

Guidelines for Argument Type Annotation in Persuasive Essays

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1 Introduction

The field of Argument Mining (AM) has been intensively studied over the last decade. While some studies focused on the development of different AM subtasks, others investigated the suitability of AM approaches on a variety of different text domains.

Persuasive essays constitute a domain of particular interest for AM research, which does not come as a surprise, given that an essay needs to contain argumentation in order to be classified as *persuasive*. One corpus extensively used in the AM community is the Argument Annotated Essay (AAE) corpus, originally published by Stab and Gurevych (2014) (version 1, n=90) and extended by Stab and Gurevych (2017) (version 2, n=402). Version 2 of the corpus contains 402 essays, annotated for the argument components *major claim*, *claim*, and *premise*, as well as the relations *support* and *attack* and *claim stance* (see Section 1.1 for more details on their annotation scheme).

Carlile et al. (2018) used a subset of version 2 (n=102) for their own research on argument attribute and persuasiveness annotation. While most attributes are closely related to persuasiveness, they also provide annotations for basic claim and premise types for the 102 essays. Another related work is Al-Khatib et al. (2016) who annotated different premise types in a set of editorials. The goal of this annotation project is to utilize a set of claim types and premise types derived from the annotation schemes of Carlile et al. (2018) and Al-Khatib et al. (2016) in order to create an argument type layer for the full version 2 of the AAE corpus.

Here, we describe the scheme for this particular annotation task. We start with a summary of the original annotation guidelines for the AAE (Section 1.1) corpus as well as the claim types added by Carlile et al. (2018) and premise types derived from both Al-Khatib et al. (2016) and Carlile et al. (2018) (Section 1.2). We then continue with a description of the annotation procedure and detailed examples of both claim types (Section 2.2) and premise types (Section 2.3). As we adapted the annotation schemes of previous studies, we closely follow the descriptions in the respective papers and guidelines.

1.1 Argument Annotated Essays

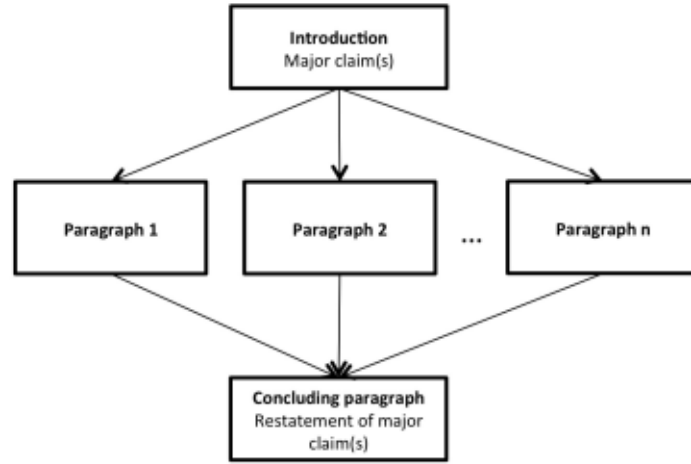
In this section we describe the original annotation scheme used by Stab and Gurevych (2017) (see Stab and Gurevych (2015)). While we do not annotate their categories ourselves, i.e. the first annotation layer, we still need to provide annotators with this layer in order to enable them to add the second layer of argument types. Hence, an understanding of the original annotation scheme is necessary.

Stab and Gurevych (2017) provide annotations for the core components of argumentation (*major claim* and *premise*).¹ Persuasive essays tend to exhibit a rather rigid structure (see Figure 1), which is reflected in the actual usage of these components.

An essay starts with an introduction to the topic. This introduction often contains the *thesis statement*, which, for the sake of this annotation, is called *major claim*. The major claim is the author’s main stance about the essay’s topic. Other than the major claim the introduction usually does not contain argumentation.

¹Note that Stab and Gurevych (2017) also annotated support and attack relations between claim and premise components and claim stance towards the major claim. These, however, are not important for our study and will be ignored during annotation.

Figure 1: A Typical Structure of a Persuasive Essay (Stab and Gurevych, 2015).



