Argumentation Patterns Guidelines

version 1.2.1 · 28 May 2025

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

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Partial funding was provided by Incipit · CSIC, USC, and project ACME (grant number PID2020-114758RB-I00 funded by MCIN/AEI/10.13039/501100011033, Retos de la Sociedad, Plan Estatal 2017-2020, Spain).

28 May 2025 15:53 · revision 1818

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Introduction

This document provides guidelines for the argumentation analysis of discourses. The purpose of argumentation analysis is to produce an argumentation model, that is, a representation of the statements uttered by the speakers plus the relationships between them in terms of justification, support and attack.

This document is designed as a pattern reference, that is, it describes what to do when a certain pattern is found during argumentation analysis. Guidelines are given in the form of situation/solution pairs, thus indicating what solution must be applied when a particular situation is found. Also, examples are used throughout.

Please see the *IAT/ML Process Guidelines* document for additional context and process-oriented guidance, and the *IAT/ML Technical Specification* document for specific details.

Text Preparation

This section provides guidelines related to the preparation of text prior to argumentation analysis.

Accessory Text Elements

Texts often include accessory elements in addition to the text body itself, such as headings, footnotes, tables or figure captions.

Texts that appear in accessory elements can be left in the text and analysed if they are understandable and provide valuable information. For example, a figure caption that merely describes the figure and cannot be understood in its absence can be safely discarded. However, a figure caption that contains argumentative sentences should be kept in the text. Similarly, a heading that does not contain a complete sentence but just a noun, such as "Geographical Aspects of the Pandemic", can be discarded.

Accessory Text Elements
Situation
A text includes accessory elements such as headings, footnotes, tables or figure captions.
Solution
Keep accessory text elements that are composed of complete sentences with argumentative value. Discard them otherwise.

Discourse Regulation Expressions

Sometimes, speakers use discourse regulation expressions to guide, clarify or otherwise regulate the dialogue they are maintaining. These are some examples:

- "I'm not sure what you mean. Could you clarify, please?"
- "Your time is up. Please answer now."

Discourse regulation expressions may be relevant to the argumentation, although they are often superfluous. Commonly, they establish an aside in the conversation to clarify or propose something, after which the conversation continues from where it was paused. Unless you think that a discourse regulation expression adds argumentation value to the analysis, you can safely discard it.

Discourse Regulation Expressions
Situation
A text includes a discourse regulation expression.
Solution
Discard it if it doesn't add value to the analysis

Meta-Discursive Expressions

Texts often include meta-discursive expressions that refer to the text itself or the speaker's actions, rather than the text contents. These are some examples:

- “In this article I show that the COVID pandemic was largely unexpected”. Here, the expression “In this article I show that” is meta-discursive.
- “I think that we shouldn’t ignore the problem”. Here, the expression “I think that” is meta-discursive.
- “I am attaching some pictures showing that my car was hit”. Here the expression “I am attaching some pictures showing that” is meta-discursive.

Note that not every occurrence of “I think” or similar constructions indicate a meta-discursive expression. For example, in “I think, therefore I am”, “I think” is not meta-discursive. Make sure that you identify meta-discursive expressions appropriately.

Meta-discursive expressions can be safely discarded.

Meta-discursive Expressions
Situation
A text includes meta-discursive expressions.
Solution
Discard them.

Segmentation

This section provides guidelines related to the segmentation of text into locutions and transitions.

Segmenting on Sentence Boundaries

As an initial segmentation strategy, you should aim at decomposing the text into sentences, and creating a locution for each of them. Consecutive locutions of the same speaker should be connected via *Adding*, *Alternating* or *Contrasting* transitions, and consecutive locutions of different speakers should be initially connected via *Turn Taking* transitions.

Later, locutions that correspond to complex sentences can be split as necessary.

Segmenting on Sentence Boundaries
Situation
A text must be segmented.
Solution
As an initial strategy, add one locution per each full sentence in the text. Connect locutions in sequence with *Adding*, *Alternating* or *Contrasting* transitions when the same speaker keeps talking, or *Turn Taking* transitions when there is a change of speaker.

Adversative Structures

Adversative structures are sentences that contain connectives such as “but” or “yet” to indicate contrast between two or more clauses. For example, “Today is raining but even so we will go to the movies” is making two assertions (that today is raining and that we will go to the movies) and putting them in contrast to one another. Note that connectives like these may also be used for other purposes, such as in “Woody Allen makes nothing but great films”; this is not an adversative structure as the “but” connective is not used to indicate contrast between two or more clauses.

An adversative structure is segmented as two or more locutions connected in sequence via *Contrasting* transitions. Figure 1 shows this example.

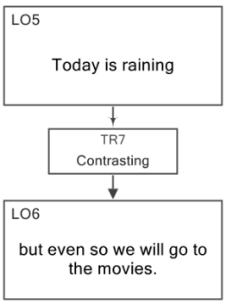

Figure 1. The adversative structure from the example has been segmented as two separate locutions connected by a *Contrasting* transition.

Adversative Structures
Situation
An adversative structure appears within a sentence.
Solution
Divide the sentence in clauses where adversative connectives such as “but” or “yet” appear, creating one locution per clause. Connect the locutions in a sequence via *Contrasting* transitions.

Alternative Structures

Alternative structures are sentences that contain connectives such as “or” or “or either” to indicate the optionality of two or more clauses. For example, “We can go to the movies or we can stay at home” is making two assertions (that we can go to the movies and that we can stay at home) and showing them as options. Like in the case of adversative structures, these connectives don’t always indicate optional clauses. For example, the “or” connective in “I can’t remember whether that happened in Paris or London” is not separating alternative clauses but simply nouns, so it doesn’t constitute an alternative structure. Similarly, in “you will do it whether you like it or not”, the speaker is not really providing options but making a single statement.

A n alternative structure is segmented as two (or more) locutions connected in sequence via *Alternating* transitions. Figure 2 shows this example.

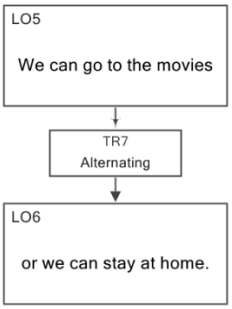

Figure 2. The alternative structure from the example has been segmented as two separate locutions connected by an *Alternating* transition.

Alternative Structures
Situation
An alternative structure appears within a sentence.
Solution
Divide the sentence in clauses where alternation connectives such as “or” or “or either” appear, creating one locution per clause. Connect the locutions in a sequence via *Alternating* transitions.

Conditional Structures

Conditional structures are sentences that contain an “if” clause indicating a condition. Note that not every occurrence of “if” indicates a condition; for example, “if you don’t understand this, I don’t understand it either” doesn’t contain a condition.

Depending on their nature, conditional structures should be segmented as either conditional statements or counterfactual constructions:

- **Conditional statements** refer to the future or to unknown events, and express possibility subject to a condition. Examples are “If it rains tomorrow, then we will cancel

the field trip" (in the future), or "if there was a witness, he/she should be able to clarify what happened" (in the past but unknown).

- **Counterfactual constructions** refer to known events in the past, present or future, and express a fact by negating the opposite. An example is "If I had left home earlier, I wouldn't have missed the flight" (expressing that I have actually missed the flight because I didn't leave home earlier).

A conditional statement is segmented as a simple locution. A counterfactual construction, however, is segmented as a pair of locutions, one for the condition and one for the consequence, connected via an *Adding* transition. For example, "If I had left home earlier, I wouldn't have missed the flight" is segmented as shown in Figure 3.

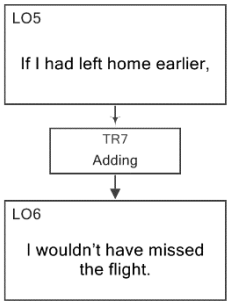

Figure 3. The counterfactual structure from the example is segmented as two separate locutions, and connected by an *Adding* transition.

Conditional Structures
Situation
A conditional structure appears in the text.
Solution
If the conditional structure is a conditional statement, then segment it as a single locution. If the conditional structure is a counterfactual construction, then segment the condition and the consequence causes as separate locutions, and connect them via an *Adding* transition.

Argumentative Structures

Argumentative structures are those that contain premises and conclusions. This is often indicated by connectives such as "because", "therefore" or "since". Consider the following example:

> Alice: Today I'm happy because it's sunny.

The connective "because" indicates that Alice is providing an argument with premise "it's sunny" and conclusion "Today I'm happy". Premises and conclusions must always be segmented as separate locutions and connected via *Adding* transitions, in order to describe the argumentation properly later on. Figure 4 shows this example.

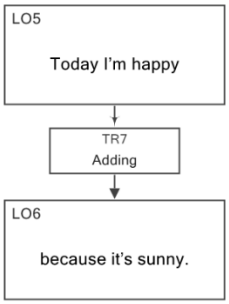

Figure 4. The "because" connective in the example has been used to split the sentence into two separate locutions for the premise and conclusion of the argument, connected via an *Adding* transition.

Sometimes, there may be multiple premises, often concatenated by connectives such as "and". Consider the following example:

> Alice: Today I'm happy because it's sunny and I'm on holiday.

As before, the "because" connective indicates an argument. In addition, the "and" connective indicates that there are two separate premises, "it's sunny" and "I'm on holiday". In situations like this, each premise must be segmented as an individual locution and connected with the conclusion via a separate *Adding* transition. Figure 5 shows this example.

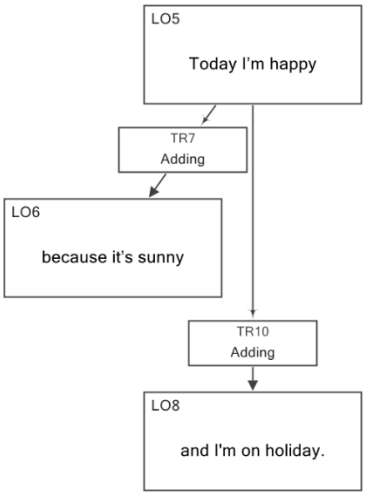

Figure 5. As in the previous example, the "because" connective has been used to split the sentence into premises and conclusion locutions. However, in this case there are two separate premise locutions; LO6 and LO8, connected to the conclusion locution LO5 via *Adding* transitions.

Note that premise locutions are connected each to the conclusion locution forming a tree rather than in sequence. The reason for this is the fact that the "and" connective works to indicate that both of its clauses follow from the previous. In other words, saying that "Today I'm happy because it's sunny and I'm on holiday" is equivalent to saying "Today I'm happy because it's sunny" plus "Today I'm happy because I'm on holiday".

There is an exception to the previous case. Consider a situation in which the premises make up an argument of themselves, such as the following:

> Philosopher: Socrates is mortal because he is a man and all men are mortal.

Here, the two premises "he is a man" and "all men are mortal" work together towards the conclusion "Socrates is mortal", rather than independently as in the previous example. In other words, Alice from the previous example may be equally happy if only one of the premises held (either today being sunny or her being on holiday); however, in this new example, both premises must be true for Socrates to be mortal. In cases like this, the sentence is split into multiple

locutions as well, but a single *Adding* transition with multiple final locutions is used instead. Figure 6 shows this example:

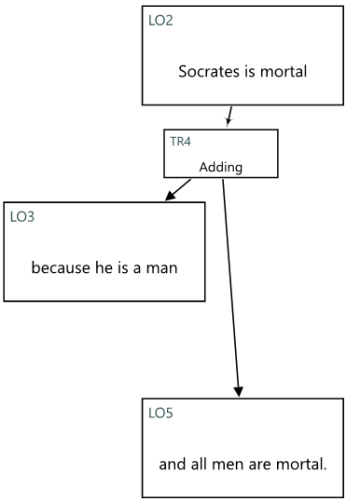

Figure 6. As in the previous example, the "because" connective has been used to split the sentence into premises and conclusion locutions. In this case, however, a single *Adding* transition is used because all the premises work together towards the conclusion.

Note that these structures work when the conclusion is provided first, followed by the premises. But, sometimes, the conclusion may be provided last, preceded by the premises, as in the following example:

> Philosopher: Socrates is a man, and all men ae mortal. Therefore, Socrates is mortal.

In this case, a sequence of *Adding* transitions is employed, as shown in Figure 7:

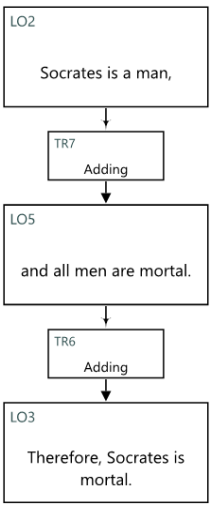

Figure 7. In this case, the conclusion is provided first, and conclusions after, so a sequence of *Adding* transitions is used to connect locutions together.

Argumentative Structures
Situation
An argumentative structure appears in the text.
Solution
Split the structure in separate locutions, one for each premise and one for the conclusion. Search for “and” or similar connectives to detect multiple premises. If premises are given first and the conclusion last, use a sequence of *Adding* transitions to connect locutions. If the conclusion is given first, and premises last, and each premise works independently towards the conclusion, connect each premise locution to the conclusion locution via a separate *Adding* transition. If, to the contrary, all premises work together towards the conclusion, connect all the premise locutions to the conclusion locution via a single *Adding* transition with multiple final locutions.

Appositions

An apposition is a clause, usually between commas or parentheses, that provides extra details about a noun phrase in a locution. Consider the following example:

> Alice: My sister, who lives in Canada, will arrive on Tuesday.
>
> Bob: She doesn't really live in Canada, does she?

Here, “who lives in Canada” in the first sentence is an apposition.

An apposition should be segmented as a separate locution if it provides relevant information that plays an argumentative role in the discourse. In the example above, if a speaker argues about my sister living in Canada regardless of when she will arrive, then the apposition “who lives in Canada” should be segmented as a separate locution.

If an apposition is segmented as a separate locution, it should be connected to the main locution via an *Embedding* transition. Very often, *Embedding* transitions constitute secondary branches in the locution sequence. Figure 8 shows this example.

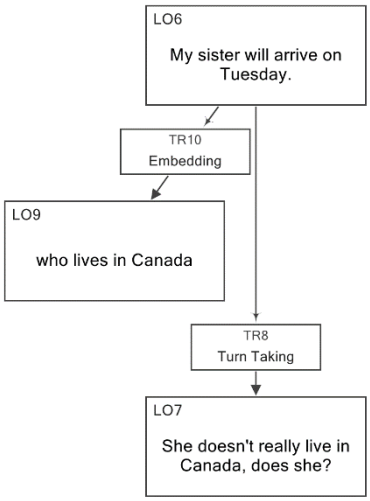

Figure 8. The “who lives in Canada” apposition has been segmented as a separate locution LO9, and connected to the main one LO6 via an *Embedding* transition.

Note that the apposition in LO9 is not maintained as part of LO6. Since the speaker is the same for both locutions, maintaining it is not advised.

Appositions
Situation
An apposition appears within a sentence.
Solution
If the apposition contains details that are argumentatively relevant, then segment it as a separate locution, and remove it from the main one. Connect the new locution to the main one via an *Embedding* transition. If the apposition does not contain argumentatively relevant details, leave it as part of the main locution.

Reported Speech

Reported speech occurs when a speaker reports what somebody else has said. Reported speech takes many forms. Consider the following example:

> Journalist: Yesterday, the president said that we should make unemployment our top priority, and that “we will not stop until it’s under 7%”. He was very firm about this.

In this example, a journalist is reporting what the president said. The clause “we should make unemployment our top priority” is *indirect* reported speech, as the journalist is not quoting the president verbatim, but expressing what he said in her own words. However, “we will not stop until it’s under 7%” is *direct* reported speech, as the journalist is indeed quoting the president.

In addition, a speaker may report a whole sentence (which includes a conjugated verb), or just a phrase or word. Consider the following example:

> Journalist: Yesterday, the president said that we should make unemployment “our top priority”, and that “we will not stop until it’s under 7%”.

Here, the journalist is reporting the full sentence “we will not stop until it’s under 7%” but also the phrase “our top priority”, which does not constitute a complete sentence. Note that we know this because the journalist is doing direct reported speech, that is, she is marking the reported words by using quotation marks. For indirect reported speech, as there are no quotation marks, it doesn’t make sense to distinguish between full-sentence or phrase reporting.

Segmentation for reported speech depends on whether it is direct or indirect, and whether a full sentence or a phrase is being reported, according to the following criteria.

Direct reported speech of a phrase, or **indirect reported speech**, is not segmented into a separate locution. Consider the following example:

> Journalist: The president said that burning the flag "is a form of free speech". He was very firm about this.

Figure 9 shows the corresponding segmentation.

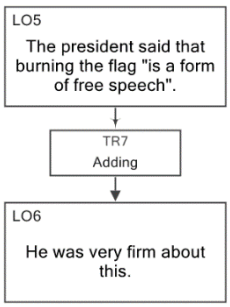

Figure 9. Direct reported speech of a phrase (or indirect reported speech) is not segmented but kept as part of the reporting locution (LO5 in the figure).

Direct reported speech of one or more whole sentences, on the contrary, should always be segmented as one or more separate locutions, which should be assigned to the right speaker, and the first one connected to the locution doing the reporting via a *Reporting* transition. A *Reporting* transition often constitutes a secondary branch in the locution sequence. Consider the following example:

> Journalist: The president said that “burning the flag is a form of free speech". He was very firm about this.

Figure 10 shows an example.

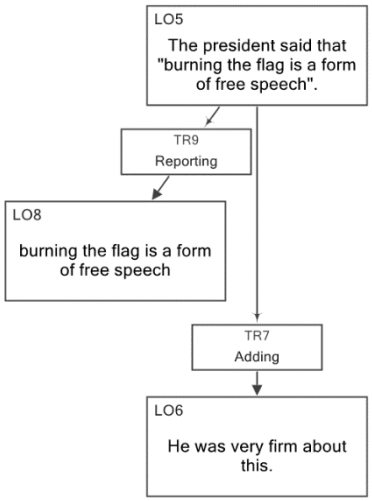

Figure 10. Direct reported speech of a whole sentence is segmented as a separate locution and connected to the locution doing the reporting via a *Reporting* transition.

Note that the reported speech text (LO8 in the previous figure) is also maintained as part of the locution doing the reporting (LO5), as it is part of what the reporting speaker is saying and may be used argumentally.

The reported text may contain multiple complete sentences. Consider this example:

> Journalist: The president said "Burning the flag is a form of free speech. It should not be punished". He was very firm about this.

Here, two locutions are necessary to represent the speech being reported. They are connected by using *Adding* transitions, as usual. Figure 11 shows this.

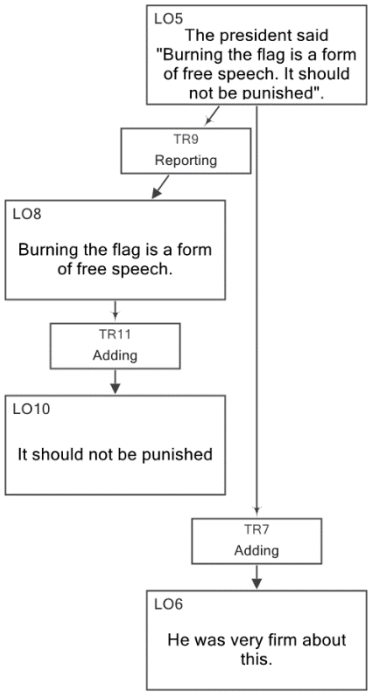

Figure 11. Two or more reported locutions can be connected via *Adding* transitions if the reported speech contains multiple complete sentences.

Reported Speech

Situation

A speaker reports what another speaker has said.

Solution

If the speaker is doing a direct reported speech of a phrase, or an indirect reported speech, do not segment it, and treat it as a single locution.

If the speaker is doing a direct reported speech of one or more complete sentences, then segment the reported speech as one or more separate locutions, also maintaining the reported text as part of the main locution. Connect the locution doing the reporting to the first reported locution via a *Reporting* transition. Assign the reported locutions to the right speaker.

Proposition Reconstruction

This section provides guidelines related to the reconstruction of propositions and the associated illocutionary forces.

Basic Reconstruction

"Reconstructing" a proposition means creating a sentence that works well as a proposition for the associated locution. To reconstruct a proposition, consider the following elements:

- The anchor locution.
- The locutions immediately before and after the anchor locution, as a means to provide context.
- The intention of the speaker when uttering the anchor locution. What are they trying to accomplish?

A well reconstructed proposition must satisfy the following criteria:

- It has a canonical sentence structure, including a subject, a verb and optionally some complements. It starts with a capital letter and ends with a full stop.
- It is self-contained, that is, it is understandable by itself, without the need to read additional context.
- Does not contain unresolved phoric or deictic words. This means that pronouns, demonstratives or similar particles that refers to external elements must be replaced with their referred to phrase. However, some conventional deictic or phoric references must not be resolved, such as generic first-person plural pronouns that refer to everybody (such as "the pandemic surprised us") "it" in reference to the weather (such as in "it is sunny"), or many temporal markers such as "today". In addition, deictic expressions referring to unknown targets cannot be resolved.

In addition, most propositions are anchored onto a locution via an illocutionary force. The type of illocutionary force depends on the intention of the speaker when uttering the locution.

Consider the following example locutions:

LO5: Alice: Today I'm happy
LO6: Alice: it's sunny
LO8: Alice: I'm on holiday.

Here, LO5 should be reconstructed as "Alice is happy today". The pronoun "I" has been resolved to "Alice", and "Today" has been moved to the end of the sentence so that the subject "Alice" is at the beginning, and the complements after the verb.

LO6 also includes a pronoun, "it". However, it refers to the weather, and the expression "it's sunny" is well understood in English without the need to clarify. For this reason, LO6 can be reconstructed as "It is sunny today". Note that "today" has been added from the previous locution for the sake of completeness.

Finally, LO8 can be reconstructed as "Alice is on holiday today". Again, the "I" pronoun has been resolved, and "today" has been added for completeness.

For all three locutions, the intention of the speaker is to make a literal assertion, so that *Asserting (Literal)* illocutionary forces are used. Figure 12 shows this example.

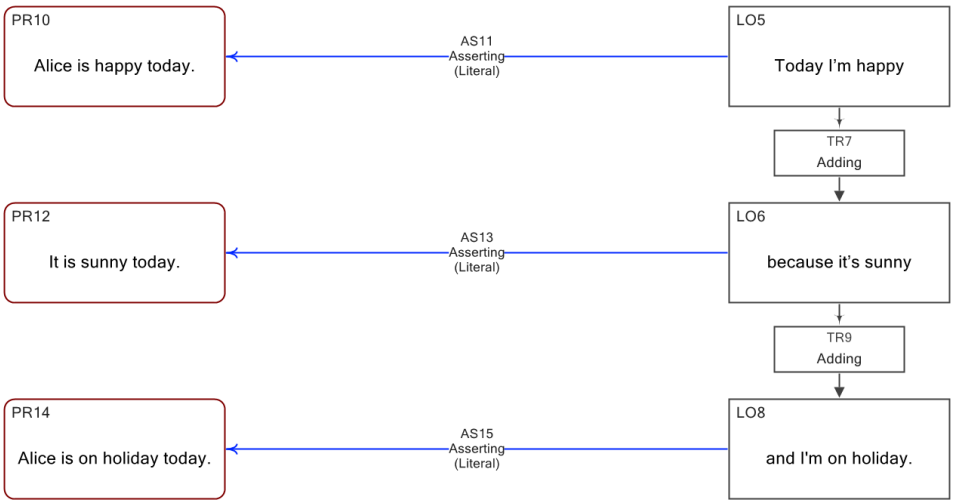

Figure 12. Each locution in the example is reconstructed as a canonical, self-contained and resolved proposition. *Asserting (Literal)* illocutionary forces are used throughout.

Consider another example, as follows:

> LO5: Alice: We worked all night in the project.
>
> LO6: Alice: However, that wasn't enough to finish it.

Here, LO5 can be reconstructed by resolving the pronoun "We" to produce "Alice and her team worked all night in the project". LO6, however, contains the anaphoric "that", which presumably refers to having worked all night. This must be reconstructed by resolving "that" accordingly to produce "Working all night in the project was not enough to finish it". Note that it is acceptable to leave "it" at the end of the proposition because it obviously refers to "the project" within the same sentence. Figure 13 shows this example.

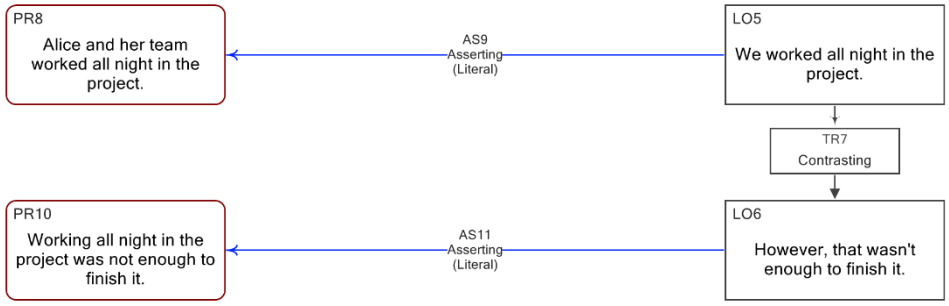

Figure 13. The "that" demonstrative in LO6 is resolved to its complete meaning in PR10.

Basic Reconstruction
Situation
A proposition must be reconstructed from a locution.
Solution
Add a proposition that is canonical and self-contained, and does not include unresolved phoric or deictic elements. Use the anchor locution's content, as well as any necessary context, to produce the proposition's content. Connect the proposition to the anchor locution via an illocutionary force corresponding to the speaker's intention.

Agreement Expressions

An agreement expression is a sentence produced in order to show agreement. Consider the following example:

> LO6: Alice: The Beatles are the best band ever.
>
> LO7: Bob: Yes, absolutely.

Here, Bob is showing his agreement to what Alice said. Agreement expressions are reconstructed by repeating the statement the speaker is agreeing with. The illocutionary force should be *Asserting (Literal)*. Figure 14 shows this example.

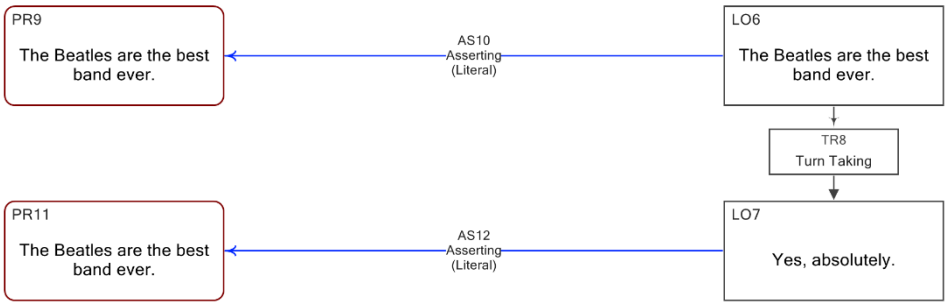

Figure 14. The agreement expression in the example is reconstructed by repeating the statement the speaker is agreeing with.

Agreement Expressions
Situation
A proposition must be reconstructed from an expression or agreement.
Solution
Add a proposition that repeats the statement the speaker is agreeing with. Use an *Asserting (Literal)* illocutionary force.

Counterfactual Constructions

A counterfactual construction is a sequence of two locutions connected by an *Adding* transition where the first locution is a false condition and the second is a false consequence of the previous. Consider the following example:

> LO5: Alice: If I had left home earlier,
>
> LO6: Alice: I wouldn't have missed the flight.

Here, Alice is saying that she missed the flight, and that she would not have missed it had she left home earlier. Counterfactual constructions are reconstructed by negating the contents of both locutions and removing the expression of potentiality, so that the resulting propositions

can be understood as facts. The illocutionary forces should be *Asserting (Figurative)*. Figure 15 shows this example.

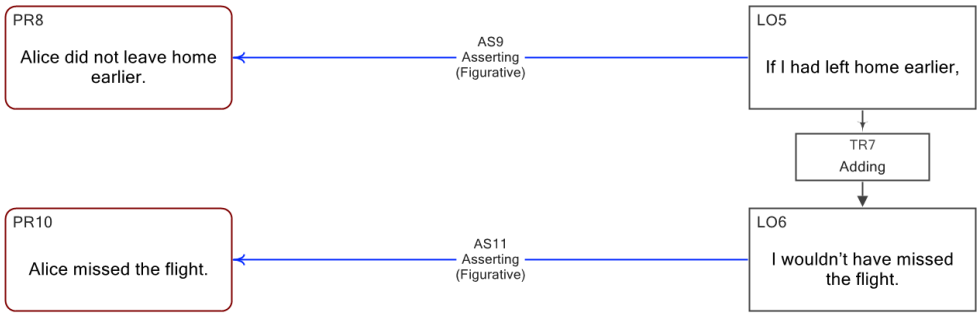

Figure 15. The counterfactual construction is reconstructed by negating the locution contents and removing the expression of potentiality.

Counterfactual Constructions
Situation
Propositions must be reconstructed from a pair of counterfactual locutions.
Solution
Add propositions that negate the locution contents are remove the expression of potentiality. Use *Asserting (Figurative)* illocutionary forces.

Reported Speech Locutions

Locutions obtained from reported speech are, in general, reconstructed as any other. However, some situations may need special consideration, depending on whether the speaker is adding their own ideas to what is being reported. Consider the following example:

> LO5: Journalist: I was shocked when the president said that “burning the flag is a form of free speech”.
>
> LO8: President: burning the flag is a form of free speech
>
> LO6: Journalist: He was very firm about this.

In LO5, the journalist is not merely reporting what the president said, but positioning herself when she says “I was shocked…”, thus adding her own ideas to the reported speech. Since the speaker is adding their own ideas to the reported text, a proposition is needed for this, as shown in Figure 16:

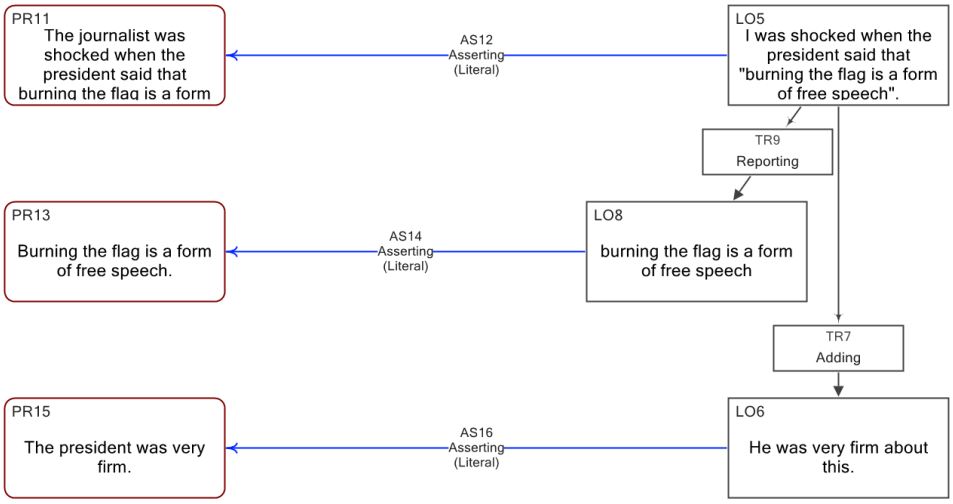

Figure 16. A proposition (PR11) is used to reconstruct a reporting locution (LO5) when the speaker adds their own ideas.

Note that the quotation (or equivalent) marks are removed in the reconstructed proposition, to indicate that the speaker is taking the reported words and making them theirs. Also, note that the reported locution (LO8 in the example) is reconstructed as usual.

However, if the reporting speaker is not adding any meaningful idea to the reported text, but simply reporting it, no proposition is needed for the reporting locution. Consider the following example:

> LO5: Journalist: The president said that “burning the flag is a form of free speech”.
>
> LO8: President: burning the flag is a form of free speech
>
> LO6: Journalist: He was very firm about this.

Now, the journalist is simply reporting what the president said in LO5, with no added ideas to the reported speech. Most situations of this kind do not need a proposition for LO5, as it would be redundant with the proposition for the reported locution. This is shown in Figure 17:

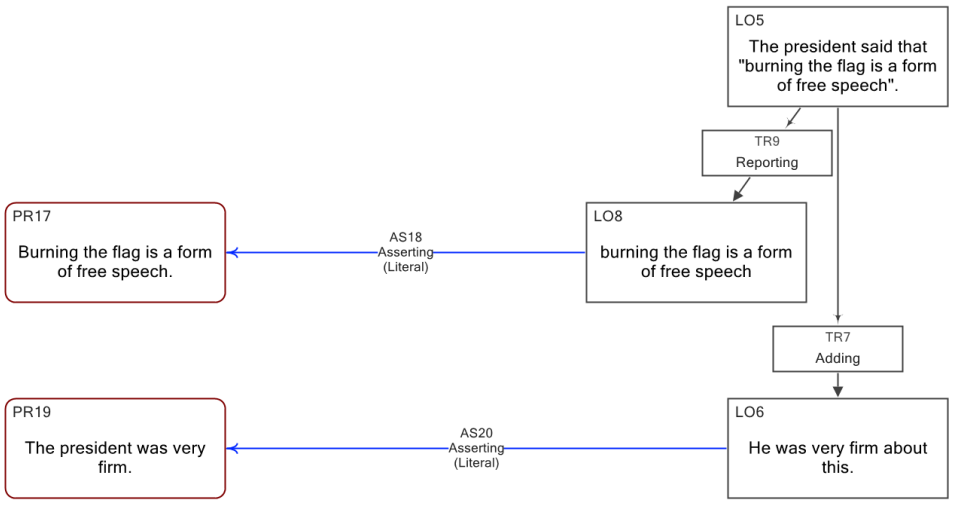

Figure 17. No proposition is used for a reporting locution (LO5) if the speaker does not add their own ideas.

An exception to this case would be if further propositions in the text challenge or otherwise interact argumentatively with the reporting locution (LO5). For example, if a further proposition challenged the claim that the president indeed said that “burning the flag is a form of free

speech", then a proposition for LO5 would be necessary. In cases like this, reconstruct the reporting locution as usual.

Reported Speech Locutions
Situation
Propositions must be reconstructed from a reported speech structure.
Solution
If the locution doing the reporting adds significant ideas in addition to that being reported, reconstruct it as usual, removing any quote marks. If the locution doing the reporting does not add significant ideas to that being reported, and no other propositions are argumentally related to it, reconstruct the reported locution but leave the locution doing the reporting without a proposition.

Questions

Questions are usually indicated by a question mark, as in "What is your name?". However, questions may also occur with no question mark, as in "I wonder what your name is".

Depending on their aim, there are three kinds of questions:

- **Rhetorical** questions are those that do not seek an answer, and are asked to emphasise a point or highlight a problem. An example is "Where is the police when you most need them?" asked as part of a crime report.
- **Assertive** questions are those that do seek an answer, but provide a possible or expected one as part of the question itself. An example is "You are coming to the party, aren't you?".
- **Pure** questions are those that genuinely seek an answer and provide no predefined options for it. An example is "What is your name?".

In addition, there are different kinds of questions depending on the answering expectations:

- **Polar** questions are those that seek a yes/no answer. An example is "Did you receive my email last night?".
- **Enumerated** questions are those that seek an answer taken from a list of provided choices. An example is "Would you prefer soup, lentils or salad?".
- **Open-ended** questions are those that seek an open answer, not predetermined by the question itself. An example is "What is your name?".
- **Why** questions are those that challenge a statement and seek a reason to justify it. An example is "Why did you buy the car?". Why questions have two subtypes, in turn:
    - Challenging a **previous** statement, pertaining to a previous proposition. For example, imagine that Alice has stated that she has bought a car. Now, Bob asks "Why?" in relation to that statement.
    - Challenging the **current** statement, which is introduced by the question itself. For example, imagine that Alice has said nothing about the car, and Bob asks "Why did you buy the car?".

Most combinations of aims and answering expectations are possible. Table 1 shows how each combination is treated and reconstructed.

	Rhetorical	Assertive	Pure
Polar	Rhetorical	Assertive	Polar Pure
Enumerated			Enumerated Pure
Open-ended		n/a	Open-Ended Pure

	Rhetorical	Assertive	Pure
Why		n/a	Why Pure

Table 1. Question aims in columns, and answering expectations in rows. Cells show possible combinations.

Questions are reconstructed in different manners depending on their kind.

Questions
Situation
A proposition must be reconstructed from a question.
Solution
Determine whether the question aim is rhetorical, assertive or pure. Determine whether the question answering expectation is polar, enumerated, open-ended or why. Reconstruct the proposition accordingly as described over the next sections.

Rhetorical Questions

Rhetorical questions can be of the polar, enumerated, open-ended or why kinds (see *Questions*, page 21). They do not seek an answer, but are asked to emphasise a point or highlight a problem. An example is “Where is the police when you most need them?” asked as part of a crime report. Here, the speaker is not really asking where the police is, but stating that they are not available when you need them.

A rhetorical question is reconstructed as a statement, since it states rather than ask. The example above can be reconstructed as “The police is absent when you most need it”. An *Asserting (Questioning)* illocutionary force is used.

Rhetorical Questions
Situation
A proposition must be reconstructed from a rhetorical question.
Solution
Add a proposition that recasts the question as a statement. Use an *Asserting (Questioning)* illocutionary force.

Assertive Questions

Assertive questions are those that do seek an answer, but provide a possible or expected one as part of the question itself. Since a possible answer is provided with the question, only polar and enumerated questions can be assertive (see *Questions*, page 21). An example is “You are coming to the party, aren’t you?”. Here, the speaker is asking whether you will come to the party, but is providing an expected response (yes, you will) as part of the question itself.

An assertive question is reconstructed as a statement, since it mostly states rather than openly ask. The statement usually reflects the answer that is included in the question itself. The example above can be reconstructed as “Alice is coming to the party”. A *Questioning (Assertive)* illocutionary force is used.

Assertive Questions
Situation
A proposition must be reconstructed from an assertive question.
Solution
Add a proposition that recasts the question as a statement of the included answer. Use a *Questioning (Assertive)* illocutionary force.

Polar Pure Questions

Polar pure questions are those that seek a yes/no answer (see *Questions*, page 21). An example is “Did you receive my email last night?”. Here, the only possible answers are yes or no.

A polar pure question is reconstructed as a disjunction statement containing both the yes and no options. The previous example can be reconstructed as “Alice received or did not receive Bob’s email last night”. A *Questioning (Pure)* illocutionary force is used.

Polar Pure Questions
Situation
A proposition must be reconstructed from a polar pure question.
Solution
Add a proposition containing a disjunction statement of the two yes/no options separated by “or”. Use a *Questioning (Pure)* illocutionary force.

Enumerated Pure Questions

Enumerated pure questions are those that seek an answer taken from a list of provided choices (see *Questions*, page 21). An example is “Would you prefer soup, lentils or salad?”. Here, the possible answers are those given by the question itself: soup, lentils or salad.

An enumerated pure question is reconstructed as a disjunction statement containing each of the options provided. The previous example can be reconstructed as “Alice would prefer soup or lentils or salad”. A *Questioning (Pure)* illocutionary force is used.

Enumerated Pure Questions
Situation
A proposition must be reconstructed from an enumerated pure question.
Solution
Add a proposition containing a disjunction statement of the provided options separated by “or” connectives. Use a *Questioning (Pure)* illocutionary force.

Open-Ended Pure Questions

Open-ended pure questions are those that seek an open answer, not included in the question itself (see *Questions*, page 21). An example is “What is your address?”. Here, the possible answers are not included in the question at all.

An open-ended pure question is reconstructed as a statement containing a free variable that stands for the missing information being sought by the question. The previous example can be reconstructed as “Bob’s address is X”, where X is the free variable. A *Questioning (Pure)* illocutionary force is used.

Open-Ended Pure Questions
Situation
A proposition must be reconstructed from an open-ended pure question.
Solution
Add a proposition containing a statement with a free variable for the missing information. Use a *Questioning (Pure)* illocutionary force.

Why Pure Questions for Previous Statements

A why pure question challenges a previous statement when it is formulated as a simple "Why?", "How so?" or similar question in relation to a previous proposition (see *Questions*, page 21). Consider the following example:

> LO6: Alice: Yesterday I got myself a new car.
>
> LO7: Bob: Why?

Here, Bob's question is challenging the statement made by Alice about having bought a new car. In other words, Bob is seeking a proposition that would justify why Alice bought a new car. Why pure questions that challenge previous statements are reconstructed as propositions containing a single free variable that stands for the proposition that supposedly would work as a premise to support the previous statement. The illocutionary force must be *Challenging*. Figure 18 shows this example.

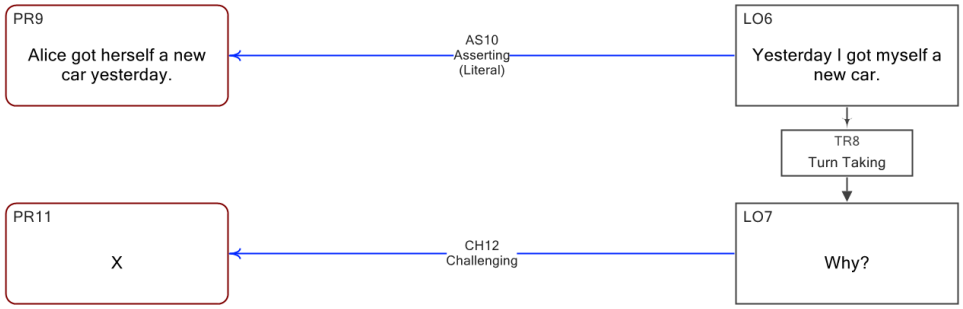

Figure 18. The why pure question in the example challenges a previous statement, so it is reconstructed as a proposition having a single free variable.

Why Pure Questions for Previous Statements
Situation
A proposition must be reconstructed from a why pure question that challenges a previous statement.
Solution
Add a proposition containing a single free variable for the missing proposition. Use a *Challenging* illocutionary force.

Why Pure Questions for Current Statement

A why pure question challenges the current statement when it is formulated as a "Why X?" or "How come X?" question, where X stands for a statement (see *Questions*, page 21). Consider the following example:

> LO5: Bob: Why did you buy a new car?

Here, Bob's question is challenging the statement that someone (presumably another speaker) has bought a new car. In other words, Bob is seeking a proposition that would justify why the other speaker bought a new car. The statement that they bought a new car is contained in the question itself. Why pure questions that challenge the current statement are reconstructed as a pair of propositions:

- The first proposition establishes the statement being made, and is reconstructed from the question by turning it into an assertion. The illocutionary force must be *Asserting (Questioning)*.
- The second proposition is the actual challenge, and contains a single free variable that stands for the proposition that supposedly would work as a premise to support the first one. The illocutionary force must be *Challenging*.

Figure 19 shows this example.

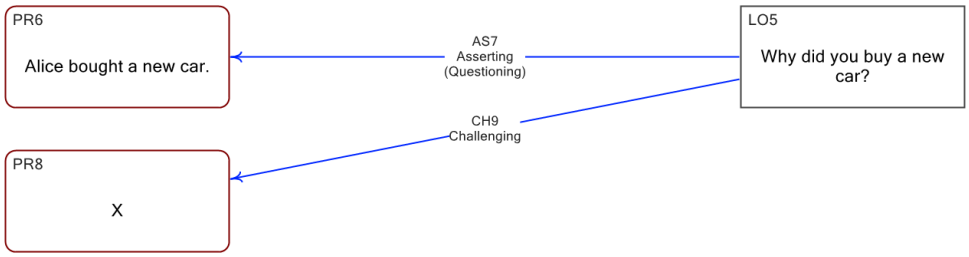

Figure 19. The why pure question in the example challenges the current statement, so it is reconstructed as a pair of propositions, one for the current statement and one for the challenge itself.

Why Pure Questions for Current Statement
Situation
A proposition must be reconstructed from a why pure question that challenges the current statement.
Solution
Add a proposition by turning the question into an assertion, in order to establish the statement. Use an *Asserting (Questioning)* illocutionary force. Then, add a second proposition containing a single free variable for the missing proposition. Use a *Challenging* illocutionary force.

Loaded Questions

A loaded question is a particular kind of pure question that contains a related statement. Consider the following example:

> LO5: Lawyer: When did you start beating your wife?

This looks like an open-ended pure question, as the speaker is seeking information (a date or moment in the past, presumably) that is not suggested by the question. However, the question is assuming that the defendant beats his wife or used to do it. In other words, any straightforward answer to the question by the defendant, such as "In 2015" or "Last week", would admit that he has in fact beaten his wife at some point, which may not be the case.

On the one hand, loaded questions are questions and, in this regard, they must be reconstructed by following the advice given in previous sections. But, on the other hand, they are statements, so they must also be reconstructed as such. In this manner, two propositions are necessary for each locution that conveys a loaded question:

- The first proposition captures the statement being made, and is reconstructed from the "load" of the question. The illocutionary force must be *Asserting (Questioning)*.

- The second proposition captures the actual question, and must be reconstructed as any regular question by following the advice in previous sections.

Figure 20 shows this example.

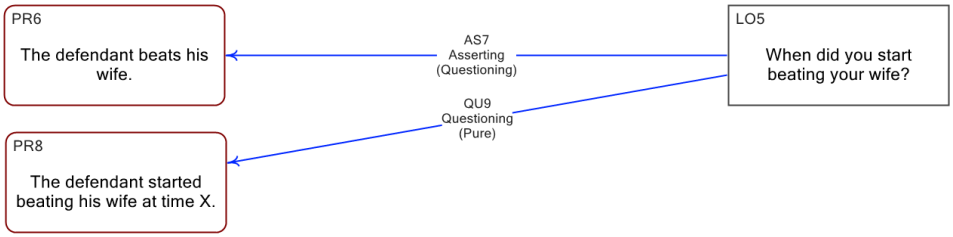

Figure 20. The question in the example is loaded, so it is reconstructed as a pair of propositions, one for the "load" and one for the question itself.

Loaded Questions
Situation
A proposition must be reconstructed from a loaded question.
Solution
Add a proposition from the "load" of the question. Use an *Asserting (Questioning)* illocutionary force. Then, add a second proposition to capture the question itself, following the advice that matches the type of question.

Irony

Irony consists of expressing something by negating it to the extreme of being humorous or shocking. Consider the following example:

> LO6: Alice: It took me six hours to walk the last kilometre.
>
> LO7: Bob: Wow, you're the fastest in the world!

Here, Bob is reacting to Alice's statement with irony. By saying "you're the fastest in the world" in LO7, he really means that Alice was very slow.

When a locution uses irony, it is reconstructed into a proposition by negating it, so that irony is removed, and the resulting proposition can be understood literally. The illocutionary force must be *Asserting (Figurative)*, and its *IsIronic* property must be established. Figure 21 shows this example.

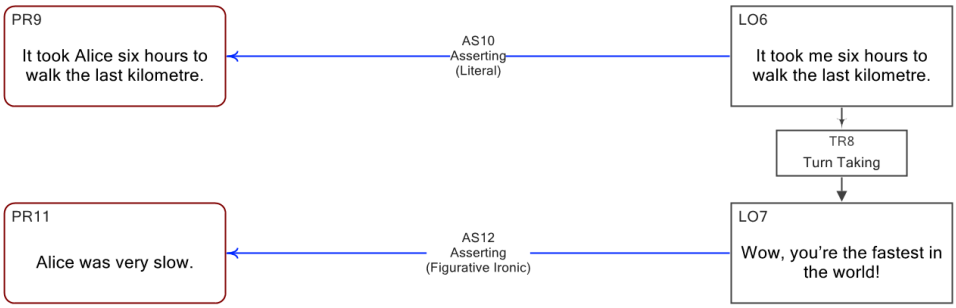

Figure 21. Irony in LO7 is removed by negation, so that the resulting proposition PR11 can be understood literally.

Irony
Situation
A proposition must be reconstructed from an ironic locution.
Solution
Add a proposition that negates the anchor locution's content, so that it can be interpreted literally. Use an *Asserting (Figurative)* illocutionary force and set its *IsIronic* property.

Metaphor

Metaphor consists of expressing something by using different concepts that, however, have something in common with what is being expressed. Consider the following example:

> LO6: Alice: I am going to invest all my savings on Company X.
>
> LO7: Bob: You shouldn't put all your eggs in one basket.

Here, Bob is saying that Alice should not invest all her savings in a single company by using a metaphor. By saying "You shouldn't put all your eggs in one basket" in LO7, he really means that Alice should not invest everything in a single company.

When a locution uses a metaphor in this manner, it is reconstructed into a proposition by recasting its contents in the domain of the literal, so that the metaphor is removed, and the resulting proposition can be understood literally. The illocutionary force must be *Asserting (Figurative)*, and its *IsMetaphorical* property must be set. Figure 22 shows this example.

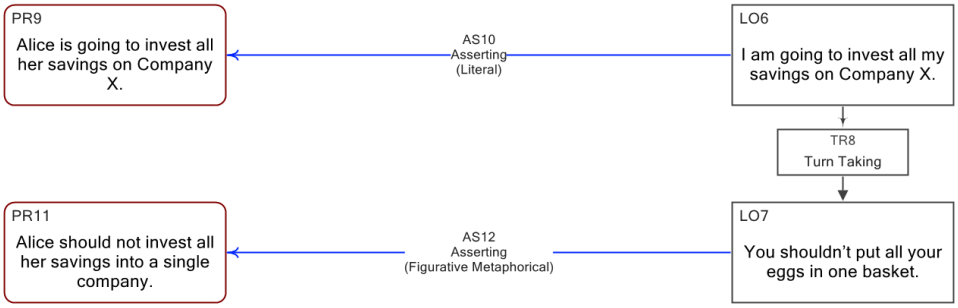

Figure 22. The metaphor in LO7 is removed by recasting it in its literal sense, so that the resulting proposition PR11 can be understood literally.

In the previous example, metaphor plays a central role in the locution, that is, the whole locution is metaphorical, and the statement being made by it is metaphorical. However, sometimes metaphor may play a minor or less central role in a locution. Consider the following example:

> LO8: Alice: The idea of investing all my savings in a single company makes my hair stand on end.

Here, Alice is using the metaphor "makes my hair stand on end" to convey the idea of terror. However, the locution is mostly about investing all of someone's savings in a single company, and this part is not metaphorical at all, but quite literal. For this reason, it should be reconstructed as before, by resolving the metaphor (i.e. as "Alice is terrified of the idea of investing all her savings in a single company.") but using an *Asserting (Literal)* illocutionary force instead of *Asserting (Metaphorical)*, and setting the *IsMetaphorical* property. In other words, and as opposed to the previous example, the illocutionary force is considered to be literal rather than figurative, because most of the propositional content is conveyed literally.

Metaphor
Situation
A proposition must be reconstructed from a metaphoric locution.
Solution
Add a proposition that recasts the anchor locution's content in the domain of the literal, so that it can be interpreted literally. Use an *Asserting (Figurative)* illocutionary force if the metaphor covers the whole locution, or *Asserting (Literal)* if not. Set the *IsMetaphorical* property.

Proposition Characterisation

This section provides guidelines related to the characterisation of propositions.

Statement Type

The statement type of a proposition describes what values it involves. Possible statement types are *Fact* or *Value*.

In order to determine a proposition's statement type, we need to determine first the group where the proposition takes place. This group is usually composed by the speaker plus the intended audience.

Statement Type
Situation
A proposition is to be characterised in terms of its statement type.
Solution
Determine the group where the proposition takes place. Then, determine whether the proposition involves values that are not shared by all the group members. Establish the statement type depending on this.

Factual Aspect

The factual aspect of a proposition describes the kind of fact that it describes. Some possible factual aspects are *Existence*, *Attribution*, *Activity* or *Achievement*. Please see the *IAT/ML Technical Specification* document for a complete list.

To determine the factual aspect of a proposition, we need to determine whether it describes a state or a change, and what kind of state or change it is.

Factual Aspect
Situation
A proposition is to be characterised in terms of its factual aspect.
Solution
Determine whether the proposition describes a state or a change. Then, drill down in the hierarchy of options to establish the specific factual aspect of the proposition.

The factual aspect of a proposition points to its *propositional centre*, that is, the ontological entity that the proposition is mainly about, according to Table 2.

Factual aspect	Propositional centre
Static	
Existence	The entity whose existence is being stated. For example, in "There is a car", the propositional centre is the car.
Identity	The entity whose identity is being described. For example, in "That woman is my sister", the propositional centre is the woman (who is my sister).
Predication	The feature or facet that is being predicated on the entity.
Attribution	The attribute or value that is being attributed to the entity. For example, in "My car is red", the propositional centre is my car's red colour.

Factual aspect	Propositional centre
Relation	The association or reference that is being associated to the entity. For example, in "I own this house", the propositional centre is the owning reference from myself towards this house.
Classification	The entity that is being assigned to a category, or the category for which instances are being described, depending on the focus. For example, in "This is an oak tree", the propositional centre is the oak tree I am pointing at. However, in "There are many oak trees, like this one here", the propositional centre is the *Oak Tree* category.
Subsumption	The category that subsumes another, or the category that is subsumed by another, depending on focus. For example, in "Apples are fruits", the propositional centre is the *Apple* category. However, in "Fruits can be classified into apples, pears, etc", the propositional centre is the *Fruit* category.
Dynamic	
Activity (atelic)	The process being described. For example, in "Unemployment is making the country poorer", the propositional centre is the phenomenon of the country becoming poorer.
Telic	
Accomplishment	The state describing the result of the action being described, or the action itself, depending on focus. For example, in "She painted the whole house", the propositional centre is the attribution of being painted that is made on the house. However, in "She is painting the whole house", the propositional centre is the ongoing process of her painting the house.
Achievement	The state describing the result of the action being described. For example, in "Bob Kersh died in 1952", the propositional centre is the attribution of being dead that is made on Bob Kersh.

Table 2. Propositional centre of each factual aspect.

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). Some possible ontological aspects are *Logically Impossible*, *Physically Contingent* or *Socially Necessary*. Please see the *IAT/ML Technical Specification* document for a complete list.

In order to determine the ontological aspect of a proposition, you must evaluate first the propositional centre as defined by its factual aspect (see *Factual Aspect*, page 29), while considering everything else in the proposition as stable and accepted. For example, "The Amazon River goes across Brazil" has a *Relation* factual aspect, so the propositional centre is the main verb "goes across". Thus, it is this relation that must be evaluated to determine the proposition's ontological aspect, taking "The Amazon River" (a physical entity) and "Brazil" (a social entity) as stable and accepted. Since "goes across" refers to a physical relation, the proposition belongs to the physical domain. Now, a world where the Amazon River goes across a country other than Brazil is conceivable, so this is a *Physically Contingent* proposition.

Note that impossible propositions are always false, necessary propositions are always true, and contingent propositions may be true or false.

Ontological Aspect
Situation
A proposition is to be characterised in terms of its ontological aspect.
Solution
Determine the domain of the proposition as either logical, physical or social. Then, determine whether the proposition describes something that is impossible, necessary or contingent, and find the resulting option in the hierarchy.

Modality

The modality of a proposition describes the kind of content that it conveys. Some possible modalities are *Indicative*, *Noetic*, *Conditional* or *Suggestive*. Please see the *IAT/ML Technical Specification* document for a complete list.

Modality
Situation
A proposition is to be characterised in terms of its modality.
Solution
Determine the kind of content that is conveyed by the proposition, and find the right option in the hierarchy.

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. Possible tenses are *Past*, *Present*, *Future* or *Atemporal*.

Propositions expressing laws, rules or patterns often use the grammatical present tense to convey an *Atemporal* meaning, such as “Babies are born after nine months”. Also, the present tense may be used to indicate events in the past (as in “Germany invades Poland in 1939”) or in the future (as in “Tomorrow we go to the movies”).

Proposition with a *Deontic* modality (see *Modality*, page 31) may have a *Present* tense if they refer to something that is already occurring, such as “People should go to the movies more often”, or *Future* if they refer to an action or event that has not occurred yet, such as “They should build a new theatre in my neighbourhood”.

Tense
Situation
A proposition is to be characterised in terms of its tense.
Solution
Find the main verb in the proposition and determine its grammatical tense. Consider if this must be taken as is, or whether it is being used with a different temporal meaning to decide on the proposition’s tense.

Truth Value

The truth value of a proposition indicates whether it is true, false or indeterminate.

Note that *Indeterminate* does not refer to whether or not we know the proposition's truth value. Rather, it refers to propositions for which no truth value can be established, as they are not truth-bearing due to their modality or tense. This includes, for example, propositions about the future.

Truth Value
Situation
A proposition is to be characterised in terms of its truth value.
Solution
Evaluate the proposition's content and modality, and decide on its truth value.

Argumentation Relationships

This section provides guidelines related to the modelling of inferences, conflicts and rephrases.

Basic Arguments

A basic argument occurs when a speaker produces a proposition in order to *support* another proposition. By supporting we mean providing a justification or a reason. The proposition being supported is called the conclusion, and the proposition being used to support it is called the premise. Consider the following example:

> Alice: Today I'm happy because it's sunny.

Here, Alice is arguing that she is happy because it's sunny. She is saying that it's sunny as a way to support the fact that she's happy. In other words, there is an inference between the premise corresponding to "it's sunny" and the conclusion corresponding to "I'm happy".

Arguments are often marked in the discourse by connectives such as "because", "therefore" or "since". When you observe connectives like these in the text, it is likely that you will need to add an inference to connect the associated propositions. Inferences are always anchored onto the transition corresponding to the argumentative connective via an *Arguing* illocutionary force. Figure 23 shows this example.

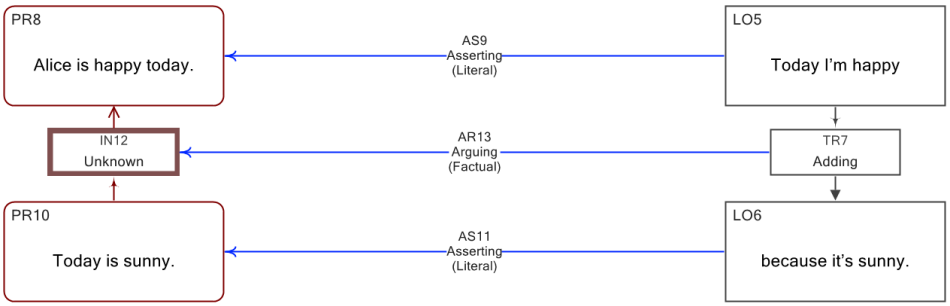

Figure 23. The "because" connective in the example marks an argument between the associated propositions. The corresponding inference is highlighted in the figure.

Bear in mind that arguments also may exist without any explicit connectives. Consider the following example:

> Alice: You shouldn't smoke. It can give you cancer.

Here, Alice is making an argument too; she is saying that you should not smoke because it can give you cancer. However, there are no explicit connectives. The argument is marked by a full stop and by the fact that "It" in the second sentence refers to smoking, thus connecting the two together. You need to use your judgment and any context that is available to determine whether the speaker is saying something to support something else and thus making an argument.

There are many subtypes of inference, depending on the content of the involved propositions and the intention of the speaker. Determining the inference type can be difficult sometimes. It is suggested that you use a decision key or a similar tool if you want to determine inference types. Please see the *IAT/ML Technical Specification* document for a list of inference subtypes.

Finally, consider that arguments can be oriented upstream or downstream. Connectives like "because" or "since", as in the first example, work upstream, as they place the conclusion first and the premise last. In the diagrams, the inference arrows point upwards, like in Figure 23.

However, connectives such as “therefore” work downstream, because they place the premise before the conclusion. Consider the following example:

> Descartes: I think, therefore I am.

In cases like this, the inference arrows in the diagrams point down. Figure 24 shows this example.

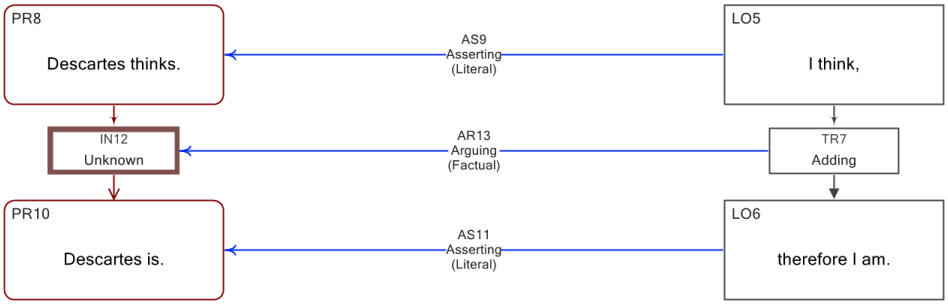

Figure 24. The “therefore” connective in the example marks a downstream argument between the associated propositions. The corresponding inference is highlighted in the figure.

Basic Arguments

Situation

A sentence contains an argumentative connective such as “because”, “therefore” or “since”.

Solution

Determine what proposition is the premise and which is the conclusion. Add an inference to connect the premise to the conclusion. Use an *Arguing (Factual)* illocutionary force to connect the inference to the transition corresponding to the argumentative connective, or to the incoming transition to the conclusion locution if there are no connectives.

If necessary, determine the subtype of inference from the content of the involved propositions and the intention of the speaker.

Serial Arguments

The conclusion of an argument may work as the premise of another argument. When argumentative chains like this occur, we call them *serial arguments*. Consider the following example:

> Politician: The burning of fossil fuels is contributing to climate change, which, in turn, will make the lives of future generations much harder.

Here, the speaker is first arguing that burning fossil fuels produces climate change, and then that climate change will make the lives of future generations much harder. These are two independent arguments, but the premise of the second is the conclusion of the first. Figure 25 shows this example.

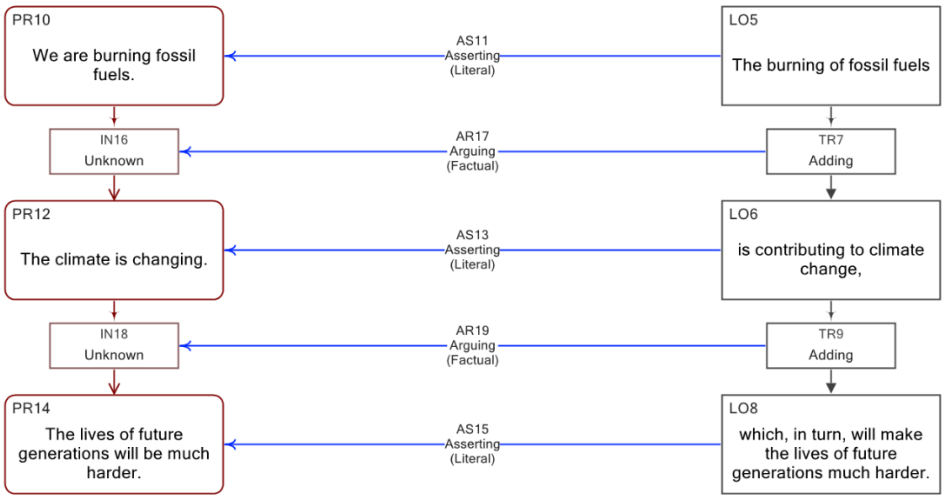

Figure 25. In the example, two sequential inferences share proposition PR12, which works as the conclusion of IN16 and premise of IN18. This is a serial argument.

Serial arguments can be longer than the example, involving many inferences in sequence.

Serial Arguments
Situation
Two or more arguments are made in sequence.
Solution
Add an inference for each argument, so that the conclusion of each inference in the chain works as premise of the next.

Arguments with Multiple Premises

Sometimes, an argument may involve multiple premises. Consider the following example:

> Alice: You shouldn't smoke. It smells terrible and can give you cancer.

Here, Alice is providing two premises for her conclusion: that smoking smells terrible and that it can give you cancer. The two premises are unrelated and work independently to support the conclusion that you should not smoke. For this reason, this is a case of *convergent arguments*, that is, two independent inferences that converge on a common conclusion. Figure 26 shows this example.

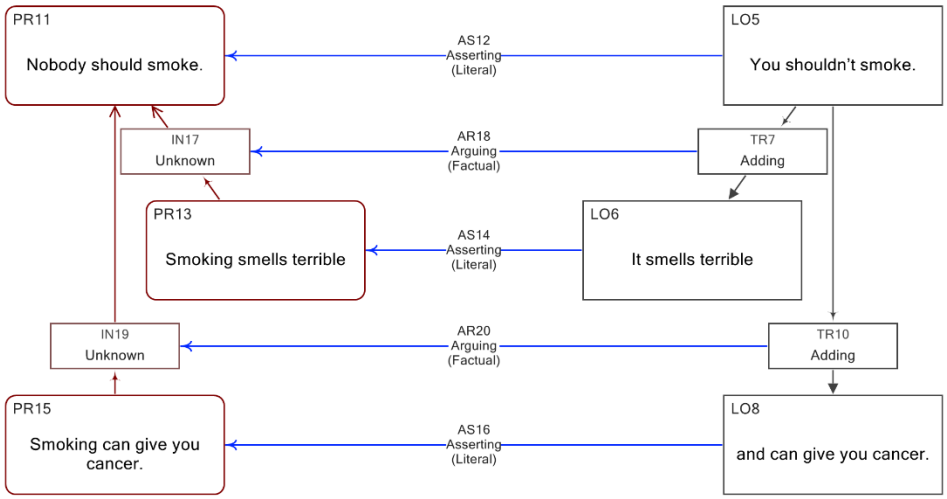

Figure 26. Two separate inferences are used in this example, as the premises PR13 and PR15 are unrelated and work independently to support a common conclusion, PR11. These are convergent arguments.

Some other times, multiple premises may work together, in an inter-related manner, to support a conclusion. Consider the following example:

> Philosopher: All men are mortal. Socrates is a man; therefore, Socrates is mortal.

Here, the speaker is concluding that Socrates is mortal by using two premises: that all men are mortal, and that Socrates is a man. Note that none of these premises is sufficient by itself to conclude that Socrates is mortal; they must work together to support this. For this reason, this is a case of *linked arguments*. Figure 27 shows this example:

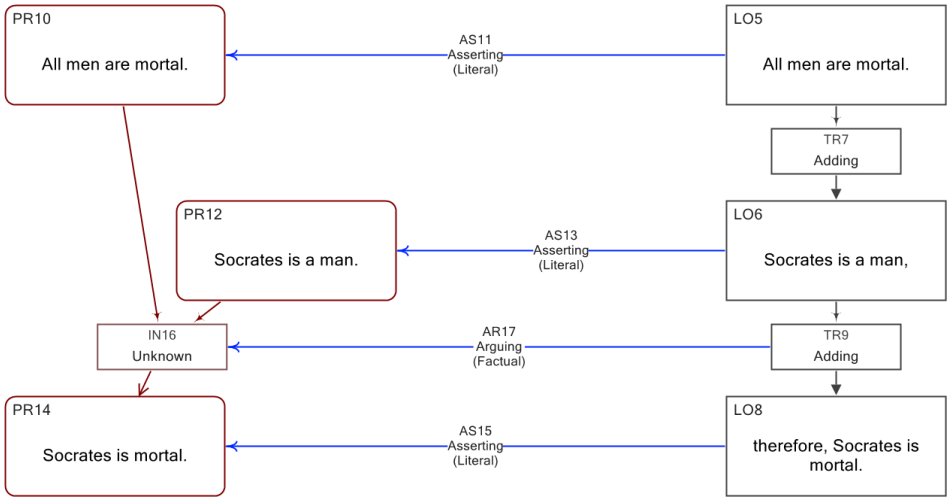

Figure 27. A single inference is used in this example, as the premises PR10 and PR12 are related and work together to support the conclusion, PR14. This is a linked argument.

The inference in linked arguments is usually anchored to the transition corresponding to the argumentation marker, such as “therefore” or “because”.

Finally, bear in mind that not all the structures containing “and” or similar connectives indicate a convergent argument, because the connectives may be separating conclusions rather than premises. See *Divergent Arguments*, page 37, for more information.

Arguments with Multiple Premises
Situation
Two or more premises are used to support a conclusion.
Solution
Determine whether the premises are unrelated and work independently to support the conclusion or, to the contrary, whether they are related and work jointly to support the conclusion. If the former, this is a case of convergent argumentation. Add an inference for each premise and connect it to the conclusion. If the latter, this is a case of linked argumentation. Add a single inference to connect all the involved premises to the conclusion.

Divergent Arguments

An argument cannot have multiple conclusions. However, there may be multiple arguments that share a common premise and support different conclusions. These are called *divergent arguments*. Consider the following example:

> Alice: Today it's raining, so I'm feeling a bit sad, and I don't want to leave home.

Here, the speaker is stating that she feels sad because it is raining, and that she does not want to leave home because it is raining. In this manner, the premise "Today it's raining" is shared by both arguments. There are two inferences, both rooted on the same premise but with different conclusions. Figure 28 shows this example.

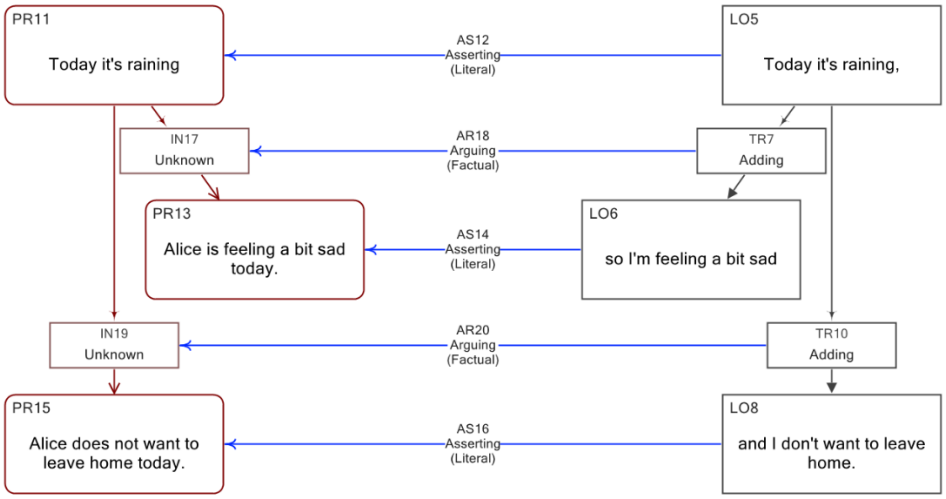

Figure 28. Two inferences share a common premise, PR11 to support different conclusions, PR13 and PR15. This is a case of divergent arguments.

Divergent Arguments
Situation
Two or more conclusions are supported by the same premise.
Solution
Add an inference for each conclusion, connecting it to the shared premise.

Counterfactual Arguments

A counterfactual argument happens when a speaker supports a conclusion on the basis of a condition that did not occur through a counterfactual construction (see *Counterfactual Constructions*, page 18). Consider the following example:

> Alice: If I had left home earlier, I wouldn't have missed the flight.

Here, Alice is saying that she missed the flight *because* she did not leave home earlier. This is a regular inference, connected to the corresponding transition via an *Arguing (Counterfactual)* illocutionary force. Figure 29 shows this example.

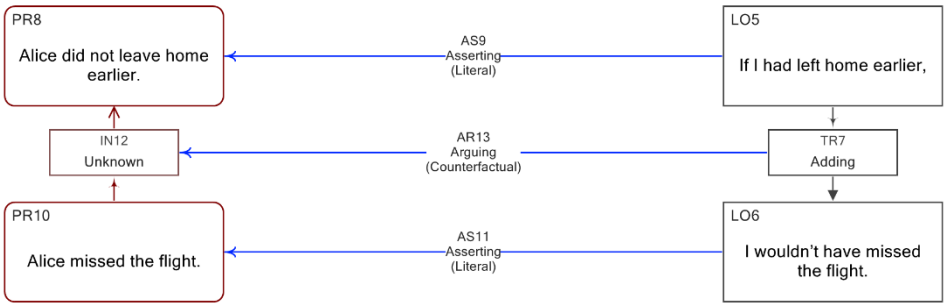

Figure 29. A counterfactual argument is indicated by an *Arguing (Counterfactual)* illocutionary force.

Counterfactual Arguments
Situation
An argument occurs between propositions that emanate from a counterfactual construction.
Solution
Add an inference that connects the corresponding propositions. Use an *Arguing (Counterfactual)* illocutionary force.

Ethotic Arguments

An ethotic argument occurs when a speaker uses a premise based on the reputation or credibility of someone (themselves or someone else). Consider the following example:

> Alice: As a world expert in climate change, I think that we should act now.

Here, Alice is arguing that we should act now on climate change because she is an expert. Although she is not using an explicit argumentative connective such as "because", it is clear that she is making an argument, as she asks the audience to believe her on the basis of her renowned expertise. Arguments like these are modelled as regular arguments, using an *Ethotic* inference type. Figure 30 shows this example.

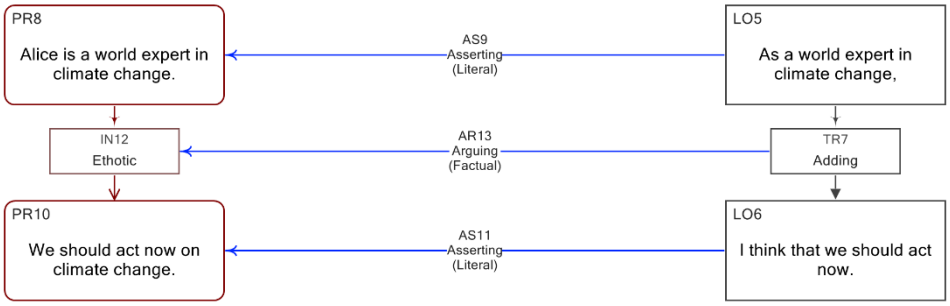

Figure 30. The ethotic argument in the example is modelled as any other argument.

Ethotic Arguments
Situation
An argument occurs on a premise based on someone's reputation or credibility.
Solution
Treat it as any other argument. Add an inference that connects the reputation or credibility-based premise to the conclusion. Use an *Ethotic* inference type.

Incomplete Arguments

Sometimes, an argument is incomplete due to an omitted proposition. Arguments having a premise or conclusion not explicitly stated are called enthymemes. Consider the following example:

> Philosopher: Socrates is mortal because he is human.

Here, the speaker is providing the premise "he is human" to support the conclusion "Socrates is mortal". The speaker is relying on the audience to know that all humans are mortal. Although the speaker omits this statement, it is a necessary premise to justify that Socrates is mortal. In addition, the argument being made is well known, and we can safely assume that most people will agree about the missing premise.

Sometimes, the missing proposition is the conclusion. Consider the following example:

> Reporter: Should the government open the borders?
>
> Politician: Well, they did that in Germany and crime rates went through the roof.

Here, the politician is making an argument to reach a conclusion that is omitted, and relying on the reporter's capacity to infer that the answer is no.

Incomplete arguments like these are modelled by adding the missing proposition. Since there is no locution on which this proposition could be anchored, the proposition is left unanchored, and assigned to the speaker that is omitting it. Otherwise, the proposition is treated as any other. Figure 31 shows an example.

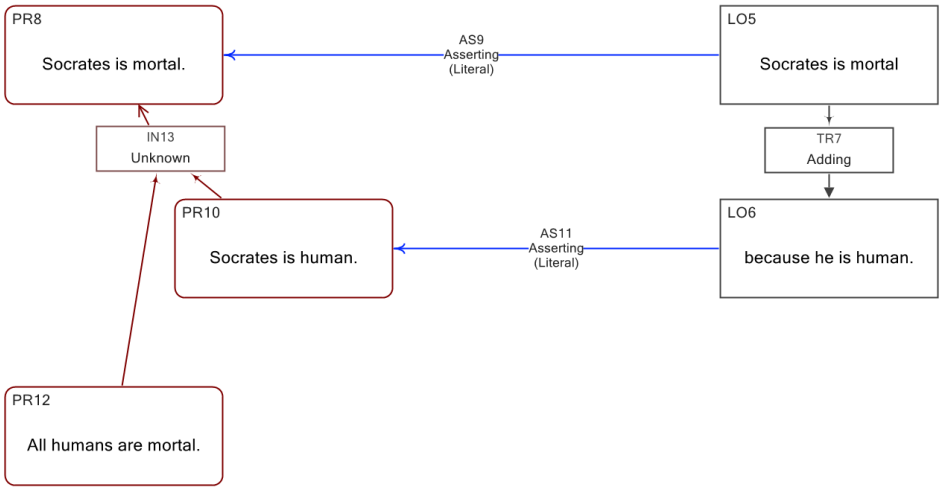

Figure 31. An incomplete argument is modelled by adding the missing premise PR12 and leaving it unanchored.

Note that an unanchored proposition like this is only permissible if we are reasonably certain that most people would derive this understanding from the discourse. If there are serious doubts, then the missing proposition should not be added.

Incomplete Arguments
Situation
A speaker omits a premise or conclusion from an argument.
Solution
If there is reasonable certainty about what the speaker is omitting, then add the missing proposition and leave it unanchored. Treat it as any other proposition.

Basic Attacks

A basic attack occurs when a speaker produces a proposition in order to *attack* another proposition. By attacking we mean a contradiction, disagreement or opposite positioning, rather than verbal abuse. The proposition being attacked is called the target, and the proposition being used to attack it is called the source. Consider the following example:

> Alice: It's quite cold today.
>
> Bob: Really? It feels fine to me.

Here, Bob is reacting to Alice's opinion that it is cold by saying that it is not. In other words, there is a conflict between the source proposition corresponding to "it feels fine to me" and the target proposition corresponding to "it's quite cold today". Notice that the source proposition in a conflict always happens after the target one, because you cannot attack something that has not been said yet.

Conflicts may be marked in the discourse by connectives such as "but", expressions such as "no" or "I disagree", or even idioms such as "Really?" or "I'm not sure about that". When you observe expressions like these in the text, it is likely that you will need to add a conflict between the associated propositions. Conflicts are always anchored onto the transition corresponding to the marking words via a *Disagreeing* illocutionary force. Figure 32 shows this example.

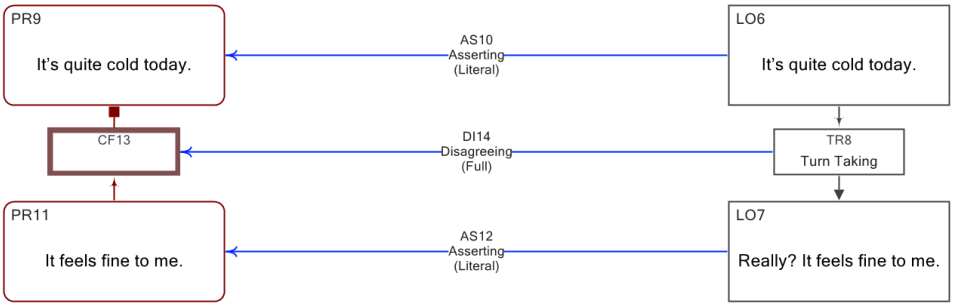

Figure 32. The "Really?" idiom in the example marks an attacking between the associated propositions. The corresponding conflict is highlighted in the figure.

When you use a *Disagreeing* illocutionary force to anchor a conflict, you can use between *Full* and *Partial* subtypes, depending on the nature of the attack. Expressions such as "I disagree" or "No way!" usually indicate full disagreement, whereas expressions such as "I'm not totally sure" or "No exactly" tend to indicate partial disagreement.

Basic Attacks

Situation

A sentence contains an expression, such as "no" or "I disagree", indicating disagreement or attack in relation to a previous statement.

Solution

Add a conflict to connect the source proposition to the target proposition. Use a *Disagreeing* illocutionary force to connect the conflict to the transition corresponding to the attack marker, or to the incoming transition to the target locution if there are no markers. Determine whether the disagreeing is full or partial depending on the nature of the attack.

Attacking an Argumentation Relation

Sometimes, attacks are not directed against a proposition but an argumentation relation. This allows a speaker to disagree with a connection between propositions rather than the propositions themselves. Consider the following example:

> Alice: My friend's daughter got autism after she was vaccinated.
>
> Bob: But vaccines don't cause autism.

Here, Bob is not disagreeing with the fact that Alice's friend's daughter got autism, or with the fact that she was vaccinated. He disagrees with the inference that Alice makes between the two things. Figure 33 shows this example.

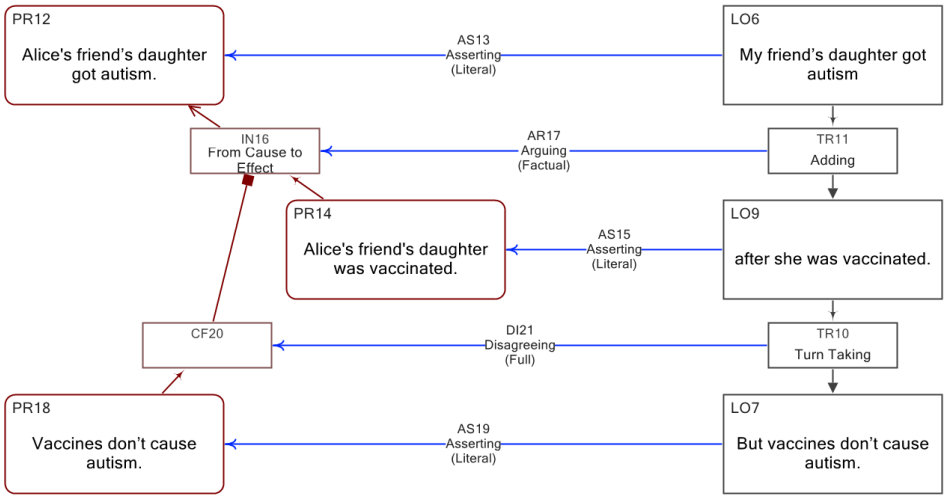

Figure 33. The conflict in the example targets an inference, not a proposition.

Conflicts can target argumentation relations of any kind, including rephrases or other conflicts, in addition to inferences.

Basic Attacks
Situation
A speaker attacks an argument, a conflict or a rephrase.
Solution
Add a conflict to connect the source proposition to the target argumentation relation. Treat this conflict as a regular attack except for the fact that its target is not a proposition but an argumentation relation.

Basic Recasts

A basic recast occurs when a speaker produces a proposition in order to *recast* another proposition. By recasting we mean saying the same thing, or something similar, perhaps with different words. The proposition being recast is called the target, and the proposition being used to recast it is called the source. Consider the following example:

> Alice: It's quite cold today.
>
> Bob: Yeah, it's quite chilly.

Here, Bob is reacting to Alice's opinion that it is cold by repeating what she said in a slightly different way. In other words, there is a rephrase between the source proposition corresponding to "it's quite chilly" and the target proposition corresponding to "it's quite cold today". Notice that the source proposition in a rephrase always happens after the target one, because you cannot recast something that has not been said yet.

There are many types of recasting situations, depending on the speaker's intentions. As a consequence, many types of markers and connectives may indicate a recast. Also, some types of recasts are rarely marked explicitly, so you will need to read the text carefully and use your own judgement to determine whether a recast is occurring or not. In any case, rephrases corresponding to basic recasts are always anchored onto the transition corresponding to the marking words, if they exist, via a *Restating* illocutionary force. Figure 34 shows this example.

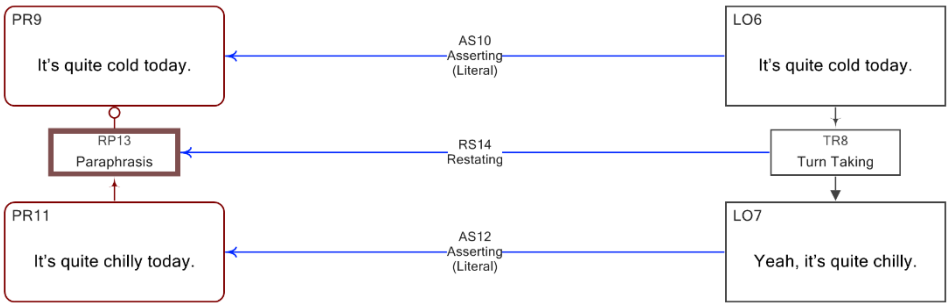

Figure 34. Bob's words in the example constitutes a recast of Alice's. The corresponding rephrase is highlighted in the figure.

There are different subtypes of rephrase, depending on the content of the involved propositions and the intention of the speaker. In the example, we have chosen *Paraphrasis* because Bob is repeating what Alice has said but changing some words. Please see the *IAT/ML Technical Specification* document for a list of rephrase subtypes.

Basic Recasts
Situation
A sentence is recasting a previous one, perhaps by using different words.
Solution
Add a rephrase to connect the source proposition to the target proposition. Use a *Restating* illocutionary force to connect the rephrase to the incoming transition to the target locution. If necessary, determine the subtype of rephrase from the content of the involved propositions and the intention of the speaker.

Agreements

Sometimes, a speaker recasts to a previous statement in order to show agreement. In fact, agreement is a special case of recast. Agreement is so common, that there is a specific way to address it. Consider the following example:

> Alice: The Beatles are the best band ever.
>
> Bob: Yes, absolutely.

Here, Bob is showing his agreement to what Alice said. It is a form or recast, because saying "yes" is akin to repeating the original statement. Agreements are modelled through a rephrase of the *Agreement* type, which is anchored onto the corresponding transition via an *Agreeing* illocutionary force. Figure 35 shows this example.

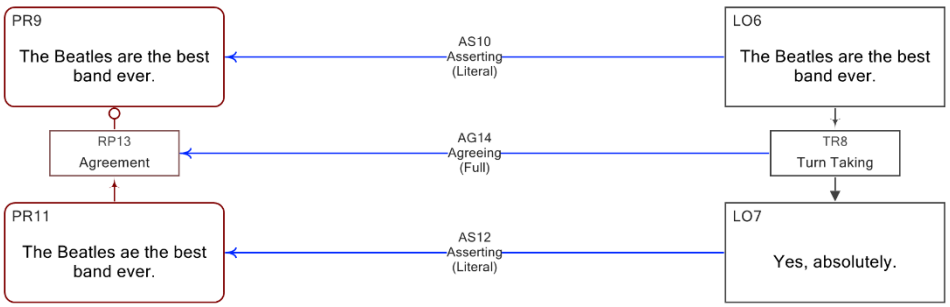

Figure 35. The agreement expression in the example constitutes a particular case of recast, which is modelled through an *Agreement* rephrase and an *Agreeing* illocutionary force.

Like for *Disagreeing* illocutionary forces (see *Incomplete Arguments*, page 39), whenever you use an *Agreeing* illocutionary force to anchor a rephrase, you can use between *Full* and *Partial* subtypes, depending on the nature of the agreement. Expressions such as "Yes!" or "Absolutely" usually indicate full agreement, whereas expressions such as "Yes, but…" tend to indicate partial agreement.

Also, notice that not all instances of "yes" or similar expressions indicate agreements; they may indicate an answer to a polar question. See *Answering Non-Why Questions*, page 44, for details.

Agreements
Situation
A speaker shows agreement with a previous statement.
Solution
Treat it as a special case of recast. Add a rephrase of the *Agreement* type to connect the source proposition to the target proposition. Use an *Agreeing* illocutionary force to connect the rephrase to the incoming transition to the target locution. Determine whether the agreeing is full or partial depending on the nature of the recast.

Answering Non-Why Questions

Answering a question constitutes a special case of recast. There are many kinds of questions (see *Questions*, page 21), and each of them is treated in a slightly different manner. However, answers are simpler to deal with. In particular, answers to polar, enumerated or open-ended questions are always treated the same. Consider the following example:

> Alice: What is your nationality?
>
> Bob: I'm Dutch.

This is a straightforward open-ended pure question, so it is modelled by using a free variable. The answer provides the information for the variable, and is connected to the question proposition by using a rephrase of the *Answer* subtype. As any other rephrase, it is anchored onto the corresponding transition via a *Restating* illocutionary force. Figure 36 shows this example.

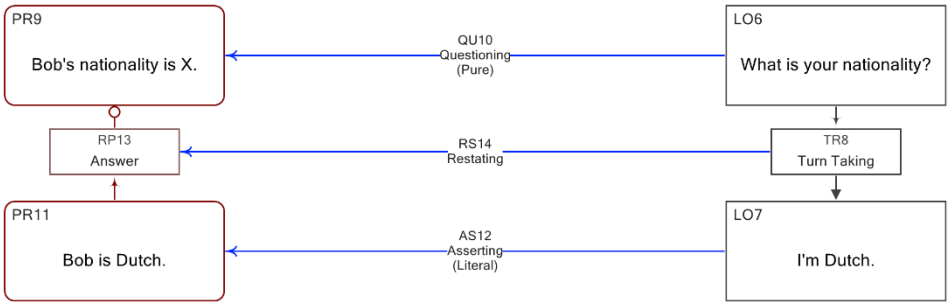

Figure 36. The response to the open-ended pure question in the example is treated as a rephrase of the *Answer* type.

Answering Non-Why Questions
Situation
A speaker answers a polar, enumerated or open-ended question.
Solution
Treat it as a special case of recast. Add a rephrase of the *Answer* type to connect the response proposition to the question proposition. Use a *Restating* illocutionary force to connect the rephrase to the incoming transition to the answering locution.

Answering Why Questions

Answering a why question (see *Questions*, page 21) constitutes a special case of recast. Consider the following example:

> Alice: Yesterday I got myself a new car.
>
> Bob: Why?
>
> Alice: The old one just stopped working.

As any other why pure question, this is modelled by using a single free variable that stands for the proposition that supposedly would work as a premise for the challenged proposition (see *Why Pure Questions for Previous Statements*, 24). The answer provides the missing proposition, and is connected doubly:

- It is connected to the challenging proposition by using a rephrase of the *Answer* subtype. As any other rephrase, it is anchored onto the corresponding transition via a *Restating* illocutionary force.
- It is connected to the challenged proposition by using an inference, which is anchored onto the same transition via an *Arguing* illocutionary force.

Figure 37 shows this example.

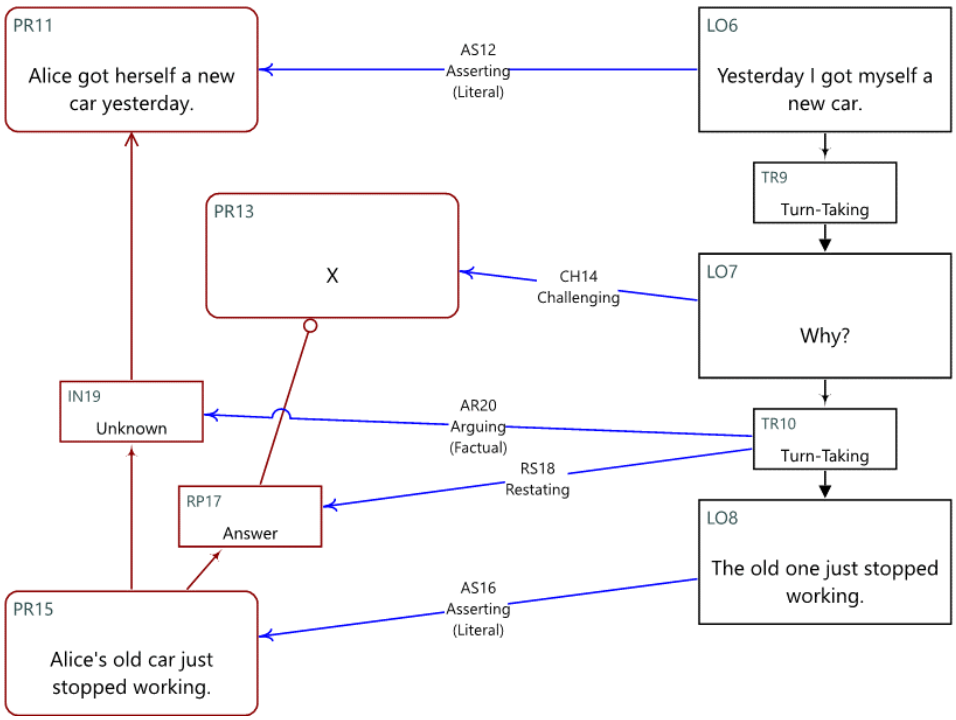

Figure 37. The response to the why pure question in the example is treated as a rephrase of the *Answer* type, and, at the same time, a premise that supports the challenged proposition.

Answering Why Questions
Situation
A speaker answers a why question.
Solution
Treat it as a special case of recast. Add a rephrase of the *Answer* type to connect the response proposition to the challenging proposition. Use a *Restating* illocutionary force to connect the rephrase to the incoming transition to the answering locution. Also, add an inference to connect the response proposition to the challenged proposition. Use an *Arguing* illocutionary force to the same transition.

Changes of Mind

A change of mind occurs when a speaker expresses a change of opinion or attitude about something that they said earlier. Consider the following example:

> Alice: When I was young I thought that The Beatles were the best band ever
>
> Alice: but now I'm a bit bored with them.

Here, Alice is expressing a change of mind. These situations are modelled through a rephrase of the *Change of Mind* type, which is anchored onto the corresponding transition via a *Restating* illocutionary force.

Changes of Mind
Situation
A speaker expresses a change of mind in relation to what they said earlier.
Solution
Treat it as a special case of recast. Add a rephrase of the *Change of Mind* type to connect the source and target propositions. Use a *Restating* illocutionary force to connect the rephrase to the associated transition.

Deciding between Inference and Rephrase

It can be difficult at times to decide whether a speaker's reaction constitutes an argument or a recast, so you struggle to decide between using an inference or a rephrase. Consider the following example:

> Alice: The building was refurbished without any taste.
>
> Bob: Yeah, they didn't respect the original materials.

Is Bob providing support for Alice's statement or is he recasting it to add some more information?

- If you think that the fact that they did not respect the original materials is a justification supporting the statement that the refurbishment lacked taste, then this would be an argument, and we should use an inference.
- However, if you think that stating that they did not respect the original materials simply adds information to the previous, without justifying it, then this would be a recasting, and we should use a rephrase.

In order to make a decision in situations like this, evaluate to what extent the second proposition is providing a reason to support the first, or simply recasting it. Some situations, like the one in the example, can be genuinely difficult to decide on.

Deciding between Inference and Rephrase
Situation
It is unclear whether a proposition is supporting or recasting a previous one.
Solution
Evaluate whether the second proposition is providing a justification or reason as to why the first one holds, or simply recasting it by using different words or adding details. If it is the former, treat as an argument. If it is the latter, treat as a recast.

Reactions to an Entire Discourse

Sometimes, a speaker reacts to an entire discourse or set of propositions. Consider the following example:

> Alice: Climate change constitutes a great risk for humanity. We should act as soon as possible and as strongly as we can. Otherwise, we will compromise the welfare of future generations. [Alice keeps arguing along these lines for a few minutes.]
>
> Bob: I disagree with everything you just said.

Here, Bob is not attacking any particular thing that Alice said, but all of it as a whole. It is obvious that there is a conflict involved, but determining the target proposition can be difficult. In situations like this, the target proposition should be the *major thesis* of the speaker. A major thesis is a statement that summarises a position, and is often supported by one or more arguments. Usually, final theses are conclusions of inference chains, and do not work as premises of further arguments. Major theses can appear at the beginning, at the end, or even in the middle of a discourse, and sometimes are repeated throughout. In the example above, the statement "Climate change constitutes a great risk for humanity" that opens Alice's discourse is probably her major thesis, as the rest of the discourse is oriented towards supporting this statement.

Deciding between Inference and Rephrase
Situation
A speaker reacts to an entire discourse rather than a specific statement.
Solution
Add a proposition for the reaction and connect it to the major thesis of the discourse by using an inference, a conflict or a rephrase, depending on the case.

Straw Man Arguments

A straw man argument occurs when a speaker shows disagreement with a reinterpretation of what another speaker said, rather than with their original words. Often, this technique is employed as a fallacy to attack a weaker, manufactured claim rather than the original one, which is stronger. Consider the following example:

> Alice: Children should be careful when they go out by themselves.
>
> Bob: But we can't keep them locked up all the time!

Here, Bob wants to attacking Alice's position. However, instead of attacking her actual position (that children should be careful when going out), he attacks a much weaker position that he himself has constructed, namely, that we should keep children locked up all the time. Attacking this claim is easier than attacking Alice's original claim, because it is so exaggerated that few would agree with it. However, Alice's original claim was much more nuanced and difficult to

attack. In this manner, Bob is constructing a "straw man" from Alice's words, and then dismantling it.

Notice that, when Bob speaks, he is doing two things at the same time:

- He is stating that Alice believes that we should keep children locked up all the time, even though this is not what Alice just said.
- He is attacking this claim.

For this reason, Bob's locution is reconstructed as two separate propositions:

- One making the fallacious claim as if Alice believed it.
- One making the opposite claim in order to attack the previous.

Similarly, the turn-taking transition that connects Alice's original claim with Bob's works as the anchor for two separate argumentation relations:

- A rephrase of Alice's original claim, of the *Reinterpretation* type, connected to the transition via a *Restating* illocutionary force.
- A conflict against the fallacious proposition, connected to the same transition via a *Disagreeing* illocutionary force.

Figure 38 shows this example.

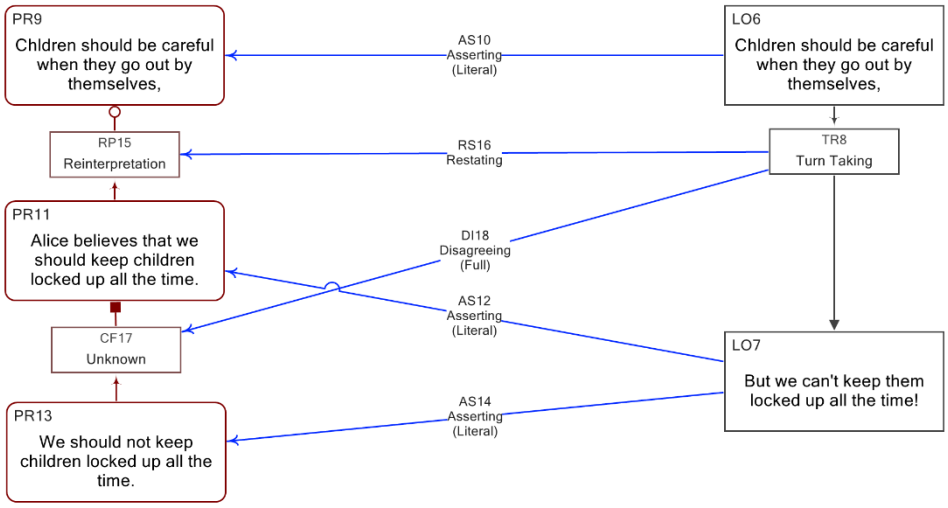

Figure 38. The straw man argument in the example is modelled as a *Reinterpretation* rephrase followed by a conflict.

Straw Man Arguments

Situation

A speaker employs a straw man argument against another.

Solution

Add a proposition stating the fallacious belief and assigning it to the attacking speaker. Connect this proposition to the one being attacked via a *Reinterpretation* rephrase. Use a *Restating* illocutionary force.

Then, add a proposition stating the attack itself by negating the previous one. Connect this proposition to the previous via a conflict. Use a *Disagreeing* illocutionary force.