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## Argument Type Identification Procedure (ATIP) – Version 3

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### Guidelines for identifying and annotating arguments

The Argument Type Identification Procedure (ATIP) facilitates the identification and annotation of arguments expressed in natural language in terms of the argument categorisation framework of the [Periodic Table of Arguments](#) (PTA). Such identification prepares the ground for an assessment of the quality of the argument under scrutiny. In this document, the various steps of the procedure are explained and illustrated through an example. The procedure starts with a functional analysis of the elements of the two statements that have been recognized as the ‘conclusion’ and the ‘premise’ of the argument and results in labelling it with a type indicator that systematically summarises its characteristics.

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### Step 1 – Label the textual elements

The theoretical framework of the PTA takes an argument to consist of two connected statements, one functioning as the ‘conclusion’ and the other as the ‘premise’ (Wagemans, 2019b, p. 60). To identify the type of argument, the analyst should first label its textual elements based on their pragmatic function. The following labels are in use:

- the text may contain a ‘connector’ such as *because* or *therefore* indicating the function of the statements as ‘conclusion’ and ‘premise’ (for lists of such indicators see, e.g., van Eemeren, Houtlosser & Snoeck Henkemans, 2007; Stab & Gurevych, 2017)
- the statements usually contain a ‘subject’, i.e., an entity about which something is said, and a ‘predicate’, i.e., what is said about that entity
- the subject and predicate together form the ‘propositional content’ of the statement
- apart from this propositional content, the statement may contain a ‘doxastic commissive’ such as *we believe that*, *it is true that*, and *in my humble opinion*, which are linguistic expressions of the arguer’s commitment regarding the acceptability of the propositional content (Wagemans, 2019b, pp. 62-64)
- the statement may also contain a ‘doxastic directive’ such as *you should accept that*, which is a linguistic expression of the arguer’s goal of convincing the addressee of the acceptability of the propositional content of the conclusion

#### Example 1 – original text

*Since the suspect left a long trace of rubber on the road, we believe that he was driving fast*

#### Functional analysis of the elements of the statements

element	function
since	connector
the suspect left a long trace of rubber on the road	propositional content (premise)
the suspect	subject (premise)
left a long trace of rubber on the road	predicate (premise)
we believe that	doxastic commissive (conclusion)
he was driving fast	propositional content (conclusion)
he	subject (conclusion)
was driving fast	predicate (conclusion)

## Step 2 – Reformulate the argument

The labelling of the elements of the argument enables the analyst to reformulate it in the standard form “[subject (conclusion)] [predicate (conclusion)], because [subject (premise)] [predicate (premise)]”. Such reformulation may involve several transformations of the original text:

- regarding the statements
  - reordering of the statements to reflect the standard form “conclusion, because premise”
- regarding the connector
  - addition of the standard connector *because* between the conclusion and the premise
  - substitution of the original connector by the standard connector *because*
- regarding the non-propositional elements of the statements
  - hiding of the doxastic commissives and directives
- regarding the propositional content of the statements
  - anaphora resolution, i.e., the substitution of specific elements so that identical entities are referred to by identical words (preferably the most informative ones)
  - changing active to passive voice or the other way around

Example 1 – original text	
<i>Since the suspect left a long trace of rubber on the road, we believe that he was driving fast</i>	
Reformulations toward the standardized version	
reformulation	transformation
<i>We believe that he was driving fast, since the suspect left a long trace of rubber on the road</i>	reordering of the statements
<i>We believe that he was driving fast, because the suspect left a long trace of rubber on the road</i>	substitution of the connector <i>since</i> by <i>because</i>
<i>He was driving fast, because the suspect left a long trace of rubber on the road</i>	hiding of the doxastic commissive <i>we believe</i>
<i>The suspect was driving fast, because the suspect left a long trace of rubber on the road</i>	substitution of <i>he</i> by <i>the suspect</i> (anaphora resolution)

