Annotation Guidelines for Argumentation Structure

Andreas Peldszus, Saskia Warzecha, Manfred Stede

English translation by Constanze Schmitt

Notes:

- If you use this document, please cite it as follows: A. Peldszus, S. Warzecha, M. Stede: Annotation Guidelines for Argumentation Structure. English translation of chapter "Argumentationsstruktur" in M. Stede (ed.): Handbuch Textannotation – Potsdamer Kommentarkorpus 2.0. Universitätsverlag Potsdam, 2016. (Available online: http://www.ling.uni-potsdam.de/~stede/Papers/ArgGuidelinesEnglish.pdf)
- These annotation guidelines have been primarily designed for the use with editorials of the 'Pro & Contra' type in which the author concisely states and justifies a clear position to a given question. They have also been applied to the texts in the *argumentative microtext* corpus (see http://angcl.ling.uni-potsdam.de/resources/argmicro.html)
- In these guidelines, we introduce a notation that can be used with pen and paper. It is also possible to use the same notation in a specialized annotation software (*GraPat*), for which we provide a separate user's guide.
- Using these guidelines for the argumentation structure requires that the text has been segmented in accordance with the guidelines of chapter 3 in the German guideline book (see above).
- All example sentences given here are fictitious unless a corpus reference is given.

1. Preface

The present annotation guidelines are primarily directed at commentaries or editorials where the author argues relatively clear in favour of or against a certain thesis. The aim of this annotation is a schematic diagram that depicts the argumentation relations between clauses, and thus represents the core of the argumentation structure of the text. This core structure is an abstraction in itself inasmuch as the argumentation can indeed be more subtle: For example, the author can evoke 'side effects' by using words that have an emotional overtone, or by arranging their arguments in a particular order. These side-effects will be neglected in the annotation. Instead, we will focus on the primary relations between clauses.

The annotation process is divided into four steps:

1. Segmenting the text into minimal segments (*argumentation discourse units, abbrev.:* ADUs).

2. Identifying the main claim for which the author of the text argues.

3. Determining the dialectical role that each segment plays in the argumentation (proponent: in favour of the main claim, or opponent: against it).

4. Finally, identifying the argumentation function of each segment and determining where it connects to the present structure.

We will describe each of these steps in detail in the following sections. In the last section, we will provide and discuss an example annotation of a larger text.

Running the annotation process will result in a representation of the argumentation structure: a graph whose nodes correspond to the ADUs, and whose edges represent the argumentative relations between the ADUs. The graph provides information about where the reader can find the main claim for which the author argues, what reasons the author gives for their thesis, which potential counter-arguments are being considered, and if and how these are refuted by the author. We will see that the graph does not need to describe the text exhaustively – the parts of the text that are irrelevant to the argumentation will be disregarded in this structural representation.

Last but not least we would like to point out that it is not always possible to execute the different steps in the annotation process independently from each other: A decision taken in a previous step can determine a decision at a subsequent step. This means that it can occasionally happen that a decision taken at an earlier stage has to be revised at a later stage. Therefore, we recommend to first read these annotation guidelines thoroughly and to make sure that you fully understand the distinctions you will have to make, before you start the annotation procedure.

2. Annotation Step 1: Segmentation

The step of segmentation is divided in two subtasks: First, to construe the elementary discourse units (EDUs) in accordance with the guidelines for the 'general' discourse segmentation as defined in chapter 3 of the German guideline book.[1] Second, to subsequently identify the specific argumentation units (ADUs) on the basis of the EDUs, which we will explain below. The following instructions thus assume that an EDU segmentation has already been carried out.

The general rule is: Every EDU which contributes an independent argument to the argumentation is considered an ADU. However, EDUs and ADUs cannot be assigned to one another 1:1 due to three possible reasons:

- An EDU is ignored in the argumentation structure because the EDU is irrelevant for the argument (→ deletion).

- Several adjacent EDUs are joined into one ADU because the EDUs were incomplete when standing alone (→ join).

- Several non-adjacent EDUs are combined because a later EDU provides only a restatement of an earlier EDU (→ restatement).