The actual argumentation unfolds in the paragraphs following the introduction. Each paragraph can contain one or more arguments, which consist of a claim and at least one premise. A claim is the central component of an argument and can be described as the *reason for the major claim*. It is supported or attacked by premises, which themselves are hence reasons for or against a claim. Each claim further bears a for/against stance towards the major claim.

Note that the whole argumentation can actually be derived from the tree structure (see Figure 2), i.e. the label of an argument component depends on its position in the argumentative tree. The root node is the major claim. Claims constitute the next level with their respective stances towards the major claim. Finally premises are used to support or attack a claim. However, an argumentation does not need to be limited to these three levels. Each premise can be supported or attacked by another premise, thus allowing for more complex argument structures. However, due to the definition of the tree structure a premise cannot be directly related to a major claim and claims cannot support/attack premises or other claims.

An essay ends with a conclusion where sometimes the major claim is reformulated. It may also contain a summary of the reasons supporting the major claim, i.e. a summary of claims. In rare cases the conclusion contains new complete arguments, i.e. a claim and its premises.

Recall that while it is important to know this original annotation scheme, none of this will be annotated in this study. Instead we utilize the original argument component layer in our annotation procedure and add another layer of argument types.

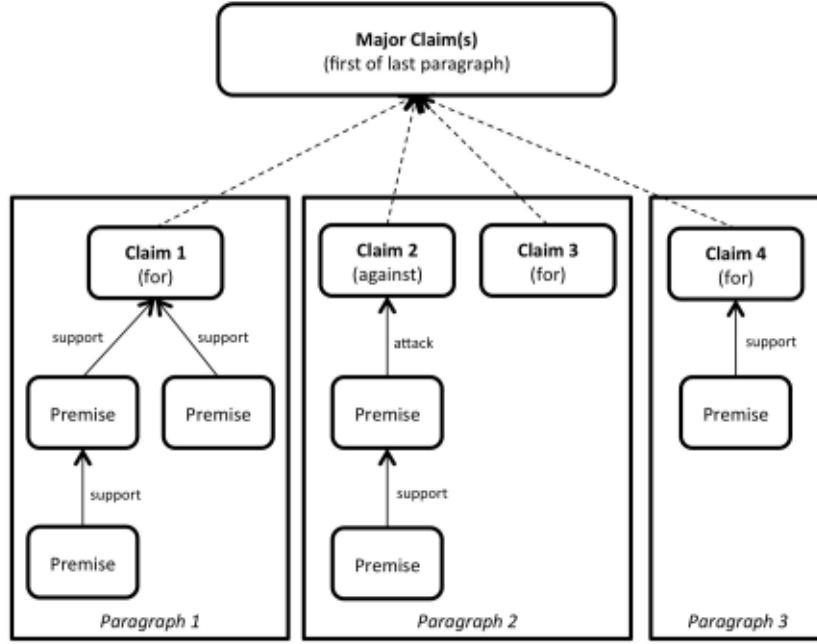
1.2 Attribute Annotation: Al-Khatib et al. (2016) and Carlile et al. (2018)

In this section we describe the general design of the claim type annotation conducted by Carlile et al. (2018) as well as the premise type annotation done by both Al-Khatib et al. (2016) and Carlile et al. (2018). Detailed examples will be given in Section 2. Importantly, argument types are mutually exclusive, i.e. each argument component will receive one claim type or premise type, respectively. We will see however that semantically some types overlap to a certain degree. To reduce ambiguity during annotation we attach priorities to argument types, i.e. a simple decision tree which shall help the annotator.

See Table 1 for a summary of claim and premise types. Carlile et al. (2018) gave brief descriptions of the definitions of argument types in their paper and, additionally, provided us with a draft of their guidelines. The claim type definitions in Table 1 roughly follow the wording used in draft and paper, however, the types lack detailed explanations. The definitions of premise types are directly taken from Al-Khatib et al. (2016) or modified from the guidelines of Carlile et al. (2018).

