

# Creating an argumentation corpus: do theories apply to real arguments?

## A case study on the legal argumentation of the ECHR

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### ABSTRACT

Argumentation annotation is a crucial step in applying machine learning techniques to the argumentation field. However, there exist few argumentation corpora and their development has not been studied in depth. In this paper we present a study conducted during the creation of a legal argumentation corpus. It shows how well-known argumentation theories are used as the background framework of the annotation process and which difficulties are found when applying those theories to real argumentation. The aim of the paper is to highlight different critical points humans encounter when applying theory to real argumentation, allowing better and faster approaches in future annotation processes. Furthermore, we also highlight fundamental problems of the chosen argumentation theories and thereby offer ideas for future research on argumentation theory.

### 1. INTRODUCTION

Argumentation is a specific type of discourse often used in daily life. The study of argumentation is crucial in many areas of artificial intelligence and text processing research, e.g. reasoning agents or discourse analysis. Machine learning has been used to solve many problems of natural language processing and therefore it is reasonable to think that it can help to solve many of the problems encountered in argumentation processing.

A good training corpus is a crucial part of applying any machine learning technique. Therefore, the creation of argumentation corpora and its annotation process are crucial steps in applying machine learning to argumentation processing. However, nowadays few argumentation corpora exist and their development has not been studied in depth. Therefore, it is not fully known how argumentation theories should be applied and which difficulties can appear while doing so.

This paper analyses the annotation process of argumenta-

tion in legal documents. The legal field is an established and interesting research area for argumentation analysis given the central role of argumentation in the practice of law. Furthermore, the study of argumentation in the legal field is interesting because it enables to consider factors that go beyond the very abstract, proof centred arguments of, for example, mathematics, while retaining a certain formal structure, as against the rather anarchic arguments found in everyday conversation. The cases made by lawyers and the decisions of judges provide, therefore, important examples of written and spoken argumentation. Moreover, the study of legal argumentation benefits all parties of a legal case, favoring or improving applications such as the visualization of argument structures and access to schemes for argument building. Judges and juries can benefit from the study of legal argumentation to evaluate the strengths and weaknesses of the arguments used on both sides, and will be made more aware of the quality and (non-)validity of their own argumentation. Meanwhile the parties in a case can use these applications to identify critical questions to ask their opposing parties and to anticipate in their arguments. It also facilitates the process of finding precedents and can help improve the quality of their own argumentation. Finally, the annotation and its visualization can make judicial decisions more easily comparable and accessible for all individuals.

The documents annotated in this study are legal cases from the European Court of Human Rights (ECHR). We analyse how the judges of this court present their argumentation and argue that it can be a valid generalization of legal argumentation made by different courts or judges. We study the relation between this argumentation and well-known argumentation theories and we discuss the problems encountered during the annotation process, providing possible explanations and solutions. The analysis of natural language argumentation is difficult, not only for students, but also for experts. To apply any argumentation theory, philosophical, logical or dialectical, human annotators must deal, between others, with the ambiguity of the theories, the conflicts between theorems, the ambiguity of the argumentation itself and the existence of implicit information. Inevitably there is also some subjectivity in the interpretation of the written argument.

The rest of the paper is organised as follows. Section 2 gives a general introduction to argumentation, paying special attention to argumentation in legal cases. Section 3 presents a detailed description of the study on argumenta-

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tion annotation. It starts with a description of the argumentation framework used in the annotation, followed by a description of the data set and the annotation methodology. In section 4 the problems found during the annotation process are discussed and some solutions analysed. Finally, section 5 presents the main conclusions of this study and some thoughts on future research.

## 2. ARGUMENTATION

Argumentation is the process by which arguments are constructed, exchanged and evaluated in light of their interactions with other arguments. An argument is a set of premises, pieces of evidence (e.g. facts), offered in support of a claim, called the conclusion. The conclusion is a proposition, an idea which is either true or false, put forward by somebody as true. Argumentation may also involve chains of reasoning, where claims or conclusions are used in the assumptions or premises for deriving further claims. The following are possible examples of argumentation:

- A PhD student, Susan, has spent more than five years trying to finish her thesis, but there are problems. Her advisers keep leaving town, and delays are continued. She contemplates going to law school, where you can get a degree in a definite period. But then she thinks: “Well, I have put so much work into this thing. It would be a pity to give up now.”
- The medical examiner (ME) said that the tissue sample found at the crime scene matches the DNA of the suspect. Therefore, the tissue sample found at the crime scene matches the DNA of the suspect.
- With the Moon’s gravity being just 1/6th of the Earth’s, one might expect dust on the Moon to fall more slowly than it does on Earth. However, the Moon has no atmosphere to speak of, and so the dust would actually fall more quickly than on Earth.

Argumentation can play different roles depending on the aim of the presenter of the arguments. For example, it can be (i) factual argumentation, i.e. use just objective information with the aim of informing the audience of some verifiable information (e.g. scientific review), (ii) positional argumentation, i.e. use of objective, subjective and hypothetical information with the aim of informing the audience of the presenter’s beliefs (e.g. newspaper opinion article) or (iii) persuasive argumentation, i.e. use objective, subjective and hypothetical information with the aim of persuading the audience to do something [1]. We focus on the specific type of argumentation used in legal cases and more specifically on court decisions as it is described on the following subsection.

