as possible.

The signature of a proposition is this:

Proposition(Speaker: 1 Speaker, Content: 1 Text)

Propositions are expressed by speakers through locutions.

Propositions possess a number of properties through which they can be characterised, as described in the next few sections.

Statement Type

The statement type of a proposition describes what values it involves. Table 1 shows the available options.

Name	Definition
Fact	The proposition is free from values that are not shared by everyone in the group. Example: <i>“My car is white”, “I have a headache”</i> .
Value	The proposition involves values beyond those that are shared by everyone in the group, such as values of some group members (but not all) or values of external agents. Example: <i>“The Beatles are the best band ever”</i> .

Table 1. Statement types of propositions.

Factual Aspect

The factual aspect of a proposition describes the kind of fact that it describes. Table 2 shows the available options.

Name	Definition
Static	The proposition expresses a state rather than a change.
Existence	The proposition expresses that an entity exists, such as <i>“There is a cat”</i> .
Identity	The proposition expresses that two references point at the same entity, such as <i>“That woman is my sister”</i> .
Predication	The proposition expresses that an entity has a property.
Attribution	The proposition expresses that an entity has a quality, such as <i>“That house is tall”</i> or <i>“Houses are comfortable”</i> .
Relation	The proposition expresses that an entity is related to another entity, such as <i>“That house belongs to my sister”</i> or <i>“People can own houses”</i> .
Classification	The proposition expresses that an entity is an instance of a given category, such as <i>“That is a house”</i> .
Subsumption	The proposition expresses that a category is subsumed by another category, such as <i>“Houses are buildings”</i> .
Dynamic	The proposition expresses a change rather than a state.
Activity	The proposition expresses that an entity carries out an action with no necessary end, such as <i>“The man is running”</i> .
Telic	The proposition expresses that an entity carries out an action with a necessary end.
Accomplishment	The proposition expresses that an entity carries out an action ending after a given duration, such as <i>“We painted the wall”</i> .
Achievement	The proposition expresses that an entity carries out an action that occurs instantaneously, such as <i>“She arrived at the hotel”</i> .

Table 2. Factual aspects of propositions.

Ontological Aspect

The ontological aspect of a proposition describes its ontological domain (logical, physical or social) plus a related aspect (impossible, possible, necessary or contingent). Table 3 shows the available options.

Name	Definition
Logically impossible	The proposition expresses something that is impossible according to the rules of logic. Example: <i>"This is a round square"</i> .
Logically possible	The proposition expresses something that is possible according to the rules of logic.
Logically necessary	The proposition expresses something that is necessary according to the rules of logic. Example: <i>"This triangle has three sides"</i> . Logically necessity implies physical and social necessity.
Logically contingent	The proposition expresses something that is contingent (may or may not be) according to the rules of logic.
Physically impossible	The proposition expresses something that is impossible according to the rules of the physical world. Example: <i>"Objects fall upwards"</i> .
Physically possible	The proposition expresses something that is possible according to the rules of the physical world.
Physically necessary	The proposition expresses something that is necessary according to the rules of the physical world. Example: <i>"Every person has a mother and a father"</i> . Physical necessity implies social necessity.
Physically contingent	The proposition expresses something that is contingent (may or may not be) according to the rules of the physical world.
Socially impossible	The proposition expresses something that is impossible according to the rules of society. Example: <i>"This car costs 2 €"</i> .
Socially possible	The proposition expresses something that is possible according to the rules of society.
Socially necessary	The proposition expresses something that is necessary according to the rules of society. Example: <i>"Children go to school"</i> .
Socially contingent	The proposition expresses something that is contingent (may or may not be) according to the rules of society. Example: <i>"Some people get married"</i> .

Table 3. Ontological aspects of propositions.

Three additional properties can be derived from a proposition's ontological aspect:

- **Derived Logical Aspect**, which describes the possibility, impossibility, necessity or contingency of a proposition within the logical domain.
- **Derived Physical Aspect**, which describes the possibility, impossibility, necessity or contingency of a proposition within the physical domain.
- **Derived Social Aspect**, which describes the possibility, impossibility, necessity or contingency of a proposition within the social domain.