These three cases will be explained in detail below. But first, there are two remarks regarding the 'mental transformation' of segments:

- The following holds for the analysis of argumentation in general: Every segment is regarded as if all its anaphoric references (including ellipses) were resolved – so the segments are mentally 'completed'.

  (11.222) [Besides, only they who have some knowledge and who would like to commemorate visit such places.] [They do not need a piece of contemporary architecture on crying walls.]

[1] We have also provided English segmentation guidelines as part of our RST annotation guidelines. See http://www.ling.uni-potsdam.de/~stede/Papers/rst-eng.pdf

→ “Well-informed visitors have no need for a piece of contemporary architecture on crying walls.” (topographie-con)

- When doing the segmentation, please note that every rhetorical question is understood as the proposition that forms the basis for the question. Likewise, the rhetorical question in example 11.223 is resolved and transformed into the proposition: “Nobody likes paying 12 euros for the Telekom's holding loop.”

  (11.223) But who really likes paying 12 euros for waiting in the Telekom's holding loop?

Deletion: Not every segment in a text contributes to the argumentation. For instance, an author could write an opening to his argumentation in which he uses the first few sentences to create a particular atmosphere that he considers beneficial to the persuasiveness of his original argumentation. It could happen as well that the author sets the contextual frame for certain parts of his argumentation first, by providing non-controversial background information that is not part of the argumentation in a narrower sense (but which facilitates its comprehension).
In all the cases in which the text contains segments which can be excluded without withholding possible reasons or counter-arguments, the segments concerned can be deleted. These segments will have no representation as an ADU or a node in the argumentation structure. An example for a mere atmosphere-creating segment is given in the first EDU 11.224.

(11.224) [Whip out a pencil and take notes:]$_1$ [To write a dictation hardly improves the spelling.]$_2$ [So the duty to write a dictation once a year can safely be abolished.]$_3$

Join: Combine two segments into one if a text segment on its own is not a complete sentence or does not express a complete proposition, but it can be combined with an adjacent segment to create a complete sentence or a complete proposition. This can become necessary if an author divides a sentence into several parts using punctuation, for instance for the purpose of emphasis. In example 11.225, the EDUs [1] and [2] are combined into ADU [1,2], which claims that the building is contaminated by asbestos through and through.

(11.225) [The building is contaminated by asbestos.]$_1$ [Through and through!]$_2$

Exception to the rule: If a segment is incomplete because it is a shortened (elliptic) clause conjunct decide whether the shortened segment makes an own contribution to the argumentation, once the ellipsis is resolved. If so, the segment is an independent ADU, else, it can be combined with another clause conjunct into an ADU, see the following example:

(11.226) [But it is a well-known fact that such building projects always exceed the calculated costs in the end.]$_1$ [and that members of the supervisory board are rarely equal to their original task.]$_2$

In bundling, first resolve the ellipsis in segment 2: “But it is a well-known fact that members of the supervisory board are rarely equal to their original task.” Then decide whether this segment plays a role in the argumentation. Only in the positive case may the segment persist as independent ADU. (Segments containing anaphoric pronouns are not considered 'incomplete' in the sense used here because their antecedents can be inserted in one's thoughts.)

Restatement: If two segments are similar in terms of content so that one can hold for the restatement of the other, both segments are combined into one ADU. This occurs frequently, especially with the main claim of the text (see step 2), when the author repeats the main claim at another point in order to support it once more. So this kind of summing-up is typically made in non-adjacent segments. Likewise, the EDUs 1 and 5 of example 11.227 are considered the same ADU (1=5).

(11.227) [More people should go to vote, urgently.]$_1$ [Because...]$_2$ [Besides...]$_3$ [and...]$_4$ [So the voter participation must by all means be increased.]$_5$

Step 1 results in a list of ADUs that are necessary for a full account of the author's argumentation. These ADUs are now to be connected into a graph structure by the actual annotation process. When mentioning *segments* in the text below, we refer exclusively to ADUs.