### 2.1 Argumentation in Legal Cases

A legal case is a dispute between opposing parties resolved by a court, or by some equivalent legal process. The purpose of legal argumentation is to “win” this dispute. A legal case begins when a plaintiff files a claim. Although no technical forms of pleading are required, there is a basic structure to every claim [5]. First, the plaintiff must allege certain facts, and then state a conclusion of law that justifies the relief being sought. The distinction between fact and law is essential to the operation of the entire system. The defendant, in turn, must file an answer. There are usually

[PREMISE *It is indisputable that there is no common ground on the question.*] [PREMISE *Although most of the Contracting States do not expressly prohibit homosexuals from adopting where single persons may adopt, it is not possible to find in the legal and social orders of the Contracting States uniform principles on these social issues on which opinions within a democratic society may reasonably differ widely.*] [CONCLUSION *The Court considers it quite natural that the national authorities, whose duty it is in a democratic society also to consider, within the limits of their jurisdiction, the interests of society as a whole, should enjoy a wide margin of appreciation when they are asked to make rulings on such matters*]

**Figure 1: Example of a judicial argument**

two possible answers: (i) deny the allegations of fact in the plaintiff’s complaint; or (ii) assert additional facts which, together with the necessary conclusions of law, would constitute an affirmative defense to the plaintiff’s original claim.

At this point, though, nothing has yet happened that legal experts would call an “argument”. There are only allegations and denials. An argument will be created once the defendant assumes that the factual allegations in the plaintiff’s complaint are true, and yet still argue that the plaintiff’s legal conclusions do not follow. Then, once the case proceeds to trial, the judicial decision has to be taken. All the facts and arguments from plaintiff and defendant are given to the trier, e.g. a court, a commission, a judge or a jury. It is the job of the trier to go over the complaints, the facts and the allegations to determine the outcome of the case, i.e. to take a judicial decision.

Judicial decisions are, therefore, made in cases of conflicts before the law, where there exists dispute about what the law means in a particular case. Subjects of law therefore have a legitimate expectation that the trier who decides a case comes to a motivated decision, based on sound argumentation, rather than ad random statements. In general there exists a particular duty for the deciding judge or court to motivate their decision, a so-called duty to give reasons. Therefore, judicial decisions are a perfect data set to find well-structured and correct arguments. An example of argument from a judicial decision can be found in Figure 1.

## 3. ARGUMENTATION ANNOTATION

Argumentation annotation is dependent mainly on three factors. First, the chosen argumentation theory or theories which establish the “elements” to be annotated. Second, the documents where the argumentation must be annotated. And, third, the knowledge and experience of the persons involved in the annotation process. This section presents a detailed description of how these three aspects were approached during our annotation process. First, it details the main characteristics of the ECHR legal procedure and its documents, then the background and main characteristics of the argumentation framework used on the annotation, and finally, a general description of the annotators knowledge, experience and working strategy.

### 3.1 Data

The set of documents selected for our corpus were extracted from the European Court of Human Rights (ECHR)

human rights documentation (HUDOC)<sup>1</sup> database of judgments and decisions, which is available on CD-ROM and online. We gathered a corpus of 45 judgments and decisions from the CDs from August and December 2006. We selected documents in English (the ECHR also offers French translations).

### 3.1.1 ECHR Characteristics

The ECHR is the court watching over the application of and compliance with European Convention on Human Rights, a treaty to which 47 Council of Europe (COE) member states, including the Russian Federation and Turkey, are parties. As such it has jurisdiction over all these states in matters regarding human rights. It is the highest court on these matters and its judgments must be implemented in all member states. For this reason alone, automated annotation of a corpus of ECHR could have a wide field of application.

Both states and individuals can file complaints, and thus act as plaintiffs or “applicants” in the Court’s jargon, but only states can be tried as defendants, and are referred to as “the government”. Previously there was also a Commission which decided on admissibility of cases before the Court could decide on the merits, but since 1998 the Court has taken over the previous commission’s duties. However, our corpus contains both admissibility decisions and judgments on the merits, from both the previous commission and the Court, so that it allows to work with all ECHR cases, i.e. past, present and future.

An important factor in choosing this court was that the ECHR, in the years since its installment several decades ago, has developed its own patterns of reasoning, using specific structures and types of argumentation. Because of the direct applicability of its judgments in all COE member states, many of these patterns have been taken over by judges and courts at the national level. These patterns took some time to develop but occur in most documents from after 1985, which is the large majority. However, we have also selected some of the cases before that date, to have a better overview of the problems. This, of course, leads to a more difficult automatic classification but makes the corpus statistically representative.

The final reasons for selecting this corpus were: (a) the ECHR covers whole of Europe in an important field, i.e. human rights, (b) the European Court of Justice (ECJ) has been known to use some of the same patterns of reasoning and has taken over some others from the ECHR, (c) there is also an ongoing process to make the European Union party to the Convention which will make this corpus all the more significant, (d) the Inter-American and African regional human rights treaties have installed courts very similar in structure to the ECHR, using some of the same phrasing and reasoning patterns as the ECHR, and (e) several constitutional courts use discursive expressions similar to those used by the ECHR.

### 3.1.2 Document Structure

The main structure of these documents contains a header providing information about the case (e.g. application number, names of the plaintiffs or applicants, defendant (the government) and members of the Court involved in the case), followed by a set of summaries on the main facts of the

case, previous decisions of this court on the current case, previous steps of the applicant before this court and complaints. Then follows the court’s decision process, which often starts with the scope of the case moving on to discuss one or more complaints or allegations of violation. Usually the documents conclude with separate dissenting or concurring opinions of one or more of the judges.