Importantly, we annotate claims only with claim types, while premise may be annotated with premise types and additional claim types. This is done in order to account for the semantic ambiguity often found in premises. While premises can be functionally identified from the argumentative tree, semantically

Figure 2: Example of Argument Tree Structure (Stab and Gurevych, 2015).



they are often rather claim-like. Every premise needs to get a premise type, while the additional claim type remains optional.

Component	Type	Definition
Claim	policy	some action should or should not be taken
	value	something is good or bad, important or not important, etc.
	fact	something is true or false
Premise	testimony	states or quotes an utterance by an expert, authority, witness, group, organization, or similar
	statistics	states or quotes the results or conclusions of quantitative research or studies, or presents quantitative dependencies
	hypothetical instance	describes a hypothetical situation
	real example	a real historical event or a verifiable statement about the world
	common ground	a unit presented by the author as a self-evident fact, accepted truth, a generally known issue or similar
	other	does not match any of the above classes

Table 1: Claim and Premise Types.

1.2.1 Claim Types

We annotate three different claim types: policy, value, and fact. All types have in common, that they focus on the arguer’s argumentative intention, i.e. what a person is arguing for (the need to undertake an action, a target’s value or truthfulness/falseness). During annotation this has to be kept in mind.

Policy: The unit is used to argue towards some action to be taken or not to be taken, or some law or rule to be implemented or not to be implemented. In this it differs from *value* and *fact* which do not intend to persuade someone of the need to take action or not.

Value: The unit is used to argue in favor of or against some target being good/bad, important/unimportant, useful/useless, etc. In other words, it asks how we interpret the world by evaluating the target, i.e. attaching a certain value to it.

Fact: The unit is used to argue in favor of or against some target being true or false. In contrast to

value, it does not evaluate a target's quality, but instead focuses on the question if something is the case or not. It thus asks what the world is like, not how we interpret it. Importantly, the target does not have to be true or false. Instead one argues with the goal of convincing someone of the target's truthfulness or falseness.

1.2.2 Premise Types

We annotate the following premise types: testimony, statistics, hypothetical instance, real example, common ground (and other).

Testimony: The unit gives evidence by stating or quoting that a proposition was made by some expert, authority, witness, group, organization, or similar. Individual experts, etc., can be explicitly named, however, a general usage is equally valid, e.g. "Scientists suggest that...".

Statistics: The unit gives evidence by stating or quoting the results or conclusions of quantitative research, studies, empirical data analyses, or similar. In addition, more general or abstract statements involving quantitative analyses and dependencies are also valid, e.g. correlations as in "the more ..., the less ...". *Statistics* requires numbers to be put into relation to each other. Simply stating amounts, e.g. "Many people ...", is not sufficient. Instead, *statistics* focuses on proportions, aggregations like the mean, correlations or similar.

Hypothetical Instance: The unit describes a hypothetical situation. While it can be similar to a real example, it cannot be proven by an external source, i.e. it did not happen sometime or somewhere, but is fully created by the arguing person.

Real Example: The unit describes a real historical event or a verifiable, specific statement about the world. For instance, it may refer to some event that happened at some point in time or some place. As such context is crucial here. Being verifiable means that an event or statement can be proven by an external source. The source, however, does not need to be given. Note that, while provable, utterances made by experts are not treated as *real example* but as *testimony*. In contrast, personal experiences given by the author, usually described using 1st person pronouns, are treated as *real example* and *not* as *testimony*.

Common Ground: The author presents the unit as common knowledge, a self-evident fact, an accepted truth, or similar. Thus, while it not necessarily *is* common knowledge or similar the author presents it as such and seemingly assumes that it will be accepted without proof or further support by all or nearly all possible readers, even if not known in advance. Contrasting with *real example* the unit refers to general issues, not to specific events or statements.

Other: The unit does not match any of the above classes.

2 Annotating Claim and Premise Types

In this section, we explain the annotation procedure and show examples that shall function as aid and reference during annotation.

2.1 Annotation Procedure

Annotations should be conducted in a top-down manner, i.e. starting with claims and finishing with premises. Every claim is annotated with a claim type. Every premise is annotated with a premise type. Given that premises often are semantically claim-like, we also annotate them with claim types. For premises which are not claim-like we add the type *No Claim*. Importantly, this type is not to be annotated for claims.