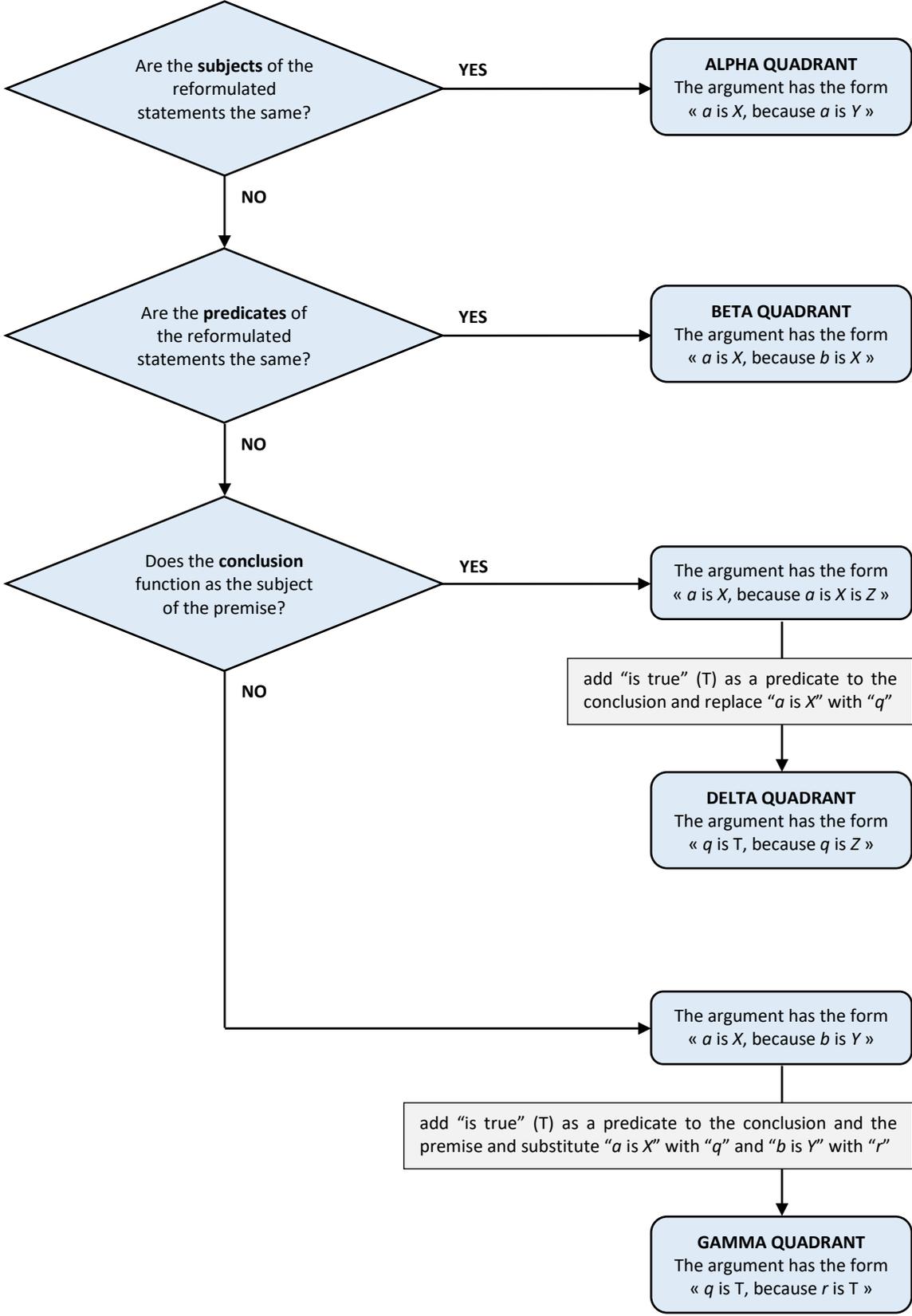
## Step 3 – Determine the argument form

The ‘argument form’ is an abstract representation of the specific constellation of the subjects and predicates expressed in the conclusion and the premise of the argument. Closely following logical conventions, subjects are indicated with letters *a*, *b*, etc., predicates with letters *X*, *Y*, etc. (predicates ‘ $\top$ ’ and ‘ $\perp$ ’ expressing doxastic commitments ‘true’ and ‘false’), and complete propositions with letters *p*, *q*, etc. Within the theoretical framework of the PTA, four basic argument forms are distinguished, which is reflected in the visual representation of the table as divided into four quadrants (Wagemans, 2017; 2018; 2019b, pp. 64-67). Table 1 contains an overview of these forms, their names, and the corresponding quadrant of the table:

argument form	name	quadrant
<i>a is X, because a is Y</i>	first-order predicate argument	alpha
<i>a is X, because b is X</i>	first-order subject argument	beta
<i>q is T, because r is T</i>	second-order subject argument	gamma
<i>q is T, because q is Z</i>	second-order predicate argument	delta

**Table 1** Argument forms distinguished in the PTA

For completing this step in the procedure, the analyst can use the decision tree pictured in Figure 1, which contains three heuristic questions as well as the corresponding instructions and outcomes depending on the answers to these questions.



**Figure 1** Decision tree for determining the argument form

The argument *The suspect was driving fast, because the suspect left a long trace of rubber on the road* instantiates the form « *a is X, because a is Y* ». It is a first-order predicate argument that is situated in the Alpha Quadrant. This result is achieved by running the reformulated version of the argument through the decision tree for determining the argument form.

**Determination of the argument form**

Are the **subjects** of the reformulated statements the same?

**YES** → The argument has the form « *a is X, because a is Y* » and is situated in the Alpha Quadrant

**Example 1 – reformulated version annotated with the argument form**

*The suspect (a) was driving fast (X), because the suspect (a) left a long trace of rubber on the road (Y)*

#### Step 4 – Determine the argument substance

Apart from by its ‘argument form’, each type of argument distinguished within the theoretical framework of the PTA is characterised by its ‘argument substance’ (Wagemans, 2016, pp. 7-8; 2019a, p. 4). This notion is defined as the specific combination of types of statements the argument instantiates. The labelling of the type of statement is done in accordance with a widely used tripartite typology of statements developed within debate theory that consists of statements of fact (F), statements of value (V), and statements of policy (P).