Table 4 describes the values of these derived variables depending on the value of a proposition's ontological aspect.

Ontological aspect	Derived Logical Aspect	Derived Physical Aspect	Derived Social Aspect
Logically impossible	Impossible	Impossible	Impossible
Logically possible	Possible	(undefined)	(undefined)
Logically necessary	Necessary	Necessary	Necessary
Logically contingent	Contingent	(undefined)	(undefined)
Physically impossible	(undefined)	Impossible	Impossible
Physically possible	Possible	Possible	(undefined)
Physically necessary	Possible	Necessary	Necessary
Physically contingent	Possible	Contingent	(undefined)

Ontological aspect	Derived Logical Aspect	Derived Physical Aspect	Derived Social Aspect
Socially impossible	(undefined)	(undefined)	Impossible
Socially possible	Possible	Possible	Possible
Socially necessary	Possible	Possible	Necessary
Socially contingent	Possible	Possible	Contingent

Table 4. Values for variables derived from ontological aspect.

In Table 4, note that some values of ontological aspect do not allow to obtain some derived values, as indicated by the text “(undefined)”. Also, note that possibility is inherited “upwards” (from more specific to more general domains) whereas impossibility is inherited “downwards”.

Modality

The modality of a proposition describes the kind of content that it conveys. Table 5 shows the available options.

Name	Definition
Realis	The proposition expresses that something is, was or will be.
Indicative	The proposition expresses a fact about the world, thus representing it. It may refer to the past, present, or future. Example: “ <i>My car is white</i> ”.
Declarative	The proposition changes the world through language. Example: “ <i>I declare you husband and wife</i> ”.
Irrealis	The proposition expresses what may or must be.
Epistemic	The proposition expresses what an agent believes.
Definitional	The proposition expands a term into its definition as agreed upon within the associated group (expanding definitional) or compresses a definition into a term (compressing definitional). Example: “ <i>This is a triangle, so it must have three sides</i> ”. Definitional propositions require an additional proposition that acts as context, consisting of a reference to the expanded term (for expanding definitional propositions) or to the definition itself (for the compressing definitional propositions).
Noetic	The proposition expresses a consequence of some reasoning. Example: “ <i>Socrates must be mortal because he is human</i> ”. Noetic propositions are conclusions, and thus require one or more additional propositions that act as premises, some or all of which may be implicit.
Presumptive	The proposition expresses an inferential consequence of adopting a commonly held belief. Example: “ <i>Alice has been a dentist for 40 years; she must be quite an expert</i> ”. Presumptive propositions are conclusions, and thus require one or more additional propositions that act as premises, some or all of which may be implicit, and at least one of them referring to commonly held belief. Also, note that presumptive propositions are inferential but not necessarily reasoned (i.e. they may not be conceptual and conscious).
Conditional	The proposition expresses the potential consequence of a situation (the condition). Example: “ <i>I would eat that pizza if I were hungry</i> ”. Conditional propositions do not establish a truth value, and should not be mistaken with counterfactual constructions (e.g. “ <i>I would have won the prize if I had played that number</i> ”), which have a negative truth value, do not have conditional modality, and are considered to be two separate propositions.
Interrogative	The proposition expresses a question, that is, a demand for information. Example: “ <i>How old are you?</i> ”, “ <i>I wonder how old you are</i> ”. Interrogative propositions are often formulated in the interrogative mood.
Deontic	The proposition expresses a state of the world that an agent thinks should be.
Commissive	The proposition expresses a commitment by the speaker. Example: “ <i>I will help you with your homework</i> ”.

Name	Definition
Directive	The proposition expresses a command or request by the speaker. Example: <i>“Come with me”, “You must try”, “Please, pardon me”</i> . Directive propositions demand a specific action or response in a given time frame, and are often formulated in the imperative mood.
Suggestive	The proposition expresses a suggestion or recommendation by the speaker. Example: <i>“You shouldn’t smoke so much”</i> . Suggestive propositions do not demand a specific action or response in a given time frame.
Volitive	The proposition expresses a wish or desire by the speaker. Example: <i>“If only I were rich!”</i> .