1. Read through the essay for comprehension.
2. Annotate one paragraph after another.
 - (a) In each paragraph, annotate types for (major) claims first, i.e. claim types.
 - (b) After finishing claim annotations, annotate the types for premises, i.e. premise types and claim types.

To facilitate annotation and reduce ambiguity we use the following priorities/decision trees during annotation.

Claim Type Priorities

Policy > *Value* > *Fact*

Premise Type Priorities

Testimony > *Statistics* > *HypotheticalInstance* > *RealExample* > *CommonGround* > *Other*

2.2 Claim Types

2.2.1 Policy

Definition: The unit is used to argue towards some action to be taken or not to be taken, or some law or rule to be implemented or not to be implemented. In this it differs from *value* and *fact* which do not intend to persuade someone of the need to take action or not.

Example (essay091):

Therefore, I would conclude that a single international language contributes to global community in terms of economic and cultural communication. On the other hand, every country should by no means disregard the preservation of their own cultural heritage_{policy}.

Rationale:

This claim contains a request to not implement a certain policy.

Example (essay094):

Preventative measures will help improve general health state of all citizens. For example, vaccines will guarantee that pregnant women and their babies are protected from serious infectious diseases such as flu, smallpox, rubella so on. When huge injection campaigns are organized throughout our country, the community's health state will be improved remarkably. As human resources play a key role in the development of a country, investing money to enhance the general health state is a totally right decision_{policy}. In addition, because the cost of treatment is often much higher than that of prevention, the government can save a lot of money for our country's health budget.

Rationale:

While this claim is not explicitly stating that an action should be taken, it still says that taking a certain action is right. Hence, it has been annotated as *policy*. Note that this could in principle be confused with *value*. However, given its focus on an action, annotating it as *policy* is preferable.

Example (essay102):

In conclusion, I believe we still need museums and art galleries but computers can be introduced to museums and galleries in order to help visitors to know more about the art works or historical objects_{policy}.

Rationale:

Although this paragraph's claim is a less demanding example, it is still a case of *policy* as it describes an action.

2.2.2 Value

Definition: The unit is used to argue in favor of or against some target being good/bad, important/unimportant, useful/useless, etc. In other words, it evaluates the target, i.e. attaches a certain value to it.

Example (essay091):

Also, a universal language is an integral part of cultural communication and interactions_{value}. If people are equipped with a single international language, they can tell each other smoothly about their countries' specific cultures such as the traditional customs or the modern lifestyles, which enables people to expand their outlooks, viewing the world in new angles. For example, when people travel to foreign countries, the local people can introduce the tourist attractions to such people with the command of the universal language, helping foreign visitors have an enjoyable exotic experience.

Rationale:

The claim is of type *value* as it describes universal language as being an integral part of cultural communications and interaction. Thus, it attaches a certain value to it.

Example (essay095):

In conclusion, the development of news media has been making great inroads into the lives of all people. It relaxes people with plentiful entertainment news. It enriches people's knowledge with worldwide information. It also positively affects the way people live in many other aspects. Therefore, the progress of news media is an advantageous development_{value}.

Rationale:

This paragraph's claim is of type *value* as it attaches the value *advantageous* to the target *progress*.

Example (essay100)

First and foremost, it is certainly true that university education is of paramount importance for certain professions such as doctor, engineer and lawyer_{value}. Without proper training and knowledge, it would be impossible for them to perform their best in their careers. Not only that, when they are in a university, they will have the opportunity to share their knowledge as well as to network for business associates and partners. This can benefit them in future when they intend to open up their own companies or hospitals.

Rationale:

This is a rather tricky case as the claim both states the truthfulness of the proposition and attaches a value. However, as it states that attaching the value *paramount importance* is true, the claim is labelled as *value*.