3. Annotation Step 2: Identification of the main claim

Among all the segments of the text, first identify the segment that best conveys the main claim[2] of the text. This means to single out the 'fundamental statement' of the text of which the author likes to convince the reader in the end. This main claim has a distinct status in the text: it would serve as the minimal summary, if the text were to be reduced to a single sentence. All the other text segments serve to increase the persuasiveness of the main claim by means of support or (refuted) attack. In general, the main claim can be given at any point within a dialectical text, whether at the very beginning, or in the middle, or at the very end.

The main claim is often expressed as an instruction or a recommendation on how to act ('We all / One / Peter should do X.'). Other typical textual moves constituting the main claim can be judgements ('X is bad.') or assumptions ('It is probably true that X.'), etc.

Occasionally, however, the main claim can be found 'between the lines' only: Although it is clearly conveyed by the text on the whole, there is no individual segment that sufficiently expresses the main claim. In that case, a new text segment [MC] shall be inserted which explicitly states the main claim.

(11.228) [Last winter, two more people froze to death in the streets of Berlin,]$_1$ [yet their deaths might have been avoided by calling the mobile cold shelter.]$_2$ [All the more because the call costs a few cents only]$_3$ [and the number – 0178-5235838 – can easily be registered in one's cell phone, after all!]$_4$

The central message of this text is that you should call the mobile cold shelter if you encounter a homeless person in bad condition in winter. However, this is not explicitly expressed by one of the four clauses. Therefore, an additional segment is to be inserted:

[MC] = *If you encounter a homeless person in bad condition winter, you should call the mobile cold shelter.*

4. Annotation Step 3: Identification of the dialectical role

The author of the text can discuss his or her main claim in an argumentative manner. He or she may not only give reasons in favour of the main claim, but may also take counter-arguments into consideration. This can be regarded as corresponding to a debate in which a proponent argues in favour of their claim and defends it against the attacks of an opponent or ‘challenger’. In monologue text, however, this opponent is merely "imaginary".

Thus the next step is to find out for each segment whether its proposition would, in the corresponding debate, be presented by the defender of the main claim, i.e., the proponent, or by the opponent who challenges the claim and its supporting moves.

In the following example, 11.229, the author allows a dissenting voice to speak ('But the clothes are such a bargain!'). Thus the second segment is attributable to the dialectical role of the oppo-nent, while the first segment, just like any main claim, represents the dialectical role of the proponent.

[2] In the literature, this is often also called the „central claim“.

(11.229) [You should not support the textile discount store A&N]$_1$ [even though the prices for jeans and t-shirts are tempting.]$_2$

In order to make the distinction between the dialectical roles clear in the argumentation diagram, we will represent the segments that belong to the dialectical role of the proponent by a circular node, and the possible segments that belong to a challenger by a rectangular node shape. Each node is labelled by a number that corresponds to the number of the segment represented by the node.
In the preceding example, both segments are rather subjective, i.e., they convey an opinion. This often facilitates the identification of the dialectical role. But then, there are often segments in which the author objectively conveys a non-controversial fact. With those segments, it is hard to judge by the segment itself whether it is the proponent or the opponent that makes use of the proposition for his or her argumentation. In such cases, the adjacent segments should be taken into account. We show examples of both cases below. In example 11.230, there is a segment that serves as a reason for the main claim and therefore is to be attributed to the proponent. In comparison, example 11.231 gives a segment that works as a possible counter-argument, which makes it part of the opponent's dialectical role. In both cases, this can only be inferred by considering the context of the other segment.

(11.230) [The new energy tariff 'Green Berlin' is based on a 95% share of renewable energies.]$_1$ [Thus it offers all that an environmentally conscious customer could wish for.]$_2$

(11.231) [The new energy tariff 'Green Berlin' is based on a 95% share of renewable energies.]$_1$ [Nonetheless, it will fail to satisfy an environmentally conscious customer.]$_2$

It might happen occasionally that an author mentions a dissenting voice but does not express it in a separate segment, because it is being refuted immediately. In this case, both dialectical roles occur in one segment. Such segments should be assigned the rhetorically-dominant role, i.e., that of the proponent. In contrast to example 11.233, in which the first segment represents the opponent (the dissenting voice) and the second segment represents the proponent (the consenting voice), example 11.232 shows a segment that should in total be assigned to the proponent.