Table 5. Modalities of propositions.

Tense

The tense of a proposition refers to when in time the proposition is referring to. Usually, this coincides with the grammatical tense of the main verb in the proposition. Table 6 shows the available options.

Name	Definition
Past	The proposition expresses a state of affairs in the past.
Present	The proposition expresses a state of affairs in the present.
Future	The proposition expresses a state of affairs in the future.
Atemporal	The proposition expresses a state of affairs that is atemporal, like a law or pattern. Example: <i>“Babies are born after nine months”</i> .

Table 6. Tenses of propositions.

Truth Value

The truth value of a proposition indicates whether it is true, false or indeterminate. Table 7 shows the available options.

Name	Definition
True	The proposition is true. Example: <i>“This triangle has three sides”</i> .
False	The proposition is false. Example: <i>“This triangle has four sides”</i> .
Indeterminate	The proposition is neither true nor false. Example: <i>“They should build more roads”</i> .

Table 7. Truth values of propositions.

Denotation

A denotation is *a semiotic connection between a part of a proposition and a target ontology element*.

The signature of a denotation is this:

Denotation(Source: 1 Proposition, Content: 1 Text, Target: 1 OntologyElement)

Denotations can optionally point at a part of the source proposition’s associated locution, if any.

Denotations work as the “glue” that connects elements in an argumentation to elements in the associated ontology.

Proposition Group

A proposition group is *a collection of propositions within an argumentation that share some commonalities*.

The signature of a proposition group is this:

$$\text{PropositionGroup}(\text{Members}: 1 \cdots n \text{ Proposition})$$

Proposition groups are a convenient mechanism to group propositions for any practical purpose.

Argumentation Relation

An argumentation relation is *an argumentation unit corresponding to a pragmatic connection between two or more argumentation units so that some of them are argumentally dependent on others.*

The signature of an argumentation relation is this:

$$\text{ArgumentationRelation}(\text{Sources}: 1 \cdots n \text{ Proposition}, \\ \text{Target}: 1 \text{ ArgumentationUnit})$$

There are three kinds of argumentation relations: inferences, conflicts and rephrases. Complete collections of related argumentation relations plus the associated propositions are called “argumentations”, whereas “arguments” are subsets of these formed by premises, conclusions and related inferences.

Inference

An inference is *an argumentation relation that indicates that one or more premise propositions are provided by a speaker to support a conclusion proposition.* All the involved premise propositions are implicitly connected via conjunction.

$$\text{Inference}(\text{Premises}: 1 \cdots n \text{ Proposition}, \text{Conclusion}: 1 \text{ Proposition})$$

Inferences are anti-reflexive and anti-symmetric.

Patterns

Serial argument

$$\text{SerialArgument}(\text{ps}: 3 \cdots n \uparrow \text{ Proposition}) \\ \rightarrow \forall i: 1 \cdots \#ps - 1, \text{Inference}(\text{ps}[i], \text{ps}[i + 1])$$

Convergent argument

$$\text{ConvergentArgument}(\text{pss}: 2 \cdots n \ 1 \cdots n \text{ Proposition}, \text{c}: 1 \text{ Proposition}) \\ \rightarrow \forall \text{ps}: \text{pss}, \text{Inference}(\text{ps}, \text{c})$$

Linked argument

$$\text{LinkedArgument}(\text{ps}: 2 \cdots n \text{ Proposition}, \text{c}: 1 \text{ Proposition}) \rightarrow \text{Inference}(\text{ps}, \text{c})$$

Divergent argument

$$\text{DivergentArgument}(\text{ps}: 1 \cdots n \text{ Proposition}, \text{cs}: 2 \cdots n \text{ Proposition}) \\ \rightarrow \forall \text{c}: \text{cs}, \text{Inference}(\text{ps}, \text{c})$$

Subtypes

An inference may be of one of the following subtypes, which have been adopted from [8], [9]:

- Circumstantial Ad Hominem
- Ethotic
- For Constitutive Rule Claims
- For Exceptional Case