2.2.3 Fact

Definition: The unit is used to argue in favor of or against some target being true or false. In contrast to *value*, it does not evaluate a target's quality, but instead focuses on the question if it is the case or not. Importantly, the target does not have to be true or false. Instead one argues with the goal of convincing someone of the target's truthfulness or falseness.

Example (essay092):

Furthermore, people with inadequate aesthetic knowledge or poor originality develop their own senses of fashion when treasuring the latest fashion information. Without following fashion trends, such people would have a hard time choosing and matching clothes, let alone forming their own dressing styles_{fact}.

Rationale:

This claim is annotated as *fact* as it does not attach a value but states that it is true that *people would have a hard time*

Example (essay097):

First and foremost, sports events are good chances for excellent athletes to meet and learn valuable experiences from one another so that they can improve their results, break

records and bring victories to their own countries_{fact}. Because a large number of people will gather in the host city for sport events, there are many good opportunities for discovering different cultures. Consequently, sport events with the spirit of healthiness, honesty and fairness can help strengthen understanding, friendship and solidarity among nations_{fact}. After sharing competitive but interesting moments in each competition, the competitors often shake hands friendly and congratulate the winners, which can lead to an improvement in the relationships among nations.

Rationale:

Both claims in this paragraph do not attach values or propose policies but instead state that the propositions are true.

Example (essay096):

It is undeniable that when the background of the convicted is 'dug' deeper and is revealed to mass of anonymous people, his privacy is being jeopardized_{fact}. If finally he is proven innocent, he may feel embarrassed to face the public. However, I am sure that the crimes done by criminals should be brought to light and the public should be aware of it so that they will not become a victim as well.

Rationale:

The claim is labelled as *fact* as it states the truthfulness of the proposition. Linguistically this is initialized by the main clause *It is undeniable....*

2.3 Premise Types

2.3.1 Testimony

Definition: The unit gives evidence by stating or quoting that a proposition was made by some expert, authority, witness, group, organization, or similar. Individual experts, etc., can be explicitly named, however, a general usage is equally valid, e.g. "Scientists suggest that...".

Example (essay054):

On the one hand, technology indeed simplifies people's life all the time. Obviously, people who watch exhibitions on TV or internet at home, save the time and money on the road, which is increasingly significant particularly to people in modern society. However, in accordance with recent research, experts suggest the lifestyle of individuals in modern society is unhealthy_{testimony} because they lack of physical exercise and face-to-face communication.

Rationale:

In this paragraph testimony is given by mentioning recent research that is used by experts to make certain suggestions.

Example (essay057):

Unfortunately, many governments restrict the artists. Frank Zappa once said, "Mind is like a parachute, it doesn't work if its not open"_{testimony}. Restrictions would just curb the innovative ideas of the artists and would limit their brains. Like the media, artists should also be given the freedom to express their ideas freely.

Rationale:

In this paragraph, Frank Zappa is directly cited. This citation is then used as a premise, i.e. Frank Zappa functions as an expert, i.e. gives testimony.

Example (essay093):

In terms of ethics, it is inhumane to watch one's fellowman struggle against famine and poverty without doing anything to help, especially when the onlooker takes no effort to do so. Compassion, a virtue preached in almost all religions from Buddhism to Mohammedanism, is what distinguishes us human beings from animals_{testimony}.

Rationale:

In this paragraph, testimony is given rather abstractly by referring to religions. As religions are some kind of organizations or authorities their teachings qualify as testimony.

2.3.2 Statistics

Definition: The unit gives evidence by stating or quoting the results or conclusions of quantitative research, studies, empirical data analyses, or similar. In addition, more general or abstract statements involving quantitative analyses are also valid, e.g. correlations as in "the more ..., the less ...". *Statistics* requires numbers to be put into relation to each other. Simply stating amounts, e.g. "Many people ...", is not sufficient. Instead, *statistics* focuses on proportions, aggregations like the mean, correlations or similar.

Example (essay071):

Besides, it is obvious that publicizing brand image or a particular product of mass media could boost sales for companies. In a larger sense, it could simulate household spending and therefore promote the economic development of the whole country. A recent study shows that after launching an advertising campaign, the sales revenue would increase by 40%, which is the very fact to verify its positive influences on economic_{statistics}.