(11.232) [The insanely expensive bank bailout was unfortunately inevitable.]$_1$

(11.233) [Yes, the bank bailout was insanely expensive.]$_1$ [But it was inevitable all the same.] $_2$

When this step in the annotation process is finished, the interim argumentation structure is a set of disconnected nodes, which now need to be connected to form a graph. In the following (and last) step in the annotation process, we determine the types of links (in other words, the kinds of arrows) and the points in the graph to which the various nodes connect.

5. Annotation Step 4: Assignment of the function and the target

Within the argumentation, there are two elementary functions for each segment (in accordance with the dialectical role): they either 'support' or 'attack' another segment. (Of course, this does not include the main claim of the text, for all the other segments are directed towards it.) Each segment is to be assigned only *one* function. This means that no more than one arrow starts from each node in the graph. Therefore, when in doubt about the function, decide for the function that is the more important one for the text.

5.1 Support

There are several ways of supporting an argument. All types of support share that the author intends to increase the credibility of the supported statement by raising the supporting statement. The support provides a reason for accepting a proposition and aims at increasing the strength of the argument. By supporting a segment *A* with a different one (*B*), the author indirectly answers a question asked by the reader: 'Why should I believe in / accept *A*?' The *Why Test* provides a first impression of whether segment *B* is a support for *A*.

Simple Support: The segments in 11.234 show a straightforward example of a simple support:

(11.234) [We should tear down the building.]$_1$ [It is full of asbestos.]$_2$

The relation of support is represented by a regular arrow. The graph of the argumentation structure for this short example is shown in Figure 1 (a). We would like to stress that the order of the supporting segment and the supported segment in the text can also be the other way round. This is the case in example 11.235, in which the supporting segment is mentioned first, followed by the supported one. The graph for this example would show the arrow between the segments 1 and 2 pointing in the other direction.

(11.235) [The building is full of asbestos.]$_1$ [We should therefore tear it down.]$_2$

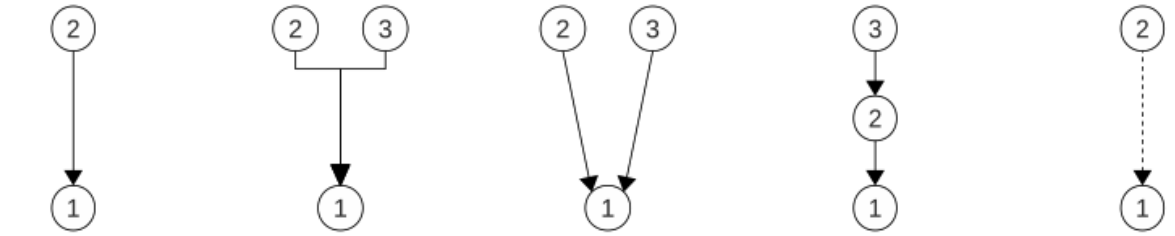


Fig. 1: Types of support relations

Linked Support: In addition to simple support, there is the more complex case of a linked support. With a linked support, none of two premises on its own would be able to support a conclusion, but they can do so together, when the author claims both of them to hold.

(11.236) [We should tear down the building.]$_1$ [It is full of asbestos.]$_2$ [All buildings with hazardous materials should be demolished.]$_3$

The argument only works if both the premises hold: If contaminated buildings were not to be demolished, the present contamination would not cause the need to tear down the building. And also the other way round: If contaminated buildings are to be demolished but a particular building is not contaminated, then there is no need to tear it down. The linked support is shown in the diagram by connecting the premises before they link to the conclusion so the arrow has several starting points and one shared target (see Figure 1 (b)).

Please note that the rule made explicit in segment 3 of example 236 remained implicit in the previous example 234 and therefore has to be taken into consideration. In the annotation process,

however, we will consider only premises that are expressed explicitly in a segment.