- From Abduction
- From Alternatives
- From Analogy
- From Bias
- From Bias Ad Hominem
- From Cause to Effect
- From Classification
- From Classification Arbitrariness
- From Classification Vagueness
- From Commitment
- From Composition
- From Correlation to Cause
- From Danger Appeal
- From Definition to Classification
- From Distress
- From Division
- From Epistemic Ignorance
- From Evidence to Hypothesis
- From Example
- From Expert Opinion
- From Fear Appeal
- From Gradualism
- From Group Membership
- From Ignorance
- From Inconsistent Commitment
- From Interaction of Act and Person
- From Memory
- From Need for Help
- From Negative Consequences
- From Oppositions
- From Perception
- From Plea for Excuse
- From Popular Opinion
- From Popular Practice
- From Position to Know
- From Positive Consequences
- From Precedent
- From Rhetorical Oppositions
- From Rules
- From Sacrifice
- From Sign
- From Sunk Costs
- From Threat
- From Values
- From Waste
- From Witness Testimony
- Full Slippery Slope
- Generic Ad Hominem
- Practical Reasoning

- Practical Reasoning from Analogy
- Pragmatic Inconsistency
- Precedent Slippery Slope
- Slippery Slope
- Sorites Slippery Slope
- Two-Person Practical Reasoning
- Verbal Slippery Slope

Conflict

A conflict is an argumentation relation that indicates that a source proposition provided by a speaker is in conflict with a target argumentation unit.

$$\text{Conflict}(\text{Source}: 1 \text{ Proposition}, \text{Target}: 1 \text{ ArgumentationUnit})$$

Where

$$\text{Source.TimeStamp} > \text{Target.TimeStamp}$$

Conflicts are anti-reflexive. From a logic point of view, conflicts are symmetrical, that is:

$$\text{Conflict}(s, t) \Leftrightarrow \text{Conflict}(t, s)$$

However, from a discourse point of view, conflicts are related to the speaker's intention to produce a conflict, so that it does not make sense to have conflicts that flow "forward" in time, so no symmetry exists.

Patterns

Rebutting

$$\text{Rebutting}(s, t: 1 \text{ Proposition}) \rightarrow \text{Conflict}(s, t)$$

Undermining

$$\begin{aligned} &\text{Undermining}(s, t: 1 \text{ Proposition}) \\ &\rightarrow \exists p: \text{Proposition}, \text{Conflict}(s, p) \wedge \text{Inference}(p, t) \end{aligned}$$

Undercutting

$$\begin{aligned} &\text{Undercutting}(s, t: 1 \text{ Proposition}) \\ &\rightarrow \exists p: \text{Proposition}, i: \text{Inference}, i(p, t) \wedge \text{Conflict}(s, i) \end{aligned}$$

Subtypes

No conflict subtypes are defined.

Rephrase

A rephrase is an argumentation relation that indicates that a source proposition is provided by a speaker as a reformulation of a target proposition.

$$\text{Rephrase}(\text{Source}: 1 \text{ Proposition}, \text{Target}: 1 \text{ Proposition})$$

Rephrases are anti-reflexive, symmetric in some cases (with opposite subtype) and transitive in some cases. See *Subtypes* below for detailed information.

Patterns

There are no specific patterns for Rephrase.

Subtypes

A rephrase may be of one of the following subtypes.

- **Abstraction:** the speaker repeats the target proposition but raising the level of abstraction. This includes mechanisms such as generalisation, classification and composition.
- **Concretion:** the speaker repeats the target proposition but lowering the level of abstraction. This includes mechanisms such as specialisation, instantiation and decomposition.
- **Definition:** the speaker unpacks a term in the target proposition by describing its meaning.
- **Naming:** the speaker provides a term to name an idea in the target proposition.
- **Answer:** the speaker answers the question in the target proposition.
- **Agreement:** the speaker expresses agreement with the target proposition.
- **Change of Mind:** the speaker expresses a change of mind in relation to a part of the target proposition.
- **Repetition:** the speaker literally repeats the target proposition, or a part of it, for emphasis.
- **Paraphrasis:** the speaker repeats the target proposition by recasting it in different words that result in a mostly lexical or syntactic change, not that much rhetorical or pragmatic.
- **Reinterpretation:** the speaker reinterprets the target proposition by changing its contents but without frontally contradicting it. This includes mechanisms such as analogies, adding emotional nuance, straw man fallacies, etc.