Rationale:

This paragraph contains a premise annotated as *statistics*. It refers to a study which provides a statistical analysis usable for the argumentation.

Example (essay101):

Apart from that, not all elderly workers are physically well. Beyond that age, a large proportion of them have an elevated chance of contracting a multitude of health problems such as stress related diseases and cardiovascular illnesses_{statistics}. To cite an example, the stressful life that an aged teacher goes through will definitely take a toll on him. Consequently, they will not be able to give their best in whatever they are doing. Besides, the academic institution will have to pay for his medical bills, resulting in more loss for the institution. Thus, it would indeed be better if at an older age, opportunities are given to the younger ones.

Rationale:

This paragraph contains a premise annotated as *statistics*. Although it lacks a study as backing the statement can still be seen as a quantitative analysis.

2.3.3 Hypothetical Instance

Definition: The unit describes a hypothetical situation. While it is similar to an event, i.e. *real example*, it cannot be proven by an external source, i.e. it did not happen sometime or somewhere, but is fully created by the arguing person.

Example (essay093):

Economically speaking, such aid could also create a win-win situation. Underdeveloped nations no doubt receive direct benefits through such deeds. For developed nations, new medical problems may very well arise from the work in underdeveloped nations_{hypothetical instance}; thus related research is conducted accordingly to conquer the problem, promoting the development of the pharmaceutical industry_{hypothetical instance}. The potential market in those poor countries, most of which has a huge population, is also a thing worth mentioning. By building a good relationship with them, wealthy nations can not only broaden their global market, but also facilitate future international commerce. The underdeveloped nations, in return, may export local agricultural products, mineral products with discount to the former, boosting each other's economy.

Rationale:

This paragraph contains two related premises annotated as *hypothetical instance*. They

do not refer to real examples but instead contain a hypothetical future development of a situation. It is hypothetical because the arguer created it.

Example (essay096):

First and foremost, I believe that it would be easier for the juries to make a decision if they know about the past information about the criminal. This is because, knowing their background very well will enable the juries to analyze the crime before coming up with a judgment. For instance, take a person who has not murdered anyone but is suddenly found to be guilty_{hypothetical instance}. The juries will be able to know whether the individual committed the crime intentionally or due to circumstances by knowing the facts about the person_{hypothetical instance}. Then, punishment can be given in accordance to the condition_{hypothetical instance}.

Rationale:

This paragraph contains several related premises annotated as *hypothetical instance*. They describe the hypothetical situation of a person found to be guilty who has not murdered anyone, and the effect of knowing the person's background on the decision made by the jury. They are hypothetical instances because they do not describe a real case.

Example (essay098):

First of all, children can learn about the hardship of earning money. When they take some kind of paid work such as looking after babies, doing housework and keeping shops, they will have some life experience and skills which make them mature and can deal with many different situations in real life_{hypothetical instance}. Therefore, they are likely to understand their parents' hardship, to respect values of money and to form a good habit of saving.

Rationale:

In this paragraph a person argues that children can learn valuable knowledge by jobbing. In order to support this claim a hypothetical situation is put forward. It is not based on a real child's experience.

2.3.4 Real Example

Definition: The unit describes a real historical event or a verifiable, specific statement about the world. For instance, it may refer to some event that took place at some point in time or some place. As such context is crucial here. Being verifiable means that an event or statement can be proven by an external source. The source, however, does not need to be given. Note that, while provable, utterances made by experts are not treated as *real example* but as *testimony*.

Example (essay091):

In spite of this, the disadvantages of the promotion of a universal language cannot be denied. To be more specific, a single international language may, to some extent, erode the cultural identity of a nation. This is because people may be impressed by the cultural values brought with the universal language, eroding a sense of national belong. For instance, some Asians are seeking individualism, previously denied by many Asian countries_{real example}, due to the fact that they have gradually identified with such values expressed in American movies, which are imported by the governments as a result of the proliferation of English_{real example}.