Convergent Support: We make a distinction between linked support and cases where the support is given by several premises that are independent from one another. An example is given in 11.237:

(11.237) [We should tear down the building.]$_1$ [It is full of asbestos.]$_2$ [Also, people in the neighborhood have always hated it.]$_3$

Even if the building is not contaminated by asbestos, there is still a (more or less strong) reason for the demolition because of the low popularity of the building. Each supporting statement fulfils its function on its own, independent from the other(s). Accordingly, the graphical representation in the argumentation structure for the multiple support is a separate arrow for each premise, linking the arguments to the common conclusion (see Figure 1 (c)). Following the literature, we call these structures `convergent'.

Serial Support: Another way to provide support to the conclusion is to further develop an argument already given by supporting one of the argument's premises. For example, our text on the demolition could as well be continued by a third segment, which does not support the main claim directly, but an "intermediate" claim that supports the main claim:

(11.238) [We should tear down the building.]$_1$ [It is full of asbestos.]$_2$ [The commission reported a significant contamination.]$_3$

Using this kind of recursive support results in a serial structure that is shown in figure 1 (d).

Support by Example: A special form of lending support to a claim is that of giving examples:

(11.239) [A citizens' initiative can force the local authorities to tear down a building.]$_1$ [In Munich, such a group forced the mayor to demolish an old office building!]$_2$

The specific example provides 'empirical evidence' for the correctness of the claim without deducing the claim from regular connections, but merely by citing one illustrative instance. This is why the support by example is often less strong. This special form of support is represented in the argumentation structure by using an arrow with a dashed line instead of a solid one (see figure 1 (e)).

Both a proponent and a possible opponent can make use of support for their claim. Thus far, we have looked into the support relations on the proponent's side only. Yet the same support relations may also hold between the segments of the opponent, e.g., when the latter provides additional reasons for his or her objection (see the example text at the end of these guidelines). But please remember that both the proponent as well as the opponent will support their own segments only.

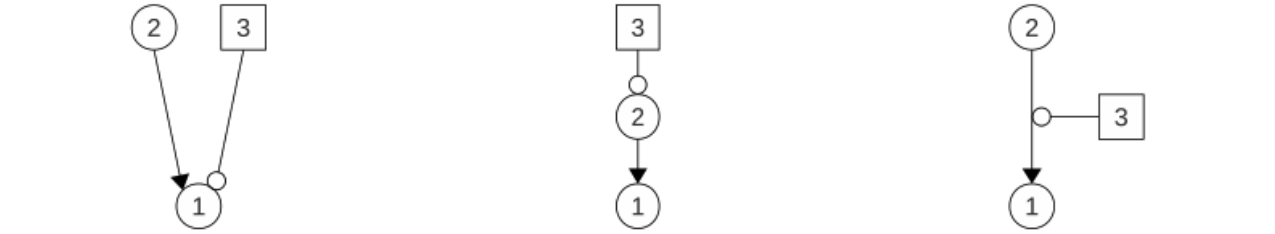
5.2 Attacks

Compared to how a support works, an attack is intended to reach the opposite goal: Attacking aims at refuting the statement that is the target of the attack, or to weaken its force. In the argumentation diagram, all attacks are depicted by an arrow with a circle arrow head. We distinguish between two kinds of attacks: *Rebutters* attack propositions whereas *undercutters* attack the relation between propositions. We explain the distinction by looking into examples of attacks made by the opponent first. (Thereafter we will deal with the opposite case, in which the proponent answers the attacks of the opponent.)

Rebutter: A rebutter refutes a proposition. This means that by using a rebutter, the author claims that a proposition does not hold for particular reasons. This is the case in the following example:

(11.240) [We should tear down the building.]$_1$ [It is full of asbestos.]$_2$ [On the other hand, many people liked the view from the roof.]$_3$

The nice view mentioned in the third segment gives reason *not* to demolish the building. The corresponding argumentation graph is given in Figure 2 (a). A rebutter can possibly also be taken as an argument for the negation of the proposition under attack: The nice view supports the request not to tear down the building.