The decision of the court is presented at the end of the section *The Law*, sometimes also called *As to the Law*. This decision can be just a statement establishing the admissibility of the case or a set of statements establishing which violations occurred and which amounts to pay per pecuniary and non-pecuniary damage. The rest of *The Law* presents the argumentation of the court by which it arrived at its decision and a recompilation of arguments previously presented to it by the applicant and defendant. This section is where the judicial decision is taken place and therefore, where most of the arguments of the legal case are found.

### 3.1.3 Discourse Structure

The ECHR discourse also shows a typical structure. The court’s discourse is influenced by its internal working process. As in typical case law (see subsection 2.1) the process goes as follows. First, the applicant, usually an individual, makes his or her case, lists the articles on which the case is based, lists the facts and argues why these facts violate the cited articles. Then, the defendant or government defends its case offering its interpretation of facts and rules and of the way facts relate to those rules. Then the court analyses all the complaints and arguments provided by both parties and offers its written argumentation, including its evaluation of the parties’ arguments, and decision.

It is important to notice that for nearly each complaint of the applicant or defendant presented to the court, the court offers an “independent” argumentation and decision. Once all the complaints have been evaluated, and all the decisions have been argued, the court presents a final decision that depends on those middle decisions and possibly some other statements not directly related to any of the complaints.

Each of these independent argumentations has also a typical structure. Firstly, the arguments of both applicants and defendants are summarized and presented in past tense. We call these arguments *reported arguments*, as their argumentative function was only relevant previously, in the documents presented to the court by both parties. Their current function is just to report that this argumentation existed. Secondly, the court presents its evaluation of the reported arguments, sometimes validating them but sometimes also presenting new arguments. These parts of the court’s discourse is what we understand as the *current argumentation*. Finally, the conclusion of the argumentation is presented.

### 3.1.4 Reasoning Structure

The ECHR also uses certain specific patterns of argumentation that are more often used in the decision making process. This section presents some of them. First, an applicant must always present a complaint about the violation of a specific article of law from the Convention. This will prompt the court to use the scheme of *Argument from Established Rule* to prove or disprove the validity of the complaint. Normally this is the “top” argument of a chain of arguments. Second, given that the ECHR is a court which relies on its previ-

<sup>1</sup><http://www.echr.coe.int/ECHR/EN/Header/Case-Law/HUDOC/HUDOC+database/>

The Court recalls that it falls to each Contracting State, with its responsibility for “the life of [its] nation”, to determine whether that life is threatened by a “public emergency” and, if so, how far it is necessary to go in attempting to overcome the emergency. By reason of their direct and continuous contact with the pressing needs of the moment, the national authorities are in principle better placed than the international judge to decide both on the presence of such an emergency and on the nature and scope of the derogations necessary to avert it. Accordingly, in this matter a wide margin of appreciation should be left to the national authorities.

**Figure 2: Example of an argument from position to know in the ECHR**

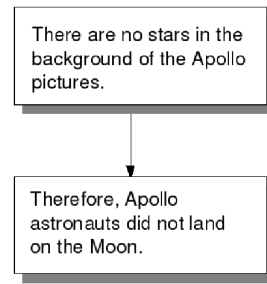
ous decisions in so-called precedent cases for the interpretation of the Convention, it is also quite common to see the court use the scheme of *Argument from Precedent* to justify its decision. This often in combination with the *Argument from Established Rule* as the precedent establishes the rule. Third, when applying an article it isn’t always immediately clear which is its scope and whether it applies to the facts currently under review. Therefore, the court also presents a recurrent use of the scheme *Argument of Verbal Classification*, again often in combination with the *Argument from Established Rule*. Fourth, the *Argument from Position to Know* is regularly used by the ECHR not in cases of witness testimony or expert opinion, or even of de jure authority, but in a pattern of argumentation that is specific and typical to the ECHR and which has attracted wide attention and sometimes following, for example from other international human rights courts, from federal constitutional courts, and from those who study them - like commentators of the US Supreme Court. This pattern of argumentation is called the “margin of appreciation doctrine” and embodies the principle that there can be a certain moral or cultural relativism in the application of human rights. The pattern then always includes the Court’s assertion that “local authorities are, in principle, better placed” to assess what is acceptable to the society in question and what is the best way to implement certain human rights in the particular circumstances of the country and culture, see Figure 2.

### 3.2 Theoretical Framework

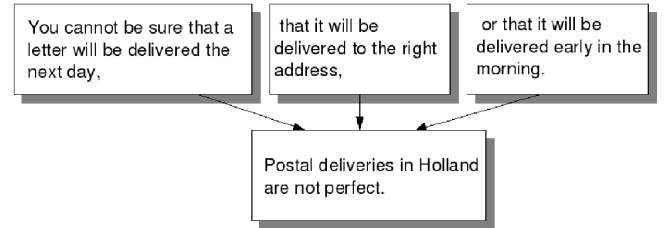
The first step, and perhaps the most important, in the creation of any corpus is to determine the information that should be preserved. Argumentation corpora are not different, they need to define which elements form the argumentation and how they related between each other, i.e. decide which argumentation theory should apply.