Rationale:

This paragraph contains two premises annotated as *real example*, as they both refer to Asian people as a concrete example of a group that changes behavior in response to a single international language. Although *Asians* is a rather abstract group, it is still provable to a certain extent. It is thus no hypothetical instance.

Example (essay097):

Secondly, sporting occasions play an essential role in raising patriotic emotions in both athletes and spectators. Seeing national flags be honored may be the most emotional moments to each athlete. The athlete also seems to be more aware of his responsibilities and he wants to contribute more to his beloved country. When witnessing our national flags flying proudly among others, many of us can stop hiding our pride and happiness. For instance, when Vietnam became the champion of SEAGAMES for the first time in 2008, a festival atmosphere permeated into the streets_{real example}. People from all ages turned out to the streets with flags, banners and they sang aloud songs of Ho Chi Minh President_{real example}. The eager atmosphere lasted many next days_{real example}. In fact, some hooligans were so excited that they took part in motor racing or using fireworks illegally_{real example}. However, the hooligans only took a minority of people_{real example}. Therefore, it can be said that sport events help to wake up love and responsibilities strongly in each citizen.

Rationale:

This paragraph contains several real example premises directly following each other. They refer to a concrete event, i.e. Vietnam becoming the champion of SEAGAMES, and reactions to it. All of the stated premises could be proven, e.g. by newspaper articles.

Example (essay100):

Looking from another perspective, there are also a significant number of people who are very successful in their fields without going to university. Take for instance those who start their own business. These people depend solely on hard work and luck. Interestingly, for some of them it proved to be a profitable job. To cite an example, Michael Dell who is the founder and the CEO of Dell left college at 19_{real example}. Initially, he started his computer company in his college dorm room_{real example}. Eventually, he used his earnings as well as his family's loan in order to progress to be who he is now_{real example}.

Rationale:

This paragraph contains several real example premises, which describe some aspects of the life of Michael Dell. These are real examples as they can be proven, e.g. by reading a biography about his life or newspaper articles.

2.3.5 Common Ground

Definition: The unit states common knowledge, a self-evident fact, an accepted truth, or similar. It refers to general issues, not to specific events. In this it contrasts with *real example* or *hypothetical instance*. Even if not known in advance, it will be accepted without proof or further support by all or nearly all possible readers.

Example: (essay091)

It is especially true if we consider the fact that a single international language plays a pivotal role in global economic cooperation. As businessmen from different countries have access to the same language, they can communicate with each other more efficiently and deeply on trade, which can intensify the transnational cooperation_{common ground}. In contrast, without the availability of the same language, there might be a chance that misunderstanding and conflicts would ensue over business negotiations, impeding collaborations between them_{common ground}. Therefore, a single international language serves an economic purpose.

Rationale:

This paragraph contains premises with type *common ground*. They describe the generally known fact that businessmen from different countries can use the same language for communication, which would not be possible if they would lack knowledge of said language.

Example: (essay095)

First and foremost, today entertainment is easier for people to enjoy than ever before. The fact is that such news media as televisions, radios, or newspapers are bringing many news on entertainment sector from all over the world to everybody_{common ground}. People can sit in front of their televisions and watch whatever they want, from musical concerts to live football match_{common ground}. This is a convenient way of relaxation after hard work. Obviously, the popularity of news media is beneficial to human beings.

Rationale:

This paragraph's premises describe the generally known truth that content of news outlets can be consumed by people via their TV sets.

Example: (essay097)

First and foremost, sports events are good chances for excellent athletes to meet and learn valuable experiences from one another_{common ground} so that they can improve their results, break records and bring victories to their own countries. Because a large number of people will gather in the host city for sport events_{common ground}, there are many good opportunities for discovering different cultures_{common ground}. Consequently, sport events with the spirit of healthiness, honesty and fairness can help strengthen understanding, friendship and solidarity among nations. After sharing competitive but interesting moments in each competition, the competitors often shake hands friendly and congratulate the winners, which can lead to an improvement in the relationships among nations.

Rationale:

This paragraph contains premises of type *common ground*. It can be seen as generally known knowledge that athletes can learn from each other on sports events.

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