(a) Rebutter gegen die Konklusion (b) Rebutter gegen die Prämisse (c) Undercutter gegen die Relation

Fig. 2: The opponent attacks the proponent

When considering the support functions, we noted that there can be different targets of that relation. This is also the case for attacks. While 11.240 provided an example of an attack on the conclusion, 11.241 gives an example of an attack on the premise of an argument; see figure 11.7 (b).

(11.241) [We should tear down the building]$_1$ [It is said to be full of asbestos.]$_2$ [Yet, nobody has really made a precise assessment of the degree of contamination.]$_3$

The fact that there is no detailed information available on the degree of contamination weakens the assumption of the building being contaminated by asbestos.

Undercutter: In contrast to a rebutter, an undercutter does not challenge the validity of a proposition but challenges the relation between two propositions, for instance a support relation:

(11.242) [We should tear down the building.]$_1$ [It is full of asbestos.]$_2$ [The building might also be cleaned up, though.]$_3$

In the example above, the author presents an exception that serves as counter-argument. The author does neither dispute that the building is full of asbestos nor make a statement about the demolition. Instead, the attack aims at the inferential step from the contamination to the demolition: The mere fact that the building is contaminated by asbestos does not necessarily mean that is has to be torn down. It could as well be cleaned up, after all. Thus in the argumentation graph, the undercutter is represented by an arrow with a circle head pointing at another arrow; see figure 2 (c).

Rebutting and undercutting attacks can sometimes be hard to distinguish on the opponent's side: Does the segment in question challenge the validity of a conclusion presented by the proponent (rebutter)? Or does it express a counter-argument that challenges the validity of the inferential step from premise to conclusion (undercutter)? A convenient way to tell them apart is to test how felicitous the attack is if the premise is omitted. The undercutter makes only sense if there is an

inference that is indeed undermined by the undercutter. If we omit the premise (segment 2) in example 11.240 then the attack still works effectively. But if we omit the premise in example 11.242, the attack fails to make sense, because it depends on the premise. So if the premise can be omitted it is more likely that the attack is a rebutter against the conclusion, rather than an undercutter.

5.3 Counter-attacks

Thus far we have focussed on attacks of the opponent that are directed against the arguments of the proponent. But the proponent will surely "fight back" and defend his or her arguments by attacking in return the opponent's attacks. In doing so, the following combinations may arise:

To rebut a rebutter: The opponent presented an argument against a proposition. The proponent refutes this objection by in turn presenting an argument against it. Hence in example 11.243, the author refers to the absence of visitor groups in order to show that the building is no tourist attraction. The corresponding graph is given in Figure 3 (a).

(11.243) [We should tear down the building]$_1$ [even though it is supposed to be some tourist attraction.]$_2$ [But I, for one, have not seen any visitor groups there!]$_3$