Argumentation theory has witnessed three decades of remarkable flowering, a proliferation of theoretical insights, where each has been developed in contradistinction to the others [2]. It’s not that theorists have been insular. On the contrary, they have for the most part proceeded with a thorough and accurate knowledge of activities from other theorists, even borrowing cuttings from one another (for example Walton from Pragma-Dialectics [10]) or digging together (for example, van Eemeren and Grootendorst with Jackson and Jacobs [8]).

Our study uses two well-known argumentation theories, argumentation schemes and pragma-dialectics. This frame-



**Figure 3: Simple Argumentation Structure**



**Figure 4: Multiple Argumentation Structure**

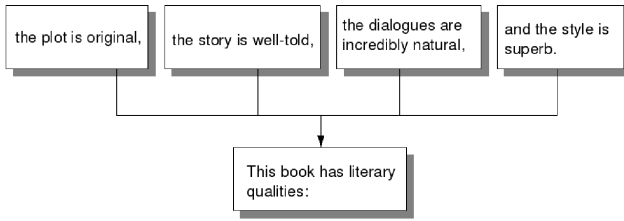
work is not the only one, nor the most important of argumentation, but its characteristics were found the most needed for the final purpose of the corpus here presented.

#### 3.2.1 Pragma-dialectics

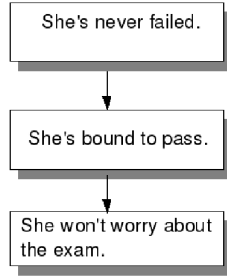
The first theory approaches argumentation from the pragma-dialectical and rhetorical view [7]. It describes argumentation as a phenomenon of verbal communication which should be studied as a specific mode of discourse, characterized by the use of language for resolving a difference of opinion. According to pragma-dialectical theory, argumentation is always part of an explicit or implicit dialogue in which one party attempts to convince the other party of the acceptability of his standpoint. In a fully explicit dialogue, the antagonist expresses his doubts and criticisms unequivocally, and all these doubts and criticisms must be answered by the protagonist by advancing more argumentation. In an implicit dialogue where the antagonist is silent, the protagonist can only anticipate the antagonist’s doubts or criticism; he will only advance more argumentation if he assumes that doubts or criticism are to be expected. In a dialogical approach to argumentation, the discussion character of the proceedings is deemed to be reflected in the structure of the argumentation. The protagonist’s argumentation is then seen as a complex whole made up of statements put forward to deal with real or anticipated critical reactions from an antagonist.

There exist different ways of putting forward statements for the argumentation:

1. **Simple Argumentation:** one defense of a standpoint. See Figure 3.
2. **Multiple Argumentation:** alternative defenses of the same standpoint. See Figure 4.
3. **Compound Argumentation:** a chain of arguments that reinforce each other.



**Figure 5: Coordinate Argumentation Structure**



**Figure 6: Subordinate Argumentation Structure**

- (a) **Coordinatively Compound Argumentation** is when the arguments constituting the chain are “connected in parallel”. Then, the arguments are part of a combined attempt to defend the standpoint. See Figure 5.
- (b) **Subordinatively Compound Argumentation** is when the arguments in the chain are “connected in series”, the one supporting the other. See Figure 6.

This theory has been applied to understand several different types of argumentative discourse. For example, it has been used to analyze and evaluate legal argumentation, mediation, negotiation, (parliamentary) debate, interpersonal argumentation, political argumentation, health communication and visual argumentation. Therefore, its relevance for the analysis of written argumentation is more than proved.

### 3.2.2 Argumentation Schemes

The second theory used on our framework background is known as argumentation schemes [9, 12] and has attracted increasing interest from argumentation theorists. Argumentation schemes offer a means of characterising stereotypical patterns of reasoning. They are the forms of argument (structures of inference) that enable one to identify and evaluate common types of argumentation in everyday discourse.

Matching each argumentation scheme, a set of critical questions is given. The critical questions are questions that can be asked (or assumptions that are held) by which a non-deductive argument based on a scheme might be judged to be (or presented as being) good or fallacious. The critical questions form a vital part of the definition of a scheme, and are one of the benefits of adopting a scheme-based approach.

The argumentation scheme and the matching critical questions are used to evaluate a given argument in a particular

case, in relation to a context of dialogue in which the argument occurred. An argument used in a given case is evaluated by judging the weight of evidence on both sides at the given point in the case where the argument was used. If all the premises are supported by some weight of evidence, then that weight of acceptability is shifted towards the conclusion, subject to rebuttal by the asking of appropriate critical questions.

One crucial aspect, then, of developing applications of argumentation schemes - computational and otherwise - is to capture these critical questions in an appropriate way. Thus, the complete set of premises employed in a scheme is the union of those given as premises and (the propositional content of) those listed as critical questions. The distinction and overlap between premises and critical questions may therefore be unclear, especially as critical questions might be anticipated in the premises by the arguer.

The number of argumentation schemes remains indefinite as new schemes are found regularly. In [9] Walton presented the twenty-five most common argumentation schemes. Earlier authors [6] identified many distinctive kinds of arguments used to convince a respondent on a provisional basis and [3] made an even more systematic taxonomy by listing some of these schemes, along with useful examples of them. More recently, Walton has elaborated further on his first list of schemes in the specificity of the legal context [11] and has defined a more detailed classification of different schemes in [12].