- a statement of fact (F) is defined as a description of a particular state of affairs that is or can be empirically observed in reality or that is or can be imagined to exist. In order for the analyst to distinguish them from statements of value, it may be helpful to consider the following subtypes and examples:
  - empirical statements, such as ‘The suspect left a long trace of rubber on the road’.
  - existential statements, such as ‘God exists’
- a statement of value (V) is defined as an evaluative judgment about a particular entity based on a subjective selection and weighing of assessment criteria. In order for the analyst to distinguish them from statements of fact, it may be helpful to consider the following subtypes and examples:
  - aesthetic judgments, such as ‘*The Corrections* is a great novel’
  - moral or ethical judgments, such as ‘Circumcision is reprehensible’
  - legal judgments, such as ‘Unauthorized copying is not theft’
  - pragmatic judgments, such as ‘Our plan for reducing CO<sub>2</sub>-emission is feasible’
  - logical judgments, such as ‘This proposition is true’
  - hedonistic judgments, such as ‘Paragliding is fun’
- a statement of policy (P), which is defined as a directive statement that expresses an advice, an incitement, or an imperative. The analyst may recognize statements of policy because of the presence of the term ‘should’ in combination with a verb expressing a particular action. Examples are:
  - advices, such as ‘Children should not sleep with artificial lightning’
  - incitements, such as ‘You should go to the gym’
  - imperatives, such as ‘Go to your room’

By labelling both the conclusion and the premise of the argument in this way, the argument substance can be determined as one of the nine possible combinations of types of statements (FF, VF, PF, FV, VV, PV, FP, VP, PP).

The argument *The suspect was driving fast, because the suspect left a long trace of rubber on the road* combines a statement of fact (F) in the conclusion with another statement of fact (F) in the premise.

**Determination of the argument substance**

	<i>statement</i>	<i>type of statement</i>
<b>conclusion</b>	<i>the suspect was driving fast</i>	statement of fact (F)
<b>premise</b>	<i>the suspect left a long trace of rubber on the road</i>	statement of fact (F)

**Example 1 – reformulated version annotated with the argument substance**

*The suspect was driving fast (F), because the suspect left a long trace of rubber on the road (F)*

**Step 5 – Provide the systematic name of the argument**

The systematic name of an argument is a symbolic representation of the results of Step 4 and 5 of this procedure and thus contains information regarding the argument form and the argument substance. It consists of:

- the prefix “1” or “2”, indicating a first-order or a second-order argument
- the infix “pre” or “sub”, indicating a predicate or subject argument
- the suffix “FF”, “VF”, etc., indicating the types of statements instantiated by the argument

*The suspect was driving fast, because the suspect left a long trace of rubber on the road* is a first-order predicate argument that combines a statement of fact with another statement of fact. Its systematic name is 1 pre FF.

**Example 1 – reformulated version**

*The suspect was driving fast, because the suspect left a long trace of rubber on the road*

**Example 1 – reformulated version annotated with complete argument type information**

*The suspect (a) was driving fast (X) (F), because the suspect (a) left a long trace of rubber on the road (Y) (F) (1 pre FF)*

**Step 6 – Provide the traditional name of the argument**

The traditional name of an argument is the name as it would occur in the dialectical lists of argument schemes and fallacies and the rhetorical lists of means of persuasion. Within the theoretical framework of the PTA, the traditional name of an argument is related to its ‘lever’, the relationship between the non-common terms of its conclusion and premise. Each of the four basic argument forms has a different common element (fulcrum) as well as a different set of non-common terms, which determines the abstract lever (see Table 2).

<b>argument form</b>	<b>fulcrum</b>	<b>abstract lever</b>
<i>a is X, because a is Y</i>	<i>a</i>	<i>Y R X</i>
<i>a is X, because b is X</i>	<i>X</i>	<i>a R b</i>
<i>q is T, because r is T</i>	<i>T</i>	<i>q R r</i>
<i>q is T, because q is Z</i>	<i>q</i>	<i>Z R T</i>

**Table 2 Fulcrum and abstract lever of the four basic argument forms**

The concrete lever can be formulated by (1) finding the abstract lever related to the argument form; (2) substituting the actual predicates or subjects in the abstract lever, and (3) finding a fitting keyword for expressing the relationship. For the latter step, the current version of the PTA can be used as a heuristic instrument. If there is no isotope corresponding to the keyword, you just found a new type of argument.

*The suspect was driving fast, because the suspect left a long trace of rubber on the road* is an ‘argument from effect’ (Ef) since it is based the relationship between *leaving a long trace of rubber on the road* and *driving fast* and the former is an ‘effect’ of the latter.

**Example 1 – annotated version**

*The suspect (a) was driving fast (X) (F), because the suspect (a) left a long trace of rubber on the road (Y) (F) (1 pre FF)*

**Example 1 – formulation of the lever**

systematic name	1 pre FF
abstract lever (based on argument form)	$Y \mathcal{R} X$
candidate keywords	{sign, cause, effect, correlation}
concrete lever	<i>leaving a long trace of rubber on the road</i> is an effect of <i>driving fast</i>
traditional name (symbol)	argument from effect (Ef)

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