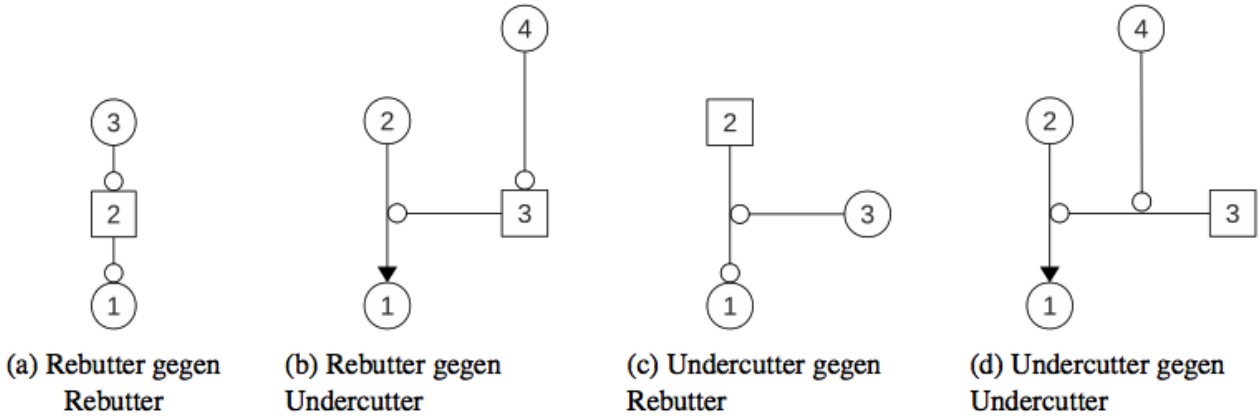


Fig. 3: The proponent responds to the opponent's attack

To rebut an undercutter: The opponent attacked an inference by referring to a counter-argument. An example is given in 11.244: If it were true what the counter-argument says, namely, that asbestos is harmless, then it would not be necessary to tear down a building that is full of asbestos. The proponent, however, can show that the counter-argument does not hold by referring to the questionable source of information. The corresponding graph is depicted in Figure 3 (b).

(11.244) [We should tear down the building.]$_1$ [It is full of asbestos.]$_2$ [Some new scientific study reportedly considers asbestos harmless.]$_3$ [But that is probably only a hoax.]$_4$

To undercut a rebutter: The opponent presented an argument against a proposition, or an argument for the negation of the proposition. The proponent, in turn, seeks to show that the supposed argument does allow this inference. The proponent in example 11.245 could accept that the building is is indeed a tourist attraction. But he shows that this is no argument against the demolition, because of the counter-argument stating that the new building will be an even greater tourist attraction. The argumentation graph for this structure is given in Figure 3 (c).

(11.245) [We should tear down the building,]$_1$ [even though it is supposed to be some tourist attraction.]$_2$ [They will surely build something even more attractive on the site.]$_3$

To undercut an undercutter: The opponent challenged an inference by referring to a counter-argument. The proponent counters this attack by giving a counter-argument to the counter-argument in turn. The proponent in example 11.246 elaborates that the possibility to clean up the building is irrelevant due to the immense costs. For the corresponding structure see Figure 3 (d).

(11.246) [We should tear down the building.]$_1$ [It is full of asbestos.]$_2$ [In principle, it is possible to clean it up]$_3$ [but according to the mayor that would be forbiddingly expensive.]$_4$

6. Summary: Overview of the annotation steps

Preparation: First, read the full text.

Step 1: Segmentation
(a) Split the text into EDUs.
(b) Derive ADUs from the series of EDUs.
- deletions
- joins
- restatements

Step 2: Identify the main claim: Is the main claim explicitly given in an ADU? Otherwise: Create an artificial ADU '[MC]'.

Step 3: Determine the dialectical role of each ADU and use the according node shape:
- proponent – round
- opponent – rectangular

Step 4: Determine the target and the argumentative function for each ADU; draw the according arrows:
support
- basic argument (simple support)
- linked support
- support by example

attack
- rebutter (attacks premises or conclusions)
- undercutter (attacks relations between two propositions)

Check:
- Is the node to which all arrows eventually point identical to the main claim as identified in step 1?
- Does every node have exactly one outgoing arrow (apart from the main claim)?
- Do the proponent and the opponent respectively support their own nodes? And do the proponent and the opponent respectively attack only the nodes of the other?

7. Analysis of an example text

In this section, we discuss the annotation process by means of an example text. We will take a text that has been segmented into EDUs as a starting point.

[1] People who regularly take a short rest during work are known to work more focussed and more effectively.

[2] This is a well-known fact and was proven by scientific long-term studies that investigated the performance in the creative industries.

[3] According to these studies, companies that provide relaxation rooms for its poets and thinkers perform better.

[4] Students, too, should have the chance to put up their feet and to switch off their mind between the lectures.

[5] In a quiet environment, of course.

[6] Certainly, not every student would be able to take this chance,

[7] as quite a few have to commute from one campus to the other during the break.

[8] And one needs to have lunch, too, eventually.

[9] But it would be fair enough to have an offer for a smaller group only.

[10] And, between you and me:

[11] The professors, too, would then be glad to have a refreshed audience and to find an attentive ear.

[12] It would definitely be no harm to the university.