Argumentation scheme theory is a good basis for the analysis of written argumentation, specially on the legal domain, as it allows to model reasoning forms of argument where the argument is used to fulfill a probative function whereby probative weight is transferred from the premises to the conclusion. The probative weight is defeasible, i.e. its function is to tilt a balance of considerations on an ultimate issue in a dialogue to one side or the other. This means that the schemes offer one way of tackling the fact that arguments traditionally categorized as fallacies seem to be appropriate and acceptable under the right circumstances. Furthermore, in judicial decisions, as in all legal argumentation, the quality of the argument is very important. Therefore, classification in types of argumentation is useful for identifying problematic types of argumentation, which are often associated with fallacies. A possible example is the ad hominem argument which is often used by plaintiffs and defendants but ought not to be considered by those judging the case [11].

### 3.2.3 Our Framework

The aim of our annotation was to create a corpus that could be used to learn the argumentation structure of a document, i.e. to detect the different arguments of the argumentation, their relations and the different statements of each argument. Therefore, the choice was made to classify the discourse relations between arguments following the pragma-dialectical approach, i.e. as coordinative, subordinative or multiple. On the other hand, each argument was classified following the argumentation schemes theory. We made the assumption that all the premises inside a scheme are necessary, i.e. have coordinative relations. The critical questions can be found explicitly or implicitly but still they are also necessary for the argumentation, and therefore, if

**Table 1: Examples of the most common argumentation schemes encountered on the ECHR corpus**

|                                   |   |
|-----------------------------------|---|
| Argument from Sign                | The Commission observes that whereas in his original application the applicant stated that his house was burnt down on January 1994, it appears that the incident under investigation by the public prosecutor of Kulp district and the Kulp District Administrative Board occurred on November 1993. In these circumstances, the question arises whether the complaints insofar as they relate to specific acts carried out on November 1993 have been introduced out of time, given that the application was introduced on June 1993  |
| Argument from Example             | There will always be a need for elucidation of doubtful points and for adaptation to changing circumstances. Indeed, in the United Kingdom, as in the other Convention States, the progressive development of the criminal law through judicial law-making is a well entrenched and necessary part of legal tradition.  |
| Argument from Consequences        | It is not always an easy matter to trace the dividing line between procedural and substantive limitations of a given entitlement under domestic law. It may sometimes be no more than a question of legislative technique whether the limitation is expressed in terms of the right or its remedy. In the present case, the Court does not consider it necessary to settle the question of the precise nature of the defence of privilege for the purposes of Article para. 1. art. 1, since it is devoid of significance in the particular circumstances. If the Court were to treat the facts underlying the complaints declared admissible by the Commission as raising a substantive, rather than a procedural, complaint going to the right to respect for private life under Article 8 of the Convention (...) the same central issues of legitimate aim and proportionality as under Article 8 para. 2 would be posed. |
| Argument from Analogy             | The Court recalls its decision in the case of Brogan and Others v. the United Kingdom (...) that a period of detention without judicial control of four days and six hours fell outside the strict constraints as to time permitted by Article 6 (...) It clearly follows that the period of fourteen or more days during which Mr Aksoy was detained without being brought before a judge or other judicial officer did not satisfy the requirement of "promptness".   |
| Argument from an Established Rule | The Court is sensitive to the subsidiary nature of its role and must be cautious in taking on the role of a first-instance tribunal of fact, where this is not rendered unavoidable by the circumstances of a particular case (...). Where domestic proceedings have taken place, it is not the Court's task to substitute its own assessment of the facts for that of the domestic authorities and, as a general rule, it is for those authorities to assess the evidence before them (...). Though the Court is not bound by the latter's findings, in normal circumstances it requires cogent elements to lead it to depart from the findings of fact they have reached (...)  |
| Argument from Precedent           | The Commission observes that Article 26 of the Convention "should be applied with some degree of flexibility and without excessive formalism; it is sufficient that the complaints intended to be made subsequently before the Convention organs should have been raised at least in substance and in compliance with the formal requirements and time-limits laid down in domestic law" ((...)Castells judgment of 23 April 1992 (...)). (...) The Commission considers that the applicant did invoke before the Greek courts, at least in substance, the complaints relating to Article 10 (Art. 10) of the Convention which he now puts to the Commission. He may therefore be said to have exhausted domestic remedies. The Commission concludes that the applicant has complied with the requirements of Article 26 (Art. 26) of the Convention.   |

they are explicit they are treated as premises also holding coordinate relations.

Our study started two years ago and, as [12] was not yet available, it was based on a previous study [9]. The list of 25 argumentation schemes presented by Walton in [9] was slightly altered for application to our corpus. First, we included some subtypes, which were also mentioned in [9] but not added to its final list, like (a) the argument from falsification of a hypothesis in addition to the argument from evidence to a hypothesis, (b) the argument from popular practice in addition to the argument from popularity, (c) the negative ethotic argument in addition to the (positive) ethotic argument, and (d) the argument from an exceptional

case in addition to the argument from an established rule. We assumed this would make it easier for humans to identify types or argumentation. We also added another argument elaborated in [9] but also not added to its final list of arguments, the arguments from ignorance. Finally, we left off the list all of the slippery slope arguments (causal, precedent, verbal and full), because, as Walton notes, they are all combinations of the argument from gradualism with other types of argument (verbal classification, precedent, popularity, etc.). This was done to prevent conflicts between annotations, where one annotator might choose a slippery slope argument while the other might choose a combination of different arguments.

Table 2: Argumentation Schemes found on our framework

| Argumentation Scheme                                   | % Occurrences in dataset | % Incorrect annotation |
|--|--------------------------|------------------------|
| Argument from Sign                                     | 7.9                      | 7.2                    |
| Argument from Example                                  | 5.2                      | 2.4                    |
| Argument from Verbal Classification                    | 4.7                      | 5.1                    |
| Argument from Commitment                               | 0.6                      | 0                      |
| Circumstantial Argument Against the Person             | 0                        | 0                      |
| Argument from Position to Know                         | 2.1                      | 2.3                    |
| Argument from Expert Opinion                           | 2.7                      | 0                      |
| Argument from Evidence to a Hypothesis                 | 0.3                      | 0                      |
| Argument from Falsification of a Hypothesis            | 4.2                      | 0                      |
| Argument from Correlation to Cause                     | 1.1                      | 1.7                    |
| Argument from Cause to Effect                          | 4.7                      | 10.6                   |
| Argument from Consequences                             | 8.2                      | 5.4                    |
| Argument from Analogy                                  | 21.6                     | 25.4                   |
| Argument from Waste                                    | 2.3                      | 0                      |
| Argument from Popularity                               | 1.2                      | 0                      |
| Argument from Popular Practice                         | 2.4                      | 2.2                    |
| Ethotic Argument                                       | 0                        | 0                      |
| Negative Ethotic Argument                              | 0.3                      | 0                      |
| Argument from Bias                                     | 0                        | 0                      |
| Argument from an Established Rule                      | 19.6                     | 28.0                   |
| Argument from an Exceptional Case                      | 0.4                      | 1.7                    |
| Argument from Precedent                                | 6.1                      | 1.7                    |
| Argument from Gradualism                               | 4.4                      | 6.3                    |
| Argument from Vagueness of a Verbal Classification     | 0                        | 0                      |
| Argument from Arbitrariness of a Verbal Classification | 0                        | 0                      |
| Argument from Ignorance                                | 0                        | 0                      |

In later studies Walton approaches the schemes in the specific context of legal argumentation [11]. Then, Walton asserts that the argument from position to know includes often as subtypes the argument from witness testimony and the argument from expert opinion, among others. These types of arguments are common in legal argumentation and it seems they should be added to our list. However, it was decided not to add them but to include guidelines for the annotators specifying these as subtypes of the argument from position to know. This was done to keep the classification scheme general enough for application to ordinary language argumentation, outside the legal field. Walton also stated in [11] that the argument from precedent is a subtype of the argument from analogy. However, we did not remove the argument from precedent from our list of arguments. The representations of argument from analogy and argument from precedent encounter in our corpus were clearly distinctive, so the sub-classification did not present a problem to our annotators.

After all the modifications on the starting schemes list, we were left with the list of argumentation schemes shown in Table 2. Note that the selected argumentation schemes are the ones we expect to find in the ECHR legal cases. However, the experimental study cannot assure the completeness or correctness of this list due to the limited number of involved cases. Still, it gives good indication of which schemes are generally used in the ECHR legal cases. Table 1 presents examples of the most common schemes.

### 3.3 Annotators

For the annotation task we have selected two sets of anno-

tators, each of them formed by two persons, and a “judge” to solve disagreements between annotators. The first set of annotators was formed by two lawyers, a European and non-European, both studying their second master degree. They had previous knowledge on argumentation detection, achieved working by different legal firms. However, these experiences did not include argumentation analysis or good knowledge of argumentation theories. The second set of annotators, were both European, but on the contrary, were given a specific training on argumentation theories, argumentation analysis and the type of argumentation done in the ECHR. All the annotators were required to read [10] and to attend a couple of meetings to discuss and clarify their doubts about the argumentation theories and the annotation process. The “judge” used on disagreement discussions has a deep knowledge on argumentation theories, specially argumentation schemes, and has worked for more than four years with ECHR legal cases analysis. All the annotators worked individually during five weeks. The annotations were afterwards analysed by the judge who chose for each set of annotators which of the two annotations, done by the annotators of the set, was the most correct.

## 4. DISCUSSION

Although the different theories used as a background framework were combined, slightly adapted and provided with additional guidelines to facilitate human annotation of the corpus, inevitably there remained some conflicts between the different annotations. Some of these conflicts were due simple causes such as lack of concentration from the annotators or misinterpretation of the ECHR language. There is no

solution for the first cause and the solution for the second only affects the source of the annotated data not our annotation process. However, there were other disagreements which demand a discussion on the annotation process, its framework and the background theories. This section provides an overview of the most common conflicts cause, and, whenever it is possible, we give an explanation or solution for those conflicts.

## 4.1 Critical Questions

The treatment of critical questions in the annotation process is one of the main discussion points given our chosen framework. Critical questions are important tools for the evaluation of argumentation when working with argumentation schemes. In the ECHR they figure as premises, either implicit or explicit, in the argumentation of both parties, either in anticipation of critical questions from the counterparty (this is usually the case for the applicant's argumentation) or in answer to the critical questions from the counterparty (which is usually the case for the government). In the Court's argumentation, critical questions sometimes occur in the evaluation of so-called "reported argument" from the parties and they also figure as implicit and/or explicit premises in the Court's own ("current") argumentation. Therefore, the annotation of the critical questions could present a problem when working only over "normal" arguments. However, our choice to separate "reported arguments" from the other arguments facilitates the identification of the critical questions that have been answered in the premises and those that have not been answered, which in turn helps identify the arguments that can be criticized.

## 4.2 Identifying Argumentation

The first substantial disagreement between annotations deals with those propositions in the documents that should be identified as argumentation but are not. This disagreement is due three main reasons, which we analyse in detail over the next sub-sections.

### 4.2.1 Reported Argument

The first disagreement cause is due to the special characteristics of the ECHR, and more specifically to fact that the Court reports, evaluates and discards or endorses the arguments of the applicant (plaintiff) and the state (defendant) which precede its judgment. Some annotators count these reported arguments as argumentation, others do not. The former were either incapable of distinguishing between the two types of argumentation or understood argumentation to be all argumentation, whereas the latter understood argumentation to be only the current argumentation by the Court itself. This problem is solved by letting the annotators mark reported-argument as such, in addition to dissecting its structure and classifying its type. The advantage of annotating reported argument is that it shows how law is a discursive/dialectical practice, and that critical questions for the previously offered arguments can be identified, enabling readers to evaluate the Court's evaluation of those arguments by checking whether all relevant critical questions were answered in the premises.

### 4.2.2 Argumentation or Fact?

The second disagreement cause is, so we believe, due to different conceptions of law held by the respective anno-

tators. [4] suggests that the positivist conception of the law, still taught in many law schools, is challenged by theories of legal reasoning which highlight the argumentative aspects of legal decisionmaking. Our hypothesis is that, in our study, we are possibly confronted with something of a reverse mechanism, where someone holding a positivist conception of law does not identify as much argumentation in legal decisions. It is difficult to fully confirm this presumption, but two elements nevertheless seem to support it. First, we do know that the annotator who identified the least arguments had enjoyed a strongly positivism-oriented legal training, whereas another of the annotators, who we know had a firm background in both legal theory and argumentation theory, identified more argumentative propositions than either all the other lawyers together did. Second, the majority of the argumentative clauses that remained undetected were classified by the other annotators as *Arguments from Precedent or Analogy*. The second most commonly non-detected type of argument was the *Argument from Established Rule*. It is common for legal positivists to count rules of law, in whichever way established, be it by statute or precedent, as "facts" in their ontology. Possibly, then, the non-identification of arguments from established rule and precedent points to such a positivist ontology in the annotator's (implicit) conception of law.

### 4.2.3 Limits of the Argument

The third disagreement cause presented itself in the form of premises going undetected by certain annotators. This occurs most often in *Arguments from an Established Rule*. We believe this relates to the fact that the general overarching argument of a judicial decision is one from established rule, with premises to the final conclusion scattered all over the text of the document. These scattered premises are most difficult to detect. We believe there are two reasons for this: (a) the larger the distance between a premise and its conclusion, the harder it is to acknowledge their relation and (b) the larger the distance between premise and conclusion, the higher the chance of human error, e.g. oblivion or lack of concentration. Even if there is no real solution to human errors, it is expected that automatic detection and visualization of argumentation will be of great service in making the structure of those complex arguments from an established rule more easily accessible to readers.

## 4.3 Identifying the Structure of the Argumentation

A second substantial disagreement between annotators arises from the structure attributed to the detected argumentative propositions. There are three main causes for this disagreement, which we discuss in the following sub-sections.

### 4.3.1 Distinguishing Premises from Conclusions

In the earliest annotations, disagreements commonly arise concerning the nature of argumentative clauses, that is on the question of whether an argumentative clause was a premise or a conclusion. The reason is, once more, that the reasoning of the Court usually takes the form of one or more large, complex and multilayered arguments from an established rule, leading to one or several simple conclusions concerning the violation of an article of law. Therefore, there are only few "pure" conclusions, with a large number of subordinative, coordinative and multiple arguments leading to it, the



premises of which can in turn be the conclusions of other arguments. In this way a reasonably large percentage of the premises are also conclusions to foregoing arguments, which explains the high ratio of disagreement between the first two annotators as they lacked familiarity with the ECHR's characteristics. The only way to solve this problem is to better train the annotators and make them aware of the specific overall argumentation structure of the documents to be annotated previous to starting the annotation process. This strategy was successfully carried out with the second set of annotators.

### 4.3.2 Identifying the Structure of Complex Argument

The second cause of disagreement on argument structure presented itself, in almost two thirds of the cases, with the premises or conclusions of *Arguments from Established Rule*: what was identified as a premise by one annotator was identified as a conclusion by the other and vice versa. Also, almost half of the cases in which super-arguments, sub-arguments or co-arguments were left undetected or in which subordinative arguments were mistakenly identified as coordinative arguments, an *Argument from Established Rule* or an Argument from Gradualism was concerned - two types of argument which are likely to be complexly structured. Again, as most of the complex overarching arguments in the ECHR's decisions are arguments from established rule, scattered sometimes over several pages of text - it need not surprise that the structure of these particular arguments was most difficult to detect, for the similar reasons as cited in the section 4.2.3: the larger the distance between different elements of an argument, (a) the more difficult it is to acknowledge their relation and (b) the larger the chance of human error. There is no real solution for this problem, but visualization will make argument structures more easily accessible.

### 4.3.3 Subordinative or Coordinative?

The third and last cause of disagreement due to argument structure is also related to complex arguments, but this time to the overarching complex argument. As stated before, many sub-, super- and co-arguments were left undetected, and lots of coordinative and subordinative premises met the same fate. Most importantly, subordinative arguments were sometimes wrongly annotated as coordinative, and the other way around, whereas the difference should not be too difficult to understand. In both cases there is a chain of premises (say, more than two) working together and leading to a conclusion but in the case of subordinative premises the chain is serial and one could place the premises in a logical order that cannot be altered, or the argument would lose meaning. In the case of coordinative premises, the order of the premises would not necessarily make much difference as they work parallel to each other. Also in a subordinative structure there can be different types of argument, though this is not necessarily the case. When the premises are coordinative there is only one argument and therefore only one possible argument scheme. There are many reasons for this type of error, e.g. the argument presents an incorrect or unclear discourse structure (the ECHR judges stated their standpoints not enough clearly) or on the other hand it could be that the annotators needed a more exhaustive training in this type of complex arguments.

## 4.4 Identifying the Type of Argument or Argumentation Scheme

The third disagreement between annotators is non-corpus related, but argumentation theory related. The annotators had difficulties identifying the correct argument type, i.e. the argumentation scheme that was most suitable to the argument reasoning. The two main reasons for this disagreement are discussed in detail in the next sub-sections.

### 4.4.1 The Argument from Gradualism. Type or Structure?

The argument from gradualism proved particularly difficult to detect. Annotators frequently disagreed on what was an argument from gradualism. In almost all cases of conflict, one of the annotators saw gradualism while another would see different types of argument, and thus different arguments, in a subordinative structure. This raised the following question: is gradualism not simply another term for a subordinative structure of argumentation, as Walton admitted to be the case for the "slippery slope" argument schemes in [9]? Our choice to use a framework in which chains of premises are either broken up into chains of separate, subordinate arguments or, if listed as one argument, presumed to be coordinative (see section 3.2) only complicated this issue. In this framework there is no place for subordinative arguments from gradualism. But can arguments from gradualism be coordinative?

Walton describes the argument from gradualism as consisting of a chain of premises but does not explicitly say whether it is subordinative or coordinative in structure. Yet he admits in [9] that this type of argument can also be understood as a strategy or tactic of argumentation. In other words it can be understood to describe how chains of subordinative argument can best be built in certain cases, by gradually augmenting and shifting the weight of probability. The visual representation given there, gives the same impression of subordinative argument as the premises are listed serially, one supporting the other. However, he also says that sometimes gradualism is used as distinctive type of argumentation - the example given argues for a gradual introduction of taxes as this will be more easily acceptable for the population. Questions arise as to whether this is not rather a combination of arguments from consequences and popular acceptance, but these questions aside, the key ingredients to a "real" argument from gradualism seem to be (a) the fact that one of the premises does not lead to the conclusion by itself, the other premises are also needed for the conclusion to gain probability and (b) an element of augmentation, of gradually increasing the weight of probability.

In fact, in our corpus, the annotators found few examples of arguments which seemed to be non-subordinative, hence assumed to be coordinative, which could not be classified as any other type of argument and which carried an element of gradualism and there was disagreement on almost all of these examples between annotators. Therefore, the question of whether the argument from gradualism is really a type of argument and not rather a strategy or structure remains, evidently, in need of further theoretical elaboration.

### 4.4.2 Classification of Schemes

The last conflict between annotations is a conflict between two types of argumentation which in fact belong to the same general class according to [12]. For example, conflict oc-

curred between an argument from correlation and an argument from cause to effect, both classified as causal reasoning, between an argument from sign and an argument from evidence to hypothesis, both classified as abductive reasoning, and between arguments from (lack of) analogy and arguments from established rule (or exception to it), both arguments applying rules to cases according to [12]. This seems to imply that it is easier for humans to detect more general classes of argumentation than it is for them to identify the more specific types.

It must also be noted that in cases of “negative” argumentation schemes, where the argumentation scheme was used negatively, for example to say that an analogy or established rule did not apply, annotators would wrongly pick a negative argumentation scheme on the list belonging to the same class (i.e. argument from exceptional case) instead of the correct argumentation scheme which was used negatively (i.e. argument from analogy) but of which the “negative” was not in our list of choices.

This reinforces the idea that more general classes of argumentation are easier to detect and also suggests that negative argumentation schemes should be kept off the list or, alternatively, that a negative should be added to each positive argumentation scheme. Therefore, we support the classification of argumentation schemes into broader classes, as done in [12], and would advise those creating corpora to let annotators select the general class of argumentation first and only clear out the specific details later. On this basis, “pathways of classification”, in the form of a real taxonomic hierarchy, could be drawn up, leading annotators to the correct detailed argumentation scheme by way of answering simple taxonomic questions.

After all this is how both humans actually pinpoint types of argumentation and it would save AI-applications a considerable amount of time in classifying argumentation as they would not have to run through a list of 60 possible types, choosing the first one possible applicable, but would come to a more correct classification in few steps.

## 5. CONCLUSIONS

Our attempt to adapt well-known argumentation theories for the annotation of real case law argumentation shows significant problems with both the theories and the real argument’s construction. Some of these problems were presumably due to the annotators themselves, for example to their background conceptions about the ontology of law. However, sometimes the theory itself was also not sufficiently clear, like in the case of the argument from gradualism. While other times, the arguments themselves were difficult to pinpoint right away, leading to the need for more general classification systems and classification pathways. In conclusion, our research allows to highlight the importance of the continued study of argumentation, to clarify the relationship between legal and argumentation theory, the relationship between the structure and type of argumentation and to draw up classification systems and pathways for natural language argumentation.

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