Illocutionary Force

An illocutionary force is *a connection between a discourse element and an argumentation unit in terms of speaker intent*.

The signature of an illocutionary force is this:

*IllocutionaryForce(Anchor: 1 DiscourseElement,
Content: 1 ArgumentationUnit)*

There are two major kinds of illocutionary forces: locution-anchored and transition-anchored. Their signatures are these:

*LocutionAnchoredIllocutionaryForce(Anchor: 1 Locution,
Content: 1 Proposition)*

*TransitionAnchoredIllocutionaryForce(Anchor: 1 Transition,
Content: 1 ArgumentationUnit)*

There are multiple kinds of each of these.

Asserting

An asserting is *a locution-anchored illocutionary force indicating that the speaker produces an anchor locution in order to communicate that they believe a content proposition*.

Asserting(Anchor: 1 Locution, Content: 1 Proposition)

Subtypes

An asserting may be of one of the following subtypes.

- **Literal:** the speaker is making a literal assertion.
- **Questioning:** the speaker is asserting via a question.
- **Figurative:** the speaker is using figurative (non-literal) language to state something different to what they actually say.

Questioning

A questioning is a *locution-anchored illocutionary force indicating that the speaker produces an anchor locution in order to obtain new information.*

Questioning(Anchor: 1 Locution, Content: 1 Proposition)

Subtypes

A questioning may be of one of the following subtypes.

- **Pure:** the question seeks new information without providing a predefined answer.
- **Assertive:** the question seeks new information but provides a predefined answer.

Challenging

A challenging is a *locution-anchored illocutionary force indicating that the speaker produces an anchor locution in order to obtain a new proposition that works as a premise for a base proposition.*

Challenging(Anchor: 1 Locution, Content: 1 Proposition)

Popular Conceding

A popular conceding is a *locution-anchored illocutionary force indicating that the speaker produces an anchor locution in order to communicate that they believe a well-known and commonly accepted content proposition.*

PopularConceding(Anchor: 1 Locution, Content: 1 Proposition)

Arguing

An arguing is a *transition-anchored illocutionary force indicating that the speaker produces an anchor transition to support a content inference.*

Arguing(Anchor: 1 Transition, Content: 1 Inference)

Subtypes

An arguing may be of one of the following subtypes.

- **Factual:** the speaker is arguing from a fact.
- **Counterfactual:** the speaker is arguing from a potential situation that was not the case.

Agreeing

An agreeing is a *transition-anchored illocutionary force indicating that the speaker produces an anchor transition to react affirmatively to a base proposition through a content rephrase.*

Agreeing(Anchor: 1 Transition, Content: 1 Rephrase)

The base proposition to which the speaker is agreeing is given by the anchor transition's initial locution.

Subtypes

An agreeing may be of one of the following subtypes.

- **Full:** the speaker is agreeing fully, with no reservations.
- **Partial:** the speaker is agreeing partially.

Disagreeing

A disagreeing is a *transition-anchored illocutionary force indicating that the speaker produces an anchor transition to react negatively to a base proposition through a content conflict.*

Disagreeing(Anchor: 1 Transition, Content: 1 Conflict)

The base proposition the speaker is disagreeing with is given by the anchor transition's initial locution.

Subtypes

A disagreeing may be of one of the following subtypes.

- **Full:** the speaker is disagreeing fully, with no concessions.
- **Partial:** the speaker is disagreeing partially.

Restating

A restating is a *transition-anchored illocutionary force indicating that the speaker produces an anchor transition to recast a base proposition through a content rephrase.*

Restating(Anchor: 1 Transition, Content: 1 Rephrase)

The base proposition the speaker is restating is given by the anchor transition's initial locution.

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