Step 1: Segmentation of ADUs: Most of the 12 EDUs mentioned above can be directly converted into ADUs, only two of them need special attention. Segment [5] is incomplete but it can be integrated in the preceding segment to form a proposition. Therefore, both segments are joined to form a new ADU [4,5]. Segment [10] is neither the main claim nor its support nor a possible counter-argument. So it does not serve any purpose in the argumentation but a purely rhetorical purpose. It can therefore be deleted and will not be present in the argumentation graph. There are no repetitions of previous segments in this text.

Step 2: Main claim: The author of the text tries to convince the readers that the university shall provide relaxation rooms for its students. This is best made clear by ADU [4,5].

Step 3: Assignment of the dialectical role: Most of the remaining ADUs argue directly or indirectly in favour of the main claim, except for the segments [6], [7], and [8]. The author presents a possible counter-argument in [6], which is further backed up by [7] and [8]. These are the objections that an imagined opponent would bring up. Thus these ADUs are depicted by rectangular nodes in the resulting argumentation graph, while the other ADUs, namely those presented by the proponent, are given by round nodes.

Step 4: Argumentative function and target: Before presenting the main claim in [4,5], the author opens the text with three ADUs that are all in favour of the main claim. How is this done exactly? Is it three arguments supporting the main claim independently from each other; or being linked to one another only; or do they provide serial support? The argument that taking a rest is useful [1] definitely supports the main claim, whether or not there are studies on it from the creative industries [2]. So we can rule out the possibility of a linked support. Moreover, a possible multiple support by independent arguments is out of question as the arguments are not fully independent from one another. The author intends to convince the reader of the benefit of relaxation rooms, and for this purpose, he or she mentions the studies *because* that is exactly what the studies show. By summing up their result, the author reaffirms that the studies indeed provide evidence for the supposed effect. Therefore, this is a serial support chain: [4,5] is supported by [1], which is supported by [2], which is supported by [3].

Following the main claim, the author presents a possible counter-argument. We have to distinguish whether this is a rebutter or an undercutter and have to find the target. Firstly, we can rule out the possibility that we are facing a rebutter against [1], [2], or [3], as neither the effect nor the validity of the studies is being questioned. Nor is it an undercutter attacking the relation between the positive effect [1] and the desire for relaxation rooms [4,5], because the little usage is independent of [1]: There could be different arguments in favour (such as the benefits of a collective nap for the social life), but the little usage would still be a point against the claim. Instead, [6] works as a rebutter against the main claim. The author presents a possible argument why there was no need to provide relaxation rooms. [6] directly attacks [4,5].
This objection is then substantiated by [7] and [8]. So they both support [6]. In which way? It cannot be a linked support, as commuting between campus and eating in the student canteen are, independently from one another, two good reasons to lack the time for a nap. It also cannot be serial support, because this would require a connection (unless the student canteen was on a different campus). Moreover, by using the clause-initial conjunction 'and', the author indicates that the two arguments are of equal importance. As a consequence, this kind of support has to be a multiple one.
In [9], the author refutes the possible objection, at last. Again, we work out how this is done in detail. The response might be a rebutter targeting [6], [7], or [8] directly, but it neither disputes that only part of the students could make use of the offer, nor does it dispute why this is the case. It is no undercutter against the support of the objection, either. Instead, it refutes the relevance of the objection for the main claim. Even if the offer could be taken by part of the students only, it would still serve its purpose. So ADU [9] works as an undercutter (attacking the attack relation).

The remaining ADUs [11] and [12] both favour the main claim. Again, a linked support can be ruled out, as both arguments would work without the other being present. In this case, it is subject to the interpretation of the text whether we annotate the arguments as a serial or as a multiple support: If simply the professors are glad about attentive students no matter how the benefit-cost-analysis was, then it is a multiple support relation. As an alternative, we could assume the professors to be glad about mental vigor *because* it does not do harm to the university. In that case, the main claim is supported by [11], which is supported by [12]. We always decide on these alternatives by considering how clear the author indicated either of them. As [12] does not give an explicit signal for a supposed relation, we rather assume a multiple support and thus interpret the argumentation in the easiest possible way. The argumentation structure that results from this example annotation is given in figure 11.